Semantic Taxonomy and NP-coordination in Korean[*]

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Lee, Juwon. (2020). Semantic taxonomy and NP-coordination in Korean. *The Linguistic Association of Korea Journal, 28*(4), 147-174. This paper discusses the novel data of Korean NP-coordinations whose non-final conjunct is semantically incompatible with the verb of which the NP-coordinations are the object in a sentence. It is shown that these "peculiar" NP-coordinations cannot be accounted for by prior approaches to coordination in the literature. In particular, any theory that directly relates the verb with such a non-final conjunct faces a significant problem of semantic incompatibility. As a solution to this problem, I propose the hypothesis that the non-final conjunct of such NP-coordination must be semantically associated with the direct hypernym of the verb. I focus on conjunctive coordinations in this paper, but it is shown that the hypothesis can be further supported by some disjunctive coordinations in Korean.

Key Words: NP-coordination, right node raising, deletion, multiple dominance analysis, semantic taxonomy, hypernym

1. Introduction

In this paper I provide the novel data of NP-coordinations in Korean and show that prior approaches to coordinations in the literature are not enough to account for them. It is argued instead that the notion of semantic taxonomy (particularly, hypernym-hyponym) is required to properly account for the Korean NP-coordinations. First, consider the typical examples of English NP-coordinations given in (1).

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(1) a. He ate [the rice and the apple].

    b. [Teachers and students] entered the building.

In (1a) the two NPs – *the rice* and *the apple* - are conjoined with the coordinator *and*, and the NP-coordination serves as the object of the verb in the sentence; it means that the referent of the subject ate the rice and he ate the apple. In (1b), the NP-coordination serves as the subject in the sentence; it means that teachers entered the building and students entered the building. The corresponding NP-coordinations in Korean are given in (2).

(2) a. *ku-ka*   [*pap-kwa*   *kuliko*   *sakwa-lul*]   *mek-ess-ta*.
       he-Nom   rice-and   and   apple-Acc   eat-Pst-Dec
       'He ate the rice and the apple.'

    b. [*sensayngnim-tul-kwa*   *kuliko*   *haksayng-tul-i*]   *kennwul-ey*   *tuleka-ss-ta*.
       teacher-Plu-and   and   student-Plu-Nom   building-to   enter-Pst-Dec
       'Teachers and students entered the building.'

In (2) the two coordinators (the affix *-kwa* 'and' and the word *kuliko* 'and') are used at the same time; but it is possible for NP-coordination to have either of them (see some data in section 2). Like the English NP-coordinations in (1), some expression is shared by the two conjuncts in (2): (2a) means that the referent of the subject ate the rice and he ate the apple, and (2b) means that teachers entered the building and students entered the building.[1]

Unlike the typical NP-coordinations illustrated above, the conjuncts of some other NP-coordinations do not share an expression. Two examples of such NP-coordinations are presented in (3) (see more data in section 2.2 below).

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1) NP-coordination can be interpreted as either collective or distributive reading. For instance, in the collective reading of (2a), the subject simultaneously ate the rice and the apple (i.e., it describes one event), but in the distributive reading of (2a), the subject separately ate the rice and the apple (i.e., it describes two events). In this paper, I focus on the distributive reading of NP-coordinations.

(3) a. *ku-ka*   *onul*   [*sakwa*   *han-ccok-kwa*   *kuliko*
        he-Nom today apple   one-pice-and   and
        khephi   *han*   *can-ul*]   *masi-ess-ta.*
        coffee one   cup-Acc   drink-Pst-Dec
        (lit.) 'Today he drank a piece of apple and a cup of coffee.'
        = 'Today he ate a piece of apple and drank a cup of coffee.'

    b. *ku-ka*   *kakey-eyse* [*moca-wa* *kuliko* *sinpal-ul*] *sin-e*   *po-ass-ta.*
        he-Nom shop-at hat-and and   shoe-Acc wear-Comp try-Pst-Dec
        'He tried on the hats and the shoes at the shop.'

    The sentences in (3) look very similar to the sentence with a typical NP-coordination in (2a); they seem to have almost the same syntactic structure. However, an important difference between them is that the main verb *mek-ess-ta* 'eat-Pst-Dec' in (2a) is semantically compatible with two conjuncts (i.e., they share the verb), but the verbs in (3) are semantically compatible only with the final conjuncts (i.e., they do not share the verb at least semantically). It is natural to say that people drink a cup of coffee, but it does not make sense at all to say that people drink a piece of apple. Nonetheless, the sentence (3a) seems to be acceptable though (2a) sounds more natural than (3a). In (3b), the serial verb *sin-e po-ass-ta* 'wear-Comp try-Pst-Dec' can be translated as *tried on* and it is semantically compatible only with the final conjunct *sinpal-ul* 'shoe-Acc.' Note that a different verb *ssu-* 'wear' is appropriate for *moca* 'hat' in Korean even though both the verbs (*sin-* and *ssu-*) can be translated as the same verb *wear* in English. Assuming that verbs like *sin-* 'wear' and *ssu-* 'wear' include what must be patient in the semantic structure of the verbs, the serial verb *sin-e po-ass-ta* 'wear-Comp try-Pst-Dec' is semantically incompatible with the non-final conjunct *moca-wa* 'hat-and' in (3b). Nevertheless, the sentence in (3b) seems also to be acceptable though typical NP-coordination constructions sound better than (3b).

    A crucial question is then how to derive an appropriate verbal meaning associated with the non-final conjuncts in the coordination constructions. This semantic problem is of theoretical importance since it poses significant challenges to prior analyses of coordinations in the literature (see detailed discussions in section 3): these approaches have never discussed such NP-coordinations to my best knowledge and cannot generate them. In this paper I argue that the direct hypernym of the verb is semantically associated with the non-final conjunct of such NP-coordination construction: for instance,

in (3a) the direct hypernym of *masi-* 'drink' is *mek-* 'eat' and so *mek-* 'eat' is semantically associated with the non-final conjunct *sakwa han-ccok-kwa* 'apple one-piece-and' and in (3b) the direct hypernym of *sin-* 'wear' is *chakyongha-* 'wear' and so *chakyonghay po-ass-ta* 'tried on' is semantically associated with the first conjunct *moca-wa* 'hat-and.'

This paper is organized as follows. In section 2, some basic properties of Korean coordinations with respect to coordinators are presented as background, and some authentic corpus data are provided. In section 3, I show that prior analyses of coordinations in the literature cannot account for the new data of NP-coordinations and some possible alternatives are discussed. In section 4, based on syntactic and semantic properties of NP-coordinations, the hypotheses about final and non-final conjuncts are proposed, and I support the hypotheses with some predictions and additional data of disjunctive NP-coordinations. The paper concludes in section 5.

2. Background

In this section, four types of NP-coordinations are discussed and some examples of NP-coordinations from the Web are presented.

2.1. Coordinators

In general, coordination constructions have an explicit coordinator. Explicit coordinators can be classified into two types in Korean: morphological coordinator and lexical coordinator. First, morphological coordinators, which are affixes, are further classified into two types according to the syntactic categories of conjuncts: *-kwa/wa*, *-hako*, *-(i)lang*, and *ina* belong to nominal coordinator, and ⁻*ko* and ⁻*kena* belong to verbal coordinator (see Kim and Yang, 2006, among others). Consider the following examples with a morphological coordinator:

(4) a. *ku-ka*   [*sosel-kwa/hako/ilang/ina   sinmwun-ul*]   *ilh-ess-ta*.
         he-Nom   novel-and/and/and/or   newspaper-Acc   read-Pst-Dec
         'He read the novel and/or the newspaper.'

b. *ku-ka   mwulken-tul-ul   [sa-ko/kena   pal-ass-ta].*
   he-Nom   thing-Plu-Acc   buy-and/or   sell-Pst-Dec
   'He bought and/or sold things.'

Lexical coordinators like *kuliko* 'and' and *ttonun* 'or' are words and they can be nominal, as shown in (5a), or verbal, as shown in (5b) and (5c) (see Kim and Yang, 2006, among others).

(5) a. *ku-ka   [sosel   kuliko/ttonun   sinmwun-ul]   ilh-ess-ta.*
       he-Nom   novel   and/or   newspaper-Acc   read-Pst-Dec
       'He read the novel and/or the newspaper.'

   b. *ku-ka   mwulken-tul-ul   [sa-ko   kuliko   phal-ass-ta].*
      he-Nom   thing-Plu-Acc   buy-and   and   sell-Pst-Dec
      'He bought and sold things.'

   c. *ku-ka   mwulken-tul-ul   [sa-kena   ttonun   phal-ass-ta].*
      he-Nom   thing-Plu-Acc   buy-or   or   sell-Pst-Dec
      'He bought or sold things.'

The NP-coordinations in (4a) and (5a) have either a morphological coordinator or a lexical coordinator. However, it is not that an explicit coordinator is required for NP-coordination. It seems possible for NP-coordination to have no coordinator at all especially when a pause comes in between the conjuncts. Note also that NP-coordinations can simultaneously have both morphological coordinator and lexical coordinator, as seen in (5b) and (5c). If so, we basically have the four possibilities regarding the appearance of coordinators in NP-coordination. This is illustrated in (6).

(6) a. *ku-ka   onul   [sakwa han-ccok(-kwa)   (kuliko)   khephi*
       he-Nom   today   apple   one-pice-and   and   coffee
       han   can-ul]   masi-ess-ta.
       one   cup-Acc   drink-Pst-Dec
       (lit.) 'Today he drank a piece of apple and a cup of coffee.'
       = 'Today he ate a piece of apple and drank a cup of coffee.'

b. *ku-ka*   *kakey-eyse*   [*moca*(-*wa*)   (*kuliko*)   *sinpal-ul*]

he-Nom   shop-at   hat-and   and   shoe-Acc

sin-e   *po-ass-ta*.

wear-Comp   try-Pst-Dec

'He tried on the hats and the shoes at the shop.'

The sentences in (6a) or (6b) seem to have the same meaning no matter whether a coordinator appears in the sentence. This variety of "peculiar" NP-coordinations means more problems for a theory of coordination. In the following some corpus data of such NP-coordinations are provided.

2.2. Corpus data

The NP-coordinations under discussion are not frequently used, but we can find some real examples in the Web. First, in the following NP-coordination, no explicit coordinator appears right before the final conjunct:

(7) *aisukhulim-ilang*   *khwukhi*   *khephil-lul*   *masi-ess-supnita*.

ice.cream-and   cookie   coffee-Acc   drink-Pst-Dec

(lit.) 'I drank ice cream, cookie, and coffee.'

= 'I ate ice cream, ate cookie, and drank coffee.'

https://www.tripadvisor.co.kr/ShowUserReviews-g294454-d2660559-r537642000-The_Cookie_Factory-Zagreb_Central_Croatia.html

The verb *masi-* 'drink' used in (7) is semantically incompatible with the non-final conjuncts, *khwukhi* 'cookie' (e.g., #*ku-ka khwukhi-lul masi-ess-ta*. '#He drank the cookie.') and *aisukhulim* 'ice cream' (e.g., #*ku-ka aisukhulim-ul masi-ess-ta*. '#He drank the ice cream.'). In (8) both the morphological coordinator *-kwa* and the lexical coordinator *kuliko* appear at the same time right before the final conjunct.

(8) *achim*   *siksa-lo*   *na-nun*   *cwusu-wa*   *ssiliel,*   *ppang-kwa*   *kuliko*

    morning meal-as I-Top juice-and cereal bread-and and

    khephi-lul   *masi-pnita.*

    coffee-Acc   drink-Dec

    (lit.) 'I drink juice, cereal, bread, and coffee as breakfast.'

    = 'I drink juice, eat cereal, eat bread, and drink coffee as breakfast.'

    http://en-co.co.kr/customer/view.php?seq=556&no=27&code=freelecture&url=custo

    mer06.php

The verb *masi-* 'drink' used in (8) is not semantically compatible with *ppang* 'bread' (e.g., *#ku-ka ppang-ul masi-ess-ta*. '#He drank the bread.').[2] In (9) only the morphological coordinator -(*k*)*wa* 'and' is used.

(9) a. ...*mah-un*   *yang-uy*   *chayso-wa*   *mwul-ul*

      lot-Rel   quantity-Gen vegetable-and water-Acc

      masye-yahanta-ko   *haney-yo.*

      drink-should-Comp   say-Dec

      (lit.) '...we are supposed to drink lots of vegetables and water.'

      = '...we are supposed to eat lots of vegetables and to drink lots of water.'

      https://brunch.co.kr/@sangheeshyn/26

    b. *apeci-nun*   *ceyil*   *coh-un*   *os-kwa*   *kalakci-wa*   *sinpal-ul*   *sin-ki-pnita*.

      father-Top most good-Rel clothes-and ring-and shoe-Acc wear-Caus-Dec

      'The father made her wear the best clothes, rings, and shoes.'

      http://www.imr.co.kr/web_board/b_cont.asp?no=70991&tab_name=&cab_name

      =&tab_property=&pageno=1&startpage=1&flag=subject&key_word=%C3%B5%B

      1%B9&ord_id=bible_line

We cannot drink vegetables, so an appropriate interpretation of (9a) should be that we are supposed to eat lots of vegetables and to drink lots of water. We can use the

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2) In Korean, the loanword *ssiliel* 'cereal' can mean cereals themselves or the mixture of cereals and milk. In the latter case, we can say that *ku-ka ssiliel-ul masi-ess-ta.* (lit.) 'He drank the cereals.' But *ppang* 'bread' never means anything like the mixture of bread and milk, so it sounds very awkward to say the sentence *#ku-ka ppang-ul masi-ess-ta.* (lit.) 'He drank the bread.'

verb *sin-* 'wear' for *sinpal* 'shoe,' but not for *os* 'clothes' (for which *ip-* 'wear' is a proper verb) or *kalakci* 'ring' (for which *kki-* 'wear' is a proper verb). Nonetheless, the sentences like (9b) are actually used.

Finally, only the lexical coordinator *kuliko* 'and' appears right before the final conjuncts in (10).

(10) a. *tephulaingphayn-eyse   pulenchi-wa   phaynkheyikhu   kuliko*
      The_Flying_Pan_Blue-at brunch-and   pancake   and
      khephi-lul   masi-ess-supnita.
      coffee-Acc   drink-Pst-Dec
      (lit.) 'I drank brunch, pancake, and coffee at The Flying Pan Blue.'
      = 'I ate brunch, ate pancake, and drank coffee at The Flying Pan Blue.'
      https://moonrise-story.tistory.com/?page=59

    b. *panana-wa   sikppang   thosuthu kuliko khephi-lul   masi-ess-supnita.*
      banana-and   bread   toast   and   coffee-Acc   drink-Pst-Dec
      (lit.) 'I drank banana, bread, toast and coffee.'
      = 'I ate banana, ate bread, ate toast and drank coffee.'
      https://cardo.tistory.com/m/79?category=924392

The verb *masi-* 'drink' is semantically incompatible with nouns denoting non-liquid entities like *pulenchi* 'brunch,' *phaynkheyikhu* 'pancake,' *panana* 'banana,' *sikppang* 'bread,' and *thosuthu* 'toast.' Nonetheless, the sentences in (10) are appropriately interpreted and understood. In short, all these kinds of NP-coordinations call for an account.

3. Prior approaches

Before a solution to the problem is proposed, it is shown in this section that some major analyses of coordinations in the literature and two possible alternatives are not enough to account for NP-coordinations in question.

3.1. Conjunction Reduction

An old rule, which looks intuitively plausible, to license coordination was proposed

in Chomsky (1957). The Conjunction Reduction rule stated in (11) may generate some typical coordinations:

(11) Conjunction Reduction rule:
   If S1 and S2 are grammatical sentences, and S1 differs from S2 only in that X appears in S1 where Y appears in S2 (i.e., S1 = ···X··· and S2 = ···Y···), and X and Y are constituents of the same type in S1 and S2, respectively, then S3 is a sentence, where S3 is the result of replacing X by X+and+Y in S1 (i.e., S3 = ···X+and+Y···). (Chomsky, 1957: 36)

According to the Conjunction Reduction rule, a constituent (e.g., X) is replaced with a coordinated constituent (e.g., X+and+Y) provided that the required conditions (i.e., constituency and identity of types) are observed. For instance, the Conjunction Reduction rule can generate the grammatical sentences in (12).

(12) a. Manfred plays the saxophone.   Matthias plays the saxophone.
       → [Manfred and Matthias] play the saxophone.
    b. Astrid is ironing the shirts.   Astrid is ironing the blouses.
       → Astrid is ironing [the shirts and the blouses].

The Conjunction Reduction rule may also be used to generate the canonical Korean NP-coordination construction in (13).

(13) *ku-ka*   *sakwa-lul*   *mek-ess-ta.*   *ku-ka*   *panana-lul*   *mek-ess-ta.*
    he-Nom   apple-Acc   eat-Pst-Dec   he-Nom   banana-Acc   eat-Pst-Dec
    'He ate the apple.'   'He ate the banana.'
    → *ku-ka*   [*sakwa-wa*   *kuliko*   *panana-lul*]   *mek-ess-ta.*
      he-Nom   apple-and   and   banana-Acc   eat-Pst-Dec
      'He ate the apple and the banana.'

Unlike English, the accusative NP *sakwa-lul* 'apple-Acc' in (13) is changed to *sakwa-wa* 'apple-and.' This shows that simply applying the Conjunction Reduction rule to Korean is not appropriate; we need some operations to deal with the change. Moreover, the rule

cannot account for the NP-coordinations under discussion. Consider the following examples:

(14) a. *Minswu-ka   onul-un   saylowun   moca-lul*
Minswu-Nom   today-Top   brand_new   hat-Acc
sse/*sin-e   po-ass-ta.
wear.Comp/wear-Comp   try-Pst-Dec
'Today Minswu tried on the brand new hats.'

b. *Minswu-ka   onul-un   saylowun   sinpal-lul*
Minswu-Nom   today-Top   brand_new   shoe-Acc
sin-e/*sse   po-ass-ta.
wear-Comp/wear.Comp   try-Pst-Dec
'Today Minswu tried on the brand new shoes.'

c. *Minswu-ka   onul-un   saylowun   moca-wa   kuliko*
Minswu-Nom   today-Top   brand_new   hat-and   and
sinpal-ul   sin-e/*sse   po-ass-ta.
shoe-Acc   wear-Comp/wear.Comp   try-Pst-Dec
'Today Minswu tried on the brand new hats and shoes.'

d. *Minswu-ka   onul-un   saylowun   sinpal-kwa   kuliko*
Minswu-Nom   today-Top   brand_new   shoe-and   and
moca-lul   sse/*sin-e   po-ass-ta.
hat-Acc   wear.Comp/wear-Comp   try-Pst-Dec
'Today Minswu tried on the brand new shoes and hats.'

Since the verb in (14a) is different from that in (14b), the Conjunction Reduction rule cannot be applied to the two sentences to generate (14c) or (14d). Furthermore, it has been shown in the literature that the Coordination Reduction rule has a problem in accounting for some other coordination constructions (e.g., *Tom and Mary met* cannot be derived from **Tom met and Mary met*, and the meaning of *Poland's national flag is white and red* is different from that of *Poland's national flag is white and Poland's national flag is red*) (see, e.g., McCawley, 1968; Lakoff & Peters, 1966; Hudson, 1970; Dougherty, 1970, 1971; Haspelmath, 2004). Hence, it would be better to look for a new approach to accommodate the new data of Korean NP-coordinations.

3.2. Right node raising

The *right node raising* (RNR) (Postal, 1974) (or right periphery ellipsis in Höhle, 1991) can generate sentences in which some expression is raised out of two conjuncts and attached to the right of both of them (i.e., *rightward across the board* (ATB) *movement*). The same phenomenon is referred to as node-raising (Dougherty, 1970: 891). Consider the English examples given in (15).

(15) a. He likes but she dislikes the book.
　　 b. Jack may be-and Tony certainly is-a werewolf.
　　　 (Hudson, 1976: 549)

According to the RNR, for instance, *a werewolf* in (15b) is moved from the two conjuncts *Jack may be a werewolf* and *Tony certainly is a werewolf* to the end of the sentence, and it is shared by the two conjuncts. Korean coordinations may be analyzed as involving RNR as like the following (see, e.g., Park, 2007):

(16) *ku-un*　　 *yenge-lul*　　 ___　 (*kuliko*)　 *kunye-un*　 *pwule-lul*　　 ___
　　 he-Top　 English-Acc　　　　 and　　　 she-Top　 French-Acc
　　 paywu-n-ta.
　　 study-Pre-Dec
　　 'He studies English, and she studies French.'

In (16), the verb *paywu-n-ta* 'study' is assumed to move out of both the conjuncts to the right of both of them and they share the raised verb. However, this RNR analysis is not applicable to the NP-coordinations. Consider the examples in (14c) and (14d): they are repeated in (17).

(17) a. *Minswu-ka*　　　 *onul-un*　　　 *saylowun*　　 *moca-wa*　 *kuliko*
　　　 Minswu-Nom　 today-Top　 brand_new　 hat-and　　 and
　　　 sinpal-ul　　 *sin-e/*sse*　　　　　　　　 *po-ass-ta.*
　　　 shoe-Acc　 wear-Comp/wear.Comp　 try-Pst-Dec
　　　 'Today Minswu tried on the brand new hats and shoes.'

b. *Minswu-ka   onul-un   saylowun   sinpal-kwa   kuliko*
Minswu-Nom   today-Top   brand_new   shoe-and   and
*moca-lul   sse/*sin-e   po-ass-ta.*
hat-Acc   wear.Comp/wear-Comp   try-Pst-Dec
'Today Minswu tried on the brand new shoes and hats.'

In (17a), the verb *sin-e po-ass-ta* 'tried on' is not shared by the two conjuncts in the NP-coordination since the verb *sin-* 'wear' is never used with *moca* 'hat.' In (17b), the verb *sse po-ass-ta* 'tried on' is not shared by the two conjuncts in the NP-coordination since *ssu-* 'wear' is never used with *sinpal* 'shoe.' That is, it is implausible to assume that the verb is raised out of two conjuncts. Moreover, the RNR analysis (just like the Conjunction Reduction rule) bears a theoretical burden to explain the shifts, for instance, from *moca-lul* 'hat-Acc' to *moca-wa* 'hat-and' in (17a) and from *sinpal-ul* 'shoe-Acc' to *sinpal-kwa* 'shoe-and' in (17b).

Other problems of the RNR analysis have been discussed in the literature. Wexler and Culicover (1980) pointed out that some RNR constructions violate, for examples, the complex NP constraint (e.g., *Mary knows [a man who buys ___], and Bill knows [a man who sells ___], pictures of Fred*). Moreover, the pair of sentences in each of (18) have different meanings, suggesting that some common element does not come from two conjuncts (Abbott, 1976: 642, fn 3):

(18) a. I borrowed a total of $3000 from the bank and my sisters stole a total of $3000 from the bank. ≠ I borrowed, and my sisters stole, a total of $3000 from the bank.

b. John gave Mary, and Joan presented to Fred, books which looked remarkably similar. ≠ John gave Mary books which looked remarkably similar and Joan presented to Fred books which looked remarkably similar.

A similar problem is also found in Korean (see Park, 2007: 87):

(19) a. *ku-tul-un/#John-un   palpyoca-lo   ku   seymina-ey   moi-ess-ta.*
he-Plu-Top/John-Top   presenter-as   the   seminar-at   gather-Pst-Dec
'They/#John gathered as presenters at the seminar.'

b. *ku-tul-un/#Bill-un*   *tholonca-lo*   *ku*   *seymina-ey*   *moi-ess-ta.*
he-Plu-Top/Bill-Top   discussant-as   the   seminar-at   gather-Pst-Dec
'They/#Bill gathered as discussants at the seminar.'

c. *John-un*   *palpyoca-lo*   (*kuliko*)   *Bill-un*   *tholonca-lo*
John-Top   presenter-as   and   Bill-Top   discussant-as
ku   *seymina-ey*   *moi-ess-ta.*
the   seminar-at   gather-Pst-Dec
'John and Bill gathered at the seminar as a presenter and a discussant, respectively.'

The collective verb *moi-* 'gather' requires a plural subject, so the sentences in (19a) and (19b) with a singular subject are not acceptable, indicating that the expression *ku seymina-ey moi-ess-ta* 'gathered at the seminar' in (19c) does not come from two conjuncts. Similarly, the plural marker *-tul* requires a plural subject (see, e.g., Choe, 1988; C. Kim, 2005), so the sentences in (20a) and (20b) with a singular subject are not acceptable, but (20c) is acceptable even though each conjunct has a singular subject (see discussions of similar examples in Chung, 2004; J.-S. Kim, 2006).

(20) a. *ku-tul-un/#John-un*   *nonmwun-ul*   *yelsimhi-tul*   *ilk-ess-ta.*
he-Plu-Top/John-Top   paper-Acc   diligently-Plu   read-Pst-Dec
'They/John diligently read papers.'

b. *ku-tul-un/#Mary-nun*   *chayk-ul*   *yelsimhi-tul*   *ilk-ess-ta*.
he-Plu-Top/Mary-Top   book-Acc   diligently-Plu   read-Pst-Dec
'They/Mary diligently read books.'

c. *John-un*   *nonmwun-ul*   *kuliko*   *Mary-nun*   *chayk-ul*
John-Top   paper-Acc   and   Mary-Top   book-Acc
yelsimhi-tul   *ilk-ess-ta*.
diligently-Plu   read-Pst-Dec
'John diligently read papers and Mary diligently read books.'

We have to significantly revise the RNR analysis in order to account for these data as well as NP-coordinations. Rather, it seems better to look for a different solution.

3.3. Deletion

Instead of a movement analysis like RNR, a deletion can be proposed to account for coordinations (see Wexler and Culicover, 1980; Kayne, 1994; Hartmann, 2000; Boskovic, 2004; Merchant, 2004, 2013, 2016, among others). According to deletion analysis, the object of the first conjunct is deleted in (21a) and the verb of the first conjunct is deleted in (21b).

(21) a. He likes ~~the book~~ and she dislikes the book.
    b. *John-un   yenge-lul   ~~paywu-n-ta~~   kuliko   Bill-un*
        John-Top   English-Acc study-Pres-Dec and   Bill-Top
        pwule-lul   paywu-n-ta.
        French-Acc   study-Pre-Dec
        'John studies English, and Bill studies French.'

In (21a) the object *the book* in the first conjunct is identical to the object in the second conjunct, and in (21b), the verb *paywu-n-ta* 'study' in the first conjunct is the same as the verb in the second conjunct. That is, the identical object or verb is deleted in the non-final conjuncts. This deletion process can derive the surface form of the sentences in (21).

However, this deletion analysis has the same problems of Conjunction Reduction and RNR analyses since they all assume the identity condition: an operation can be applied only when conjuncts have the identical expressions. In (22a) the verbs used in the two conjuncts are different from each other (*ssu-* 'wear' vs. *sin-* 'wear') and thus the serial verb *sse po-ass-ta* 'wear.Comp try-Pst-Dec' in the first conjunct should not be deleted according to deletion analysis. But the sentence (22b) can be licensed.

(22) a. *Minswu-nun   kakey-eyse   moca-lul*
        Minswu-Top   shot-at   hat-Acc
        sse/*sin-e   po-ass-ta
        wear.Comp/wear-Comp try-Pst-Dec
        kuliko   sinpal-ul   sin-e/*sse   po-ass-ta.
        and   shoe-Acc wear-Comp/wear.Comp try-Pst-and

'Minswu tried on the hats and tried on the shoes at the shop.'

b. *Minswu-nun*   *kakey-eyse*   *moca-lul/-wa*   *kuliko*   *sinpal-ul*

Minswu-Top   shop-at   hat-Acc/-and   and   shoe-Acc

*sin-e/*sse*   *po-ass-ta*.

wear-Comp/wear.Comp   try-Pst-Dec

'Minswu tried on the hats and tried on the shoes at the shop.'

This suggests that deletion approach is not appropriate for an analysis of NP-coordinations in Korean. Moreover, it also has the burden to explain the shift from *moca-lul* in (22a) to *moca-wa* in (22b).

3.4. Multiple dominance analysis

Wilder (1997, 1999) proposed the multiple dominance analysis of coordinations according to which, for instance, the object *the book* in (23) is directly shared by the verbs of two conjuncts (see McCawley, 1982; Goodall, 1987; Muadz, 1991; Moltmann, 1992 for a similar analysis involving a parallel structure).

(23) John bought and Mary read the book.

The basic syntactic structure of (23) can be represented like the following under the multiple dominance analysis; the NP *the book* is syntactically combined with the verbs in the two conjuncts (Wilder, 1999):

(24)
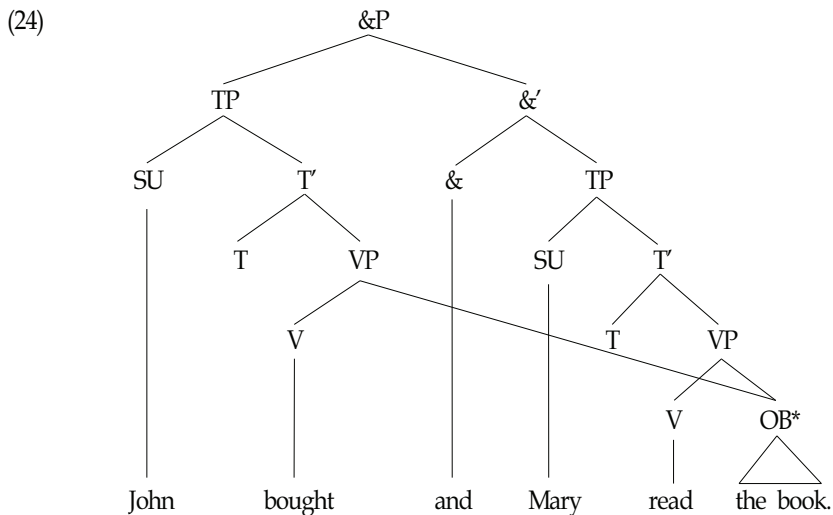
Chung (2004) applied the multiple dominance analysis to Korean coordinations. He argues that in (25) the expression *yelsimhi(-tul) ilk-ess-ta* 'read hard' is syntactically shared by two conjuncts, and the sentence has a structure similar to that of (24) (see also Park, 2006).

(25) *John-un*   *nonmwun-ul*   (*kuliko*)   *Mary-nun*   *chayk-ul*
      John-Top   article-Acc   and   Mary-Top   book-Acc

      yelsimhi(*-tul*)   *ilk-ess-ta.*
      hard-Plu   read-Pst-Dec

      'John read articles hard and Mary read books hard.'

The multiple dominance analysis may account for the coordination construction in (25): *yelsimhi(-tul) ilk-ess-ta* 'read hard' is directly connected to the conjuncts and the subjects in the conjuncts satisfy the plural subject condition of the plural marker *tul*. However, it does not account for the coordinate structures involving semantic incompatibility. For instance, consider (22b), repeated in (26).

(26) *Minswu-nun*   *kakey-eyse*   *moca-lul/-wa*   *kuliko*   *sinpal-ul*
     Minswu-Top   shop-at   hat-Acc/-and   and   shoe-Acc
     *sin-e/*sse*   *po-ass-ta.*
     wear-Comp/wear.Comp   try-Pst-Dec
     'Minswu tried on the hats and tried on the shoes at the shop.'

The serial verb *sin-e po-ass-ta* 'wear-Comp try-Pst-Dec' in (26) must not be directly associated with *moca-lul* 'hat-Acc' or *moca-wa* 'hat-and' due to semantic incompatibility. In addition, the verb requires an accusative NP as its object, not an NP attached with the coordinator *wa* 'and' (see other problems of multiple dominance analysis in Kayne, 1994; J.-S. Kim, 2006).

In sum, it looks difficult to analyse the "peculiar" NP-coordinations in the previous approaches. However, this does not necessarily mean that they must be rejected altogether. Perhaps the previous analyses can be modified somehow to deal with the problematic examples. But this remedy would require much theoretical apparatus. Rather, it seems more plausible to assume that 1) the "shared" expression is licensed at the position where it appears in sentence (i.e., it has no underlying structure) and 2) the "shared" expression syntactically combines with a coordination, but not with each conjunct in the coordination.

3.5. Two alternatives

One may argue that we can loosen the identity condition involved in the previous approaches. That is, instead of identity, similarity can be assumed to allow some syntactic operation. In fact, examples like (27) suggest a similarity condition. In the gapping construction (27a), the verb *likes* in the first conjunct is not strictly identical to the verb *like*, which is covert in the second conjunct. Similarly, the covert verb in the first conjunct of (27b) should be *cohaha-si-n-ta* 'like-Hon-Pre-Dec' since the subject of the verb has a honorific marker *nim*. Note that Korean uses the honorific agreement between a verb and its subject.

(27) a. (gapping) Julia [likes] Mendelssohn, and her parents [V] the Rolling Stones.
(Haspelmath, 2004: 37, (105a))

   b. *sensayng-nim-i*   *meyntelson-ul*   *kuliko*   *Jane-un*
      teacher-Hon-Nom   Mendelssohn-Acc   and   Jane-Top
      lollingsuthon-ul   *cohaha-n-ta*/**cohaha-si-n-ta.*
      Rolling Stones-Acc   like-Pre-Dec/like-Hon-Pre-Dec
      'The teacher likes Mendelssohn and Jane the Rolling Stones.'

Data like (27) indicate that inflectional difference can be ignored in coordinations (see the notion of *vehicle change* in Fiengo and May, 1994 according to which some features like gender and number can be ignored in checking identity); *likes* and *like* basically have the same meaning. However, the NP-coordinations under discussion involve more than inflectional difference. For instance, *masi-* 'drink' and *mek-* 'eat' in (3a) are different lexical items having different meanings, and so are *ssu-* 'wear' and *sin-* 'wear' in (3b). One might assume then that an operation is allowed under semantic similarity rather than semantic identity: that is, if the involved verbs have similar meanings, then an operation (e.g., deletion) is applied, as illustrated in the following:

(28) a. *ku-ka*   *onul*   *sakwa*   *han-ccok-ul*   ~~*mek-ess-ta*~~
      he-Nom   today   apple   one-pice-Acc   eat-Pst-Dec
      kuliko   *khephi*   *han*   *can-ul*   *masi-ess-ta.*
      and   coffee   one   cup-Acc   drink-Pst-Dec
      'Today he ate a piece of apple and drank a cup of coffee.'

   b. *ku-ka*   *kakey-eyse*   *moca-lul*   ~~*sse*~~   ~~*po-ass-ta*~~
      he-Nom   shop-in   hat-Acc   wear.Comp   try-Pst-Dec
      kuliko   *sinpal-ul*   *sin-e*   *po-ass-ta.*
      and   shoe-Acc   wear-Comp   try-Pst-Dec
      'He tried on the hats and tried on the shoes at the shop.'

The surface forms of sentences in (28) have the same meanings as those of the underlying sentences. This is desirable. However, this approach has a problem of generating inappropriate interpretations. For instance, in (29) the verb of the first conjunct (*tangki-ess-ta* 'pull-Pst-Dec') is deleted since its meaning is similar to the meaning of the verb in the second conjunct (*mill-ess-ta* 'push-Pst-Dec').

(29) *ku-ka   Jane-ul   ~~tangki-ess-ta~~   kuliko   Mary-lul   mil-ess-ta.*
 he-Nom Jane-Acc pull-Pst-Dec and Mary-Acc push-Pst-Dec
 'He pushed Jane and pushed Mary.'

Then the surface form of the sentence in (29) is predicted to have the meaning that the referent of the subject pulled Jane and pushed Mary. But this is not the case. The correct meaning of the sentence is that the referent of the subject pushed Jane and pushed Mary.

Another alternative is that *pap* 'rice' in (30a) takes its possible telic role (*mek-* 'eat') as the related verbal meaning (see qualia roles in Pustejovsky, 1995). However, there seems to be no independent evidence for the existence of telic role of *pap* 'rice' as shown in (30b) (see Korean light verb and qualia roles in Lee, 2016).

(30) a. *ku-ka   onul-un   pap-kwa   kuliko   khephi-lul   masi-ess-ta.*
  he-Nom today-Top rice-and and coffee-Acc drink-Pst-Dec
  (lit.) 'He drank the rice and the coffee.' = 'He ate the rice and drank the coffee.'
 b. *ku-ka   pap-ul   hay-ss-ta.*
  he-Nom rice-Acc do-Pst-Dec
  (lit.) 'He did the rice.' = 'He made/cooked/#ate the rice.'

The range of possible interpretations of (30b) suggests that the common noun *pap* 'rice' has *mantul-* 'make' or *cis-* 'cook' as its agentive role, but it does not have a telic role. Summarizing, the prior analyses and some possible alternatives have problems to properly analyze NP-coordination constructions in Korean.

4. Semantic Taxonomy—based Account

I argue in this section that the notion of semantic taxonomy is necessary to provide an appropriate interpretation of NP-coordination constructions (see other constructions requiring semantic taxonomy in, e.g., Lee, 2017).

4.1. Final conjunct

It has been widely known that some constructions show a proximity effect (see, e.g., William, 1990). This is illustrated in (31).

(31) a. Either Mary or her sisters are coming.
     b. None of them were in the building.

In (31a) the plural verb *are* agrees in number with the final conjunct, *his sisters*, which is closer to the verb than the non-final conjucnt, *Mary*. In (31b) the plural verb *were* agrees in number with *them* rather than *None* since the former is closer to the verb than the latter.

Korean coordination seems to assign the syntactic headedness to the right-most conjunct: the CASE or HON(orification) value of nominal coordination and the MOOD value of verbal coordination are projected from the final conjunct (Kim and Yang, 2006). In (32) we can see from the contrast that the verb with the honorific affix *si* is used only when the final conjunct in NP-coordination is attached with the honorific affix *nim*.[3]

(32) a. *haksayng-kwa*   *kuliko sensayng-nim-i*   *o**(-si)-ess-ta*.
       student-and   and   teacher-Hon-Nom   come-Hon-Pst-Dec
       'Students and teachers came.'
    b. *sensayng-nim-kwa*   *kuliko*   *haksayng-i*   *o*(*-si)-ess-ta*.
       teacher-Hon-and   and   student-Nom   come-Hon-Pst-Dec
       'Teachers and students came.'

Similarly, the Korean NP-coordination construction shows a proximity effect in terms of semantic compatibility. Consider the ungrammatical sentences in (33).

(33) a. *Minswu-ka   *onul-un*   [*khephi*   *han*   *can-kwa*   *kuliko*
       Minswu-Nom   today-Top   coffee   one   cup-and   and

---

3) This honorific agreement can be used to argue against the multiple dominance analysis (see, e.g., J.-S. Kim, 2006: 138-139) since the verb with *si* does not agree with the first conjunct without *nim* but the verb directly combines with the conjunct in the multiple dominance analysis.

        sakwa   han   ccok-ul]   *masi-ess-ta.*

        apple   one   piece-Acc   drink-Pst-Dec

        (int.) 'Today Minswu drank a cup of coffee and ate a piece of apple.'

  b. **Minswu-ka   onul-un*   [*nolan   sinpal-kwa   kuliko*

        Minswu-Nom   today-Top   yellow   shoe-and   and

        saylosan   moca-lul]   *sin-e*   *po-ass-ta.*

        brand_new   hat-Acc   wear-Comp   try-Pst-Dec

        'Today Minswu tried on the yellow shoes and the brand new hats.'

In (33), the verb is semantically incompatible with the last conjunct of the NP-coordinations. By contrast, the final conjunct of the grammatical examples in (3) is semantically compatible with the verb. Hence, we can observe the generalization that the final conjunct of NP-coordination must be compatible with the main verb both syntactically and semantically.

4.2. Non-final conjunct

We have discussed NP-coordinations whose non-final conjunct is semantically incompatible with the main verb. But in general NP-coordinations have conjuncts all of which are compatible with the main verb. In (34) both *capci-wa* 'magazine-and' and *sinmwun-ul* 'newspaper-Acc' are semantically compatible with the verb.

(34) *Minswu-ka   capci-wa   kuliko sinmwun-ul   soktokhay-ass-ta.*

      Minswu-Nom   magazine-and and   newspaper-Acc   quickly_read-Pst-Dec

      'Minswu quickly read the magazine and the newspaper.'

      #'Minswu carefully read the magazine and quickly read the newspaper.'

The sentence in (34) can have only one meaning that Minswu quickly read the magazine and he quickly read the newspaper. It cannot have a meaning, for instance, that the magazine was read carefully and the newspaper was read quickly. This suggests that when a non-final conjunct is compatible with the verb, then it is required that the verb should be semantically associated with the conjunct. Only if a non-final conjunct is semantically incompatible with the verb, some other verbal meaning is instead semantically associated with the non-final conjunct. A question at this point is whether

any NP incompatible with the verb can appear as a non-final conjunct in NP-coordinations. Consider the examples given in (35), which are clearly unacceptable.

(35) a. #*Minswu-ka*   *onul-un*   [*nolan*   *sinpal-kwa*   *kuliko*   *khephi*
         Minswu-Nom   today-Top   yellow   shoe-and   and   coffee
         han   *can-ul*]   *masi-ess-ta.*
         one   cup-Acc   drink-Pst-Dec
         (int.) 'Today Minswu wore the yellow shoes and drank a cup of coffee.'
    b. #*Minswu-ka*   *onul-un*   [*khephi*   *han*   *can-kwa*   *kuliko*
         Minswu-Nom   today-Top   coffee   one   cup-and   and
         nolan   *sinpal-lul*]   *sin-e*   *po-ass-ta.*
         yellow   shoe-Acc   wear-Comp   try-Pst-Dec
         (int.) 'Today Minswu drank a cup of coffee and tried on the yellow shoes.'

In (35a), the first conjunct 'the yellow shoes' is not semantically compatible with the verb 'drank.' In (35b), the non-final conjunct 'a cup of coffee' is semantically incompatible with the verb; it is implausible to say that people tried on a cup of coffee. In this respect, the sentences in (35) are similar to those with a "peculiar" NP-coordination discussed above. However, the former are unacceptable, and the latter sound fine. Then what causes the different acceptabilities between the sentences? I propose the following constrains regarding conjuncts in Korean NP-coordinations:

(36) a. **The Final Conjunct Constraint:** The final conjunct of NP-coordination must be semantically compatible with the main verb in a sentence.
    b. **The Non-final Conjunct Constraint:** The non-final conjunct of NP-coordination must meet either of the following constraints:
      A: If a non-final conjunct is semantically compatible with the main verb in a sentence, then the verb must be semantically associated with the conjunct.
      B: If a non-final conjunct is semantically incompatible with the main verb in a sentence, then the direct hypernym of the verb must be semantically associated with the conjunct.

According to the Non-final Conjunct Constraint B, the sentences in (35) should be ungrammatical since the direct hypernym of *masi-* 'drink' is *mek-* 'eat' and *mek-* 'eat' is not

compatible with the first conjunct 'the yellow shoes' in (35a), and the direct hypernym of *sin-* 'wear' is *chakyongha-* 'wear' and *chapyongha-* 'wear' is not compatible with the first conjunct 'a cup of coffee' in (35b). The grammatical sentences in (3), repeated in (37), can be accounted for by the same constraint.

(37) a. *ku-ka*   *onul*   [*sakwa*   *han-ccok-kwa*   *kuliko*
         he-Nom   today   apple   one-pice-and   and
         khephi   *han*   *can-ul*]   *masi-ess-ta.*
         coffee   one   up-Acc   drink-Pst-Dec
         (lit.) 'Today he drank a piece of apple and a cup of coffee.'
         = 'Today he ate a piece of apple and drank a cup of coffee.'

      b. *ku-ka*   *kakey-eyse*   [*moca-wa*   *kuliko*   *sinpal-ul*]   *sin-e*   *po-ass-ta.*
         he-Nom   shop-at   hat-and   and   shoe-Acc   wear-Comp   try-Pst-Dec
         'He tried on the hats and the shoes at the shop.'

The first conjunct 'a piece of apple' in (37a) is semantically associated with the direct hypernym (*mek-ess-ta* 'ate') of the verb *masi-ess-ta* 'drank' and the first conjunct 'hat' in (37b) is semantically associated with the direct hypernym (*chakyonghay po-ass-ta* 'tried on') of the serial verb *sin-e po-ass-ta* 'tried on.'

4.3. Predictions

Two predictions of the Non-final Conjunct Constraint B are tested here. First, the sentences in (38) with the adverb *chenchenhi* 'slowly' seem to be unacceptable, but if the adverb is removed, then the sentences sound fine.[4]

(38) a. *ku-ka*   *onul*   [*sakwa*   *han-ccok-kwa*   *kuliko*
         he-Nom   today   apple   one-pice-and   and
         khephi   *han*   *can-ul*]   (**chenchenhi*)   *masi-ess-ta.*
         coffee   one   cup-Acc   slowly   drink-Pst-Dec
         (lit.) 'Today he slowly drank a piece of apple and a cup of coffee.'

---

4) As a reviewer pointed out, the sentences with the adverb may sound fine for some people. This issue of acceptability judgments would be addressed with experimental methods in future work.

  b. *ku-ka*   *kakey-eyse*   [*moca-wa*   *kuliko*   *sinpal-ul*]
     he-Nom   shop-at   hat-and   and   shoe-Acc
     (*chenchenhi*)   *sin-e*   *po-ass-ta*.
     slowly   wear-Comp   try-Pst-Dec
     'He slowly tried on the hats and the shoes at the shop.'

The unacceptabilities of the sentences in (38) are predicted by the Non-final Conjunct Constraint B. It seems plausible to assume that the modified verb *chenchenhi masi-ess-ta* 'slowly drank' has *masi-ess-ta* 'drank' as its direct hypernym. But *masi-ess-ta* 'drank' is semantically incompatible with the non-final conjunct *sakwa han-ccok-kwa* 'a piece of apple' in (38a). Similarly, the non-final conjunct *moca-wa* 'hat' is not semantically compatible with the direct hypernym (i.e., *sin-e po-ass-ta* 'tried on') of *chenchenhi sin-e po-ass-ta* 'slowly tried on' in (38b). Thus the sentences sound awkward. Note that in (38) an adverbial expression (*onul* 'today' or *kakey-eyse* 'shop-at') appears right before the NP-coordinations. This expression does not directly modify the verb since the verb first combines with the NP-coordination in syntax. Thus the direct hypernym (*mek-ess-ta* 'ate' or *chakyonghay po-ass-ta* 'tried on'), which is compatible with the non-final conjunct, is semantically associated with the conjunct.

Second, the NP-coordinations discussed so far are conjunctions, but we also have disjunctive NP-coordinations. Then the constrains on NP-coordinations in (36) should be also applied to disjunctive NP-coordinations. This is borne out in (39).

(39) a. *ku-ka*   *hangsang*   *kukos-eyse*   *pap-ina*   *khephi-lul*   *masi-n-ta.*
        he-Nom   always   there-at   rice-or   coffee-Acc   drink-Pre-Dec
        (lit.) 'He always drinks rice or coffee there.'
        = 'He always eats rice or drinks coffee there.'
     b. *ku-ka*   *hangsang*   *kukos-eyse*   *pap*   *ttonun*   *khephi-lul*   *masi-n-ta.*
        he-Nom   always   there-at   rice   or   coffee-Acc   drink-Pre-Dec
        (lit.) 'He always drinks rice or coffee there.'
        = 'He always eats rice or drinks coffee there.'

The sentences in (39) seem to be acceptable. We can also find some data of the kind in the Web. Consider the following examples:

(40) a. *maycwu*   *kyohoy-eyse*   *naylyeo-myen*   *kekise*   *cenyek-ina*
     every.week   church-from   come-when   there   dinner-or
     khephi-lul   *masipni-ta.*
     coffee-Acc   drink.Pre-Dec
     (lit.) 'Every week when I come from the church, I drink dinner or coffee there.'
     = 'Every week when I come from the church, I eat dinner or drink coffee there.'
     https://yawara.tistory.com/m/863?category=24716

  b. *...kathun*   *umsik-ina*   *mwul-ul*   *masi-ess-nunteyto,...*
      same   food-or   water-Acc   drink-Pst-even.though
     (lit.) '...even though people drank the same food or water,...'
     = '...even though people ate the same food or drank the same water,...'
     https://www.mk.co.kr/news/it/view/2011/08/547185/

The non-final conjuncts in (40) are semantically incompatible with the verbs, but the sentences are actually used and they are properly interpreted. These disjunctive NP-coordiantions can also be accounted for by the Non-final Conjunct Constraint B: the direct hypernym *mek-* 'eat' is semantically associated with *cenyek-ina* 'dinner-or' in (40a) or with *umsik-ina* 'food-or' in (40b).

5. Conclusion

In this paper I provided some data of Korean NP-coordination whose non-final conjunct is semantically incompatible with the main verb in a sentence that takes the coordinate structure as its object. These NP-coordination constructions cannot be accounted for by the previous approaches to coordination in the literature. I showed that some possible alternatives cannot license them, either. In particular, any theory that directly relates the verb with such non-final conjunct faces a serious problem of semantic incompatibility. In this paper, instead, I proposed three constraints on conjuncts of NP-coordinations in Korean: i) the final conjunct must be semantically compatible with the main verb all the time (the Final Conjunct Constraint), ii) a non-final conjunct is semantically associated with the verb when it is semantically compatible with the conjunct (the Non-final Conjunct Constraint A), and iii) a non-final conjunct is semantically associated with the direct hypernym of the verb when it is semantically

incompatible with the conjunct (the Non-final Conjunct Constraint B). I argued that the Non-final Conjunct Constraint B can account for NP-coordinations in question and that it is further supported with the disjunctive NP-coordinations in Korean. Finally, the NP-coordinations seem not to be possible in languages like English; exploration of cross-linguistic variation remains as future work.

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