

Intervention effect, scope, and type-shifting*

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Kim, Jieun. 2018. Intervention effect, scope, and type-shifting. *Linguistic Research* 35(2), 305-335. This paper proposes a new approach to the intervention effect in Korean. Instead of attributing this effect to the failure of proper binding between a wh-phrase and its Q-operator in syntactic (Beck 1996; Beck and Kim 1997) or in semantic sense (Beck 2006; Kim 2002; Wee 2007), this paper points out that the properties of the semantics of interveners and the contribution of interveners scope to compositional process of forming a wh-interrogative meaning should be investigated more carefully. In this paper, I regard quantifying items as potential interveners and suggest how only some specific classes of quantifying items escape from being a real intervener. As for the remnant quantifying items, the real interveners, two factors are suggested as the cause of intervention effect: (1) combinatorial mismatch in wh-interrogative composition process and (2) improper formation of informative content when an intervener scopes over a wh-phrase. We can find that not only the positive information but also the negative information delivered by strong exhaustive reading of a wh-question are not formed properly when an intervener scopes over a wh-phrase. This suggestion is distinguished from previous ones in that it explains why not all quantifying items are interveners and how interveners cause semantic problems, not syntactic problems. (University of Ulsan)

Keywords intervention effect, quantifying items, scope, type-shifting

1. Introduction

This paper revisits an old problem in linguistics, the so-called intervention effect (IE henceforth) in Korean. It does not aim to suggest an amazing new solution but attempts to get closer to a realistic clarification of the intervention effect. The IE is quite interesting because, in Korean, scrambling of any word, whether it is a wh-phrase or a canonical DP, is possible in general and does not affect the felicity of a sentence, as shown in (1). The example in (1a) provides a

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typical *wh*-in-situ question that represents this rule. In addition, as shown in (1b), an object *wh*-phrase can be freely moved over a subject to the sentence's initial position.

- (1) a. Yona-ka mwues-ul mek-ess-no?
 Yona-Nom what-Acc eat-Past-wh-Q?¹
 'What did Yona eat?'
 b. mwues-ul Yona-ka mek-ess-no?
 What-Acc Yona-Nom eat-Past-wh-Q?
 'What did Yona eat?'
- (2) a. *Yona-man mwues-ul mek-ess-no?^{2,3}
 Yona-only what-Acc eat-Past-wh-Q?
 'What did only Yona eat?'
 b. mwues-ul Yona-man mek-ess-no?
 What-Acc Yona-only eat-Past-wh-Q?
 'What did Yona eat?'

1 Here is a list of abbreviations used in the gloss.

wh-Q: a *wh*-question morpheme in South Kyoongsang Korean
 y/n-Q: a yes-no question morpheme in South Kyoongsang Korean
 Q: a question morpheme in Standard Korean
 Past: Past tense
 Dec: Declarative
 Nom: Nominative Case
 Acc: Accusative Case
 Top: Topic
 Comp: Complementizer

- 2 In this paper, I use the examples of Kyoongsang dialect in Korean mainly in order to avoid the confusion of *wh*-questions with *y/n*-questions in a written form. Kyoongsang Korean distinguishes *wh*-questions and *y/n*-questions with complementizers as well as intonation patterns, while Seoul Korean depends only on the prosodic pattern in distinguishing them. The complementizer *-no* unambiguously marks a *wh*-question and the complementizer *na* marks a *y/n*-question in Kyoongsang Korean as illustrated in example (5). Seoul Korean uses *-ni* for both types of questions. Substitution of *-no* with *-ni* does not make any semantic difference.
- 3 As pointed out by a reviewer of *Linguistic Research*, native speakers' judgments on IE data exhibit a great degree of variance. In fact, this has been continuously pointed out as a weak point of the research on IE, which has strongly motivated to move on from the syntactic approach to semantic/pragmatic approach (Tomioka 2008). I expect an experimental research on IE to be conducted in the near future to confirm the validity of the arguments on this topic.

The behavior of (2a) and (2b), however, exhibits a sharp contrast with that of (1a) and (1b). In (2a), when a subject phrase with a default case marker, e.g., *Yona-ka* ‘Yona-Nom’, is substituted with a focus-sensitive phrase *Yona-man* ‘only Yona’, the sentence becomes infelicitous. Interestingly, when this phrase is crossed over by a wh-phrase, *mwues-ul* ‘what’, the felicity of the sentence improves greatly and is judged to be felicitous. These classified constituents, which are thought to trigger intervention effects, are called interveners. As hinted in the name of ‘intervention effect’, the infelicity of (2a) has been analyzed to ascribe to the following two factors: (1) the existence of the focus-sensitive particle *-man* ‘only’ and (2) its position relative to a wh-phrase as well summarized in the configurations below (Kim 2002; Beck 2006, etc.)

- (3) a. *[Q...[...Intervener...[...Wh...]]]
 b. [Q...[...Wh...]...Intervener...]

Most solutions have concentrated on explaining the properties of the interveners that interfere with some kind of linking band between the Q-operator and a wh-phrase. What clearly distinguishes the infelicitous configuration (3a) from the felicitous version (3b) is ascribed to the intervener placement between a Q-operator and a wh-phrase. In general, two directions of analyses have been provided to explain the ungrammaticality/uninterpretability derived from the alleged structure of (3a). The relatively old approach, which was popular in 90s, regards this phenomenon as ungrammatical (i.e. syntactic) (Beck 1996; Beck and Kim 1997) and the new approach regards it as uninterpretable (i.e. semantic) (Kim 2002; Beck 2006; Wee 2007) or infelicitous (i.e. pragmatic) (Tomioka 2007, 2008; Moon 2008). The most crucial part in solving this IE problem lies in identifying the interveners, that is, finding out which property makes the apparently different groups of items be interveners. The lexical items that are generally thought to raise the IE in Korean are as follows: *amuto* ‘no one’ (NPI), *amuna* ‘anyone’, *nukuto* ‘no one’ (NPI), *nukuna* ‘anyone/everyone’, *-pakkey* ‘except for’ (NPI), *-man* ‘only’, *-cocha* ‘even’, *-to* ‘also’. A quick glance at these items gives the impression that they all form quantifying items of <et,t> type and at the same time, the scope-bearing items. Based on this, we seem able to easily categorize interveners as quantifiers or quantifying items. However, in this case,

we need to provide an explanation as to why other well known quantifiers such as *motun* 'all/every' and *taepupun* 'most' and numerals such as *ses* 'three' do not exhibit the intervention effect. Since the excluded items consist of the majority of the general quantifier classes, it seems hard to find a proper explanation as to why the latter group of quantifiers are not interveners. This is exactly the reason why Beck and Kim (1997), some of the earliest researchers that raised this issue in Korean, did not extend their analysis to the whole class of interveners but only restricted it to the case of NPI *amuto* 'no one'. They argued that negation builds an LF barrier for a wh-phrase to move to the specified position to be properly interpreted. In fact, they acknowledged that similar phenomena occur with other quantifying items. However, due to the difficulty of categorizing all the interveners as a single group, including the criteria based on which we can exclude the non-intervening quantifiers, they admit that further research is necessary.⁴

However, I will pursue this idea that interveners are <et,t> type quantifying items. There are, of course, other suggestions regarding the characterization of interveners. In their later research, Beck (2006) and Kim (2002) identify interveners to be alternative forming items, i.e. the focused ones. However, except for the last three items in the above list, the focus sensitive particles, other items including the NPIs are not necessarily focused. There is no independent evidence such as prosodic cue and no semantic motivation as to why anyone or everyone should be always focused. Another identification of interveners comes from Tomioka (2007, 2008). His analysis is based on the information structure of wh-questions and attributes the cause of the IE to the improper correspondence between word order and information structure. In this system, the interveners are called Anti-Topic Items, abbreviated as ATI. I agree with his observation that the interveners resist to becoming topics in general. He approaches this IE issue as an infelicity problem but this is an interpretability problem. It means that the IE phenomena need a semantic explanation. My

4 Let me cite the phrase that I illustrated in their text in the following:

While in Korean as well as in German, negation is not the only element inducing an intervention effect, it is not the full class of quantified expressions that blocks LF movement. Clearly, there is need for further crosslinguistic research.
(Beck and Kim 1997: 372)

suggestion will be a semantic version of Tomioka's pragmatic explanation supplemented with other interpretation problems. The last option would be to treat the interveners of IE as the items that do not provide a proper domain for anaphor binding. Although this has not been suggested in the literature regarding the intervention effect, it has actually been suggested to explain the Weak Island phenomena by Hancoop (1998).⁵ Beck (2006) objects to this option due to the following reason: while anaphoric accessibility is universally quite stable, there are considerable variations in the intervention effect. I agree with Beck's point, but still believe that the descriptive facts of the analysis can overlap with the first option that I pursue here. By arguing that the interveners are quantifying items of <et,t> type scoping over a wh-phrase, instead of the configuration of the IE of (3a), I suggest the following as the exact configuration of the intervention effect.

(4) *[CP Intervener [CP Wh-Q]]

The point is that problems arise when a scope bearing item, intervener in (4), scopes over a wh-phrase combined with a Q operator both in a wh-movement language and in a wh-in-situ language. It is well known that the relative scope meaning follows the surface order in Korean (Beck and Kim 1997; Suh 1990; Kim

5 Hancoop (1998) makes an insightful observation that the class of expressions that prohibits what-for split construction in Germanic languages from being properly formed, which are called interveners of what-for split constructions, coincide with the expressions that create inaccessible domains for dynamic anaphora. The following example illustrates which items are improper domains for dynamic anaphora.

(i) *[No students/Exactly three students/more than three students/I wonder whether John] bought a book. It was expensive.

The expressions in (i) cannot form proper domain for the pronoun 'it' in the following sentence refers to. Hancoop (1998) observed that the interveners correspond to these items. Although we do not deal with the same construction in this paper, I think that the line Hancoop pursued in his analysis for interveners in what-for construction can be similarly applied in our analysis for IE. Although the analysis here does not coincide with Hancoop (1998), the intervener class that cannot be properly converted to a proper type does not also seem to form a class to be properly bound by dynamic anaphora. I have not done systematic investigation on this but only mentions it here and in section 2.1. It has been also mentioned in Beck (2006). Despite Beck's opposition to this, I believe that the comparison between two classes of interveners deserve to be investigated in the future.

1990. etc.). Accordingly, we can predict the meaning of (2a) and (2b) to be different. This is also tightly tied to the intervention effect.

In order to account for the scopal effect of interveners in forming improper interpretation, I employ a recent formulation done by George (2011) who successfully accomplishes the goal to suggest compositional semantics for strongly exhaustive reading. The structure of this paper is as follows. In the next section, I will put forth my suggestion that the IE in Korean is a problem of wh-questions with quantifiers, which also appears in a wh-movement language such as English (Engdahl 1986; Chierchia 1993 etc). Under the assumption that quantifiers are potential interveners, I will explain which quantifiers escape from the intervener status for what reason. In section 3, we will study how informative content cannot be properly delivered as originally intended in the strong exhaustive reading adopting the compositional formulation of George (2011). Section 4 will provide an introduction to previous research and some commentary on these studies. The discussion will be summarized in section 5.

2. IE and composition of wh-interrogatives

2.1 Composition of questions with IE

In order to see the meaning of the representative IE example (2b), we need to understand the compositional semantics of wh-questions and the semantic properties of quantifiers regarding how they can be incorporated into the compositional process of wh-questions. The IE would be naturally met at the end of the discussion on these two issues. I do not intend to add any new prospects to the existing theories of wh-question composition but intend to explain why the interveners cannot precede the wh-phrases in the existing paradigm of wh-question semantics. As illustrated in (5), complementizers, *-na* and no function to differentiate a *y/n*-question and a wh-question in Kyongsang Korean.

- (5) a. Yona-man mue(s)-lul mek-ess-ta.
 Yona-only something-Acc eat-Past-Dec.

- ‘Only Yona ate something’
 b. Yona-man *mue(s)-lul* *mek-ess-na?*
 Yona-only something-Acc eat-Past-y/n-Q?
 ‘Did only Yona eat something?’
 c. #Yona-man *mue(s)-lul* *mek-ess-no?*
 Yona-only something-Acc eat-Past-wh-Q?
 ‘What did only Yona eat?’

Based on Karttunen (1977), the question complementizer *-na* or *-no* (or *-ni* in Standard Korean) in (5) has the following meaning:

$$(6) \quad [|-na, -no, -ni|] = \lambda p_{\langle s,t \rangle} . \lambda q_{\langle s,t \rangle} . \lambda p^6$$

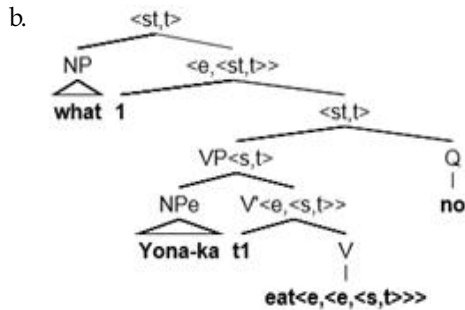
In this line of view where C0 *no* is responsible for the formation of $\langle st,t \rangle$ type constituent, wh-phrase *mue(s)* is regarded to express the meaning of the existential quantifying force in wh-questions, which is distinguished from a y/n-question in (5b). This corresponds to our intuition about a wh-question. When we ask ‘what did Yona eat?’, we assume that Yona ate something and ask what it is⁷. Based on this meaning and the one in (6), the meaning of *mues* ‘what’ will be as in (7) and the question ‘What did Yona eat?’ with canonical order will be composed as in (8).

$$(7) \quad [[mues]] = \lambda P_{\langle e, \langle st,t \rangle \rangle} . \lambda p_{\langle s,t \rangle} . \exists x \in D_{\langle e \rangle} . P(x)(p)$$

6 In the original proposal of Karttunen (1977), the interrogative complementizer is marked as ‘?’ since English does not have a lexical item that corresponds to C0[+Q]. In Korean, the particle *-no* corresponds to ‘?’ In case of *-no*, it might be related to a feature such as an interpretation property of wh-phrases since it only expresses wh-interrogative sentences but not the y/n-questions.

7 It is well known that a wh-question has existential presupposition and this statement exactly mentions this point.

- (8) a. *mues-ul Yona-ka mek-ess-no?*
 what-Acc Yona-Nom eat-Past-wh-Q
 'What did Yona eat?'



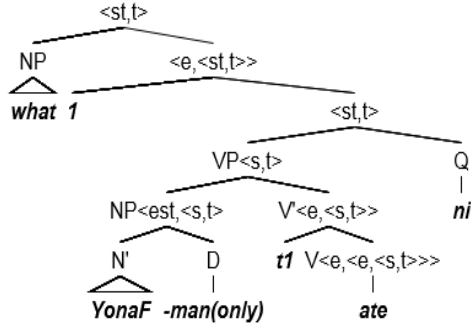
Scrambling in Korean targets a position above the level of the CO head. As for the non-scopal constituents, scrambling does not have any semantic effects (it may have pragmatic effects such as information structure modification), while for scopal elements, scrambling induces an inversed scope of the canonical order. (8b) is a semantic tree of (8a) with indication of types in each node. When the subject *Yona-ka* moves over a wh-phrase as '*Yona-ka mues-ul mek-ess-no?*', it leaves an $\langle e \rangle$ type trace in its original position and applies the predicate abstraction process one more time. At the final stage, $\langle e \rangle$ type DP *Yona-ka* meets the $\langle e, \langle st, t \rangle \rangle$ type constituent and returns the $\langle st, t \rangle$ type meaning.

Now let us discuss the IE case with the alleged intervener *Yona-man* 'only Yona'. We need to have pre-knowledge of the particle *-man* 'only' here. The Korean particle *-man* has a very restricted distribution, being directly attached to its complement and evaluates its sister constituent and the alternative set of it. It has the meaning as follows:

$$(9) \quad [[-man]] = \lambda x_{\langle e \rangle}. \lambda P_{\langle e, \langle s, t \rangle \rangle}. \lambda w_{\langle e \rangle}. \forall y [y \in [x]_{ALT} \ \& \ y \neq x \rightarrow \neg P(y)(w)]$$

With (9) as the meaning of *-man*, the non-intervention sentence, '*Mues-ul Yona-man mek-ess-no?*', is constructed as follows:

(10) a. *Mues-ul Yona-man mek-ess-no?*



b. $\lambda p_{\langle s,t \rangle}. \exists x \in D_{\langle e \rangle}. p = \lambda w. \forall y [y \in [Yona_F]_{ALT} \ \& \ y \neq Yona \rightarrow \neg ate_w(g(1))(y)]$

The *-man* phrase is treated as a quantifier of type $\langle\langle e, st \rangle, \langle s, t \rangle\rangle$ here (refer to Choi 1994 for formalisation of *-man*). The structure in (10) shows that the relative scope between the existential force of a *wh*-phrase, the meaning of *-man*, and the question operator appears in the order of ' $\exists > Q > -man$ 'only'. This is in accordance with speakers' intuitions. That is, the meaning of (5c) as it appears in (10a) would be roughly paraphrased as 'There is something that only Yona but no one else ate and I ask what it is.'

However, when the *man* phrase is placed prior to a *wh*-phrase, the scope will be '*-man* 'only' $> \exists > Q >$ ' and the paraphrase in this state would be roughly as follows: 'only Yona but no one else ate something and I ask what it is.' Here the pronoun 'it' should be only read as scoping under 'only', which means that it does not have an object to refer to. This is a problem. It is easily understood that when you have a sentence 'no one except John ate anything', you cannot continue the sentence with 'because it was so insipid.' In more detail, we need to compare the meaning of a *wh*-question, that is, the set of propositions and the meaning of a presupposition of the *wh*-question in our concern.

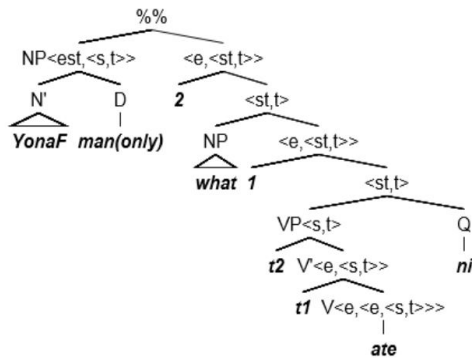
This examination, in fact, has already been done in Mayer (2014) and Kim (2012). Mayer (2014) attributed the IE to the incorrect presupposition which the *wh*-questions of IE cases have in common. In his analysis, the *wh*-question with the 'only $>$ *wh*-phrase' order has an incorrect presupposition. The presupposition of a *wh*-question is obtained when the *wh*-phrase is converted into an indefinite DP 'some NP' and when the set of this proposition based on this presupposition

does not correspond to the meaning of wh-questions. This explains the IE in Mayer (2014). I think Mayer’s analysis on the IE is on the right track. The next question that arises is what generalization applies to these kinds of questions that exhibit a mismatch between the set of propositions derived from a wh-question’s presupposition and the meaning (a set of propositions type) of a question. Regarding this, Mayer (2014) provides the following generalization:

- (11) Mayer’s (2014) Generalization for the IE
 An operator is a problematic intervener if it is non-additive.⁸

Let us assume that we adopt (11) as an explanation for the IE in Korean. Following the compositional process, *Yona-man* scopes over *mues*, and the presupposition is not compatible with the meaning of its originally intended wh-question. Why is it so? Why is a wh-question meaning not eligible to be formed from that kind of presupposition? The generalization in (11) provides a good reason for why the IE arises but not for why only one of the two presuppositions is eligible to make a wh-sentence meaning. To rephrase this slightly, why should a wh-phrase always have scope over the interveners? I will investigate this question through the compositional process that we have seen in (10). Here is a semantic tree to show the compositional process of (2a) *Yona-man mues-ul mek-ess-no?*

- (12) *Yona-man mues-ul mek-ess-no?*



8 The meaning of being additive is as follows:
 f of type $\langle \sigma, \tau \rangle$ is additive if for any g, h of type σ , $f(g) \vee f(h) = f(g \vee h)$. (Mayer 2014: 5)

The type mismatch appears at the last stage of the composition in (12). The phrase *Yona-man* which has moved to a higher position than *mues* ‘what’ cannot take the $\langle e, \langle st, t \rangle \rangle$ type as its complement. Type mismatch alone is too vulnerable to make a strong argument to explain this old puzzle since type mismatch problems, in many cases, can be remedied or accommodated in some way. If this is all for the solution, it is problematic. We will start the discussion from here and eventually see that the interveners are items that cannot be a ‘peg’ for a wh-question in Landmann’s term or a topic in Tomioka’s (2008) term. That is, the discussion initiated from finding the combinatorial problem in quantifying items scoping over a wh-phrase will lead to the conclusion that this issue is tightly interrelated with the informative content problem including what Mayer has pointed out. As mentioned in the introduction, not all quantifiers have a problem being placed prior to a wh-phrase despite their semantic type of $\langle e, \langle st, t \rangle \rangle$. For instance, consider the following wh-question with the $\langle e, \langle st, t \rangle \rangle$ type quantifier *motun* ‘every’ having a scope over a wh-phrase. It is even able to have a distributive reading and have an answer (13b).

- (13) Q: *motu-ka colep phati-ey mues-ul ipko wa-ss-no?*
 Everyon-Nom graduation party-at what-Acc wear come-Past-wh-Q?
 ‘What did everyone come wearing in graduation party?’
- a. A: *yangpok-ul ipko wa-ss-e.*
 suit-Acc wear come-Past-Dec.
 ‘(everyone) came wearing a suit’
- b. A: *Anne-un dress-lul, Ben-un yangpok-ul kuliko Chris-nun jin-ul*
 Anne-Top dress-Acc, Ben-Nun suit-Acc and Chris-Top jean-Acc
ipko wa-ss-e.
 wear come-Past-Dec.
 ‘Anne came wearing a dress, Ben, a suit, and Chris came with jeans.’

The example in (13) appears to be problematic in two ways. In one aspect, it does not seem to follow our initial generalization that scope interpretation follows the surface word order. In the other aspect, the DP *motu* seems to have solved the type mismatch problem unlike the case of *Yona-man*. One might want to make this case as an exception for a universal quantifier, which turns out to

be an unavailable solution due to the different behavior of *nukuna* which also has a universal quantificational force. The quantifier *motu* will be shown to escape from potential intervener status due to its characteristic property. In the next subsection, we will divide the DPs into three types based on two criteria. We will first divide all quantifying DPs by those that escape from the potential intervener status and those that cannot. Then, the escapers will be divided again based on those having distributive reading and non-distributive reading.

2.2 Two groups of non-intervening DPs

In the previous subsection, we have seen that quantifying DPs are potentially interveners. However, according to the native speakers' judgments, the real interveners are only identified as nine items as in the left column of Table 1. The following table seems to contradict our suggestion in the previous section by categorizing more quantifying DPs as non-interveners.

Table 1. Intervening DPs and non-intervening DPs

Intervening DPs	Non-intervening DPs
Group C: <i>amuna</i> 'anyone', <i>amuto</i> 'no one', <i>nukuna</i> 'everyone', <i>nukuto</i> 'no one', <i>NP-man</i> 'only NP', <i>NP-cocha</i> 'even NP', <i>NP-to</i> 'NP also', <i>NP-pakkey</i> 'except for NP'	Group A: <i>motu</i> 'everyone/all', <i>motun</i> 'every/all', <i>ku</i> NP 'the NP', <i>i</i> NP 'this NP', proper names Group B: <i>myechmyech</i> 'several', <i>mahnun</i> 'many', <i>taypupun</i> 'most', Numeral NP, <i>ttak</i> Numeral NP 'exactly Numeral NP', Numeral <i>isang</i> 'more than Numeral'

In the above table, the quantifiers are categorized as three groups, Group A, B, and C. I have categorized them based on their property regarding being intervener and being distributive. The first group consists of non-interveners which can be interpreted distributively as follows.

- (14) Group A [-intervener, +distributive]
 a. Q *motu-ka* *colep* *pathi-ey* *mues-ul* *ipko* *wa-ss-no?*
 Everyone-Nom graduation party-at what-Acc wear come-Past-wh-Q?

'What did everyone wear in the graduation party?'

A: Minsu-nun teksito-lul, Yona-nun punhong dules-lul, Hajin-un mescin
 Minsu-Nun tuxedo-Acc Yona-Nun pink dress-Acc, Hajin-un gorgeous
 yangpok-ul ipko wa-ss-e.
 suit-Acc wear come-Past-Dec.
 'Minsu wore a tuxedo, Yona wore a pink dress and Hajin wore a gorgeous
 suit in the graduation party.'

b. Q ku semyeng-i colep pathi-ey mues-ul ipko
 The three people-Nom graduation party-at what-Acc wear
 wa-ss-no?
 come-Past-wh-Q?

'What did the three people wear in the graduation party?'

A: Minsu-nun teksito-lul, Yona-nun punhong dules-lul, Hajin-un mescin
 yangpok-ul ipko wa-ss-e.

c. Q Minsu-wa Yona, Hajin-ika colep pathi-ey mues-ul ipko
 Minsu and, Yona, Hajin-Nom graduation party-at what-Acc wear
 wa-ss-no?
 come-Past-wh-Q?

'What did Minsu, Yona, and Hajin wear in the graduation party?'

A: Minsu-nun teksito-lul, Yona-nun punhong dules-lul, Hajin-un mescin
 yangpok-ul ipko wa-ss-e.

(cf) kuaytul-i colep pathi-e cencang-ul ipko wa-ss-e.
 they-Nom graduation party-at formal suit-Acc wear come-Past-Dec.
 'They wore a formal suit in the graduation party.'

The quantified items categorized as the second group are also non-interveners but are not eligible for distributive interpretation.

(15) Group B [-intervener, -distributive]

a. Q myecmyec haksaying-i colep pathi-ey mues-ul ipko
 several student-Nom graduation party-at what-Acc wear
 wa-ss-no?
 come-Past-wh-Q?

'What did students wear in the graduation party?'

A: myecmyec haksaying-i colep pathi-ey chengpaci-lul ipko
 Several student-Nom graduation party-at jeans-Acc wear
 wa-ss-e.
 come-Past-Dec.

'Several students wore jeans at the graduation party.'

b. Q taypupun haksayingtul-i colep pathi-ey mues-ul ipko
 most students-Nom graduation party-at what-Acc wear
 wa-ss-no?
 come-Past-wh-Q?

'What did most students wear at the graduation party?'

A: taypupun haksayingtul-i colep pathi-ey cencang-lul ipko
 most students-Nom graduation party-at suit-Acc wear
 wa-ss-e.
 come-Past-Dec.

'Several students wore suits at the graduation party.'

c. Q ttak sey myeng-i colep pathi-ey mues-ul ipko
 Exactly three Counter-Nom graduation party-at what-Acc wear
 wa-ss-no?
 come-Past-wh-Q?

'What did exactly three wear in the graduation party?'

A: ttak sey myeng-i colep pathi-ey chengpaci-lul ipko
 exactly three Counter-Nom graduation party-at jeans-Acc wear
 wa-ss-e.
 come-Past-Dec.

'Exactly three wore jeans at the graduation party.'

(cf)#Minsu-nun teksito-lul, Yona-nun punhong dules-lul, Hajin-un
 Minsu-Nun tuxedo-Acc Yona-Nun pink dress-Acc, Hajin-Nun
 mescin yangpok-ul ipko wa-ss-e.
 gorgeous suit-Acc wear come-Past-Dec

'Minsu wore a tuxedo, Yona wore a pink dress, and Hajin wore a
 gorgeous suit in the graduation party.'

The last group amounts to the interveners which cause IE.

- (16) Group C [+intervener]
- a. Q #nukuna colep pathi-ey mues-ul ipko wa-ss-no?
 everyone graduation party-at what-Acc wear come-Past-wh-Q?
 'What did everyone wear at the graduation party?'
- (cf) Q mues-ul nukuna colep pathi-ey ipko wa-ss-no?
 A: nukuna cencang-lul ipko wa-ss-e.
 everyone suit-Acc wear come-Past-Dec.
 'Everyone wore a suit.'
- b. Q #amuto colep pathi-ey mues-ul ipko oci anh-ass-no?
 No one graduation party-at what-Acc wear come Neg-Past-wh-Q?
 'What did no one wear at the graduation party?'
- (cf) Q mues-ul amuto colep pathi-ey ipko oci anh-ass-no?
 A: chengpaci-nun amuto ipko oci anh-ass-e.
 Jeans-Nun no one wear come Neg-Past-Dec.
 'No one wore jeans.'
- c. Q #Minsu-man colep pathi-ey mues-ul ipko wa-ss-no?
 Minsu-only graduation party-at what-Acc wear come-Past-wh-Q?
 'What did only Minsu wear at the graduation party?'
- (cf) Q mues-ul Minsu-man colep pathi-ey ipko wa-ss-no?
 A: Minsu-man cencang-lul ipko wa-ss-e.
 Minsu-only suit-Acc wear come-Past-Dec.
 'Only Minsu wore a suit.'

What is the property that makes this distinction observed in (14)-(16)? We find the answer in the eligibility of type-shifting. Every member in group A is an either $\langle e \rangle$ type DP or at least, convertible to $\langle e \rangle$ type. According to Partee (1987), the type-shifting operator from a quantifier $\langle et, t \rangle$ to an entity $\langle e \rangle$ cannot apply to just any DP. It is argued to be a partial function with a very restricted application. The shifting process from $\langle et, t \rangle$ to $\langle e \rangle$ is called Lower and known to map a principal ultrafilter into its generator. From the definition of principal ultrafilter, we can tell that the unique non-empty set is the only set that forms the quantifier meaning in group A. In case of 'these two guys', the set of the specified two guys, for example {Brian, Chris} will be the generator set. It applies in the same way for any proper names and even for the universal

quantifier *motu* ‘everyone’. In the case of *motu* ‘everyone’, all the elements of the set *motu* become an $\langle e \rangle$ type individual and for each individual it is possible to apply the wh-interrogative function. This is read as a distributive reading.

Summing up, as for the individual type DPs or those that are eligible to be converted to individual type through a direct Lower process, we can provide the explanation that they can escape from intervener status and also have what looks like a distributive reading. Note that this distributive reading is derived from the fact that each member of the generator set is converted to an individual to which a predicate applies. This should not be confused with the meaning as universal quantifier meaning with a high scope (scoping over an existential one).

This suggestion provides a good explanation for the sharp contrast between the two items with universal quantificational reading, *motu* ‘every/all’ and *nukuna* ‘every/any’. There is a strong contrast in the behavior of these two items since only *nukuna* cannot be placed prior to a wh-phrase while *motu* can be. This is puzzling since both of them have universal quantificational force and neither of them have a negative property. One substantial difference observed between them is that *nukuna* cannot have a unique non-empty set to form its quantificational meaning since it has a domain widening function as the free choice ‘any’ in English (as for Korean *nukuna* refer to Kratzer and Shimoyama 2002; as for English ‘any’ refer to: Kadmon and Landman 1993; Giannakidou 2001, etc.). Accordingly, it naturally follows that domain widening *nukuna* cannot be applied by the Lower operator despite its universal-like reading.

Now how can the rest of the members, which I refer to as group B of non-intervening DPs, escape from the intervener status? They are not qualified for the Lower type shifting. Instead, they shift to an $\langle e, t \rangle$ type predicate. Those converted to $\langle e, t \rangle$ type undergo a type shifting process one more time. The second converting operation is Chierchia’s nominalization of predicates (Chierchia 1984, 1998). Those that have undergone these two type-shifting processes will be eventually in the $\langle e \rangle$ type form but will not have the meaning of a single individual entity like the ones applied by the Lower process. The wording seems to contradict itself by stating that some DPs have an $\langle e \rangle$ type and do not have an individual entity reading. These are only read as a group.

A group makes an $\langle e \rangle$ type but we cannot look inside it and do something

for each element of the group. Why is it so? It follows from the property of converting process. The BE process which converts $\langle e,t \rangle$ to $\langle e,t \rangle$ only selects singleton sets from the sets that constitute the quantifier meaning in the domain. The function of an operator BE is to select the only element from the singleton set which constitutes the quantifier meaning and form a new set with these elements from singleton sets. If there is no singleton set among the elements in the set that forms the quantifier meaning, even though the BE operator is applied, the result we get would be an empty set.

Let us think of the quantifier 'three' as an example. The meaning of a quantifier 'three' will, of course, consist of sets with three elements. However, as Partee also mentioned, we can observe that plurality in Link(1983)'s sense applies here. That is, there is a set that has sets of singleton sets whose sole member corresponds to a group of three members and these singletons sets are extracted to form a predicative meaning of 'three'. In other words, the predicative meaning of 'three' is the property of a group with three members in it⁹. Every example of group B provides a good example in which they are used as predicates. This makes a clear contrast with group C whose predicative usage turns out to be all infelicitous. The example (17) shows this point well:

- (17) Group B's predicative usage
 colep pathi-ey yangpok-ul ipko o-n haksaying-i
 graduation party-at suit-Acc wear come-Rel student-Nom
 {ses-/tak ses-/ses isang-/taypwupwun-/manh-}(i)-ta.
 {three-/exactly three-/three more-/most/many-}-be-Dec.
 'The students who came to the graduation party wearing a suit are
 {three/exactly three/more than three/most/many.}'

9 In case of the quantifier 'most', Partee (1987) predicted it to be hard to obtain the predicative meaning since it seems hard to form a group with 'most' members in the text of her type-shifting paper. However, she added a footnote that says it may be possible depending on its individual property, which, I assume, means that the convertibility depends on the characteristic property of 'most' in a specific language. In Korean, *taypwupwun* 'most', which is in general thought to be a non-predicative quantifier in English, exhibits good usage of predicative state.

(18) Group C's unavailability of predicative usage

colep pathi-ey yangpok-ul ipko o-n haksaying-i
 graduation party-at suit-Acc wear come-Rel student-Nom
 {*amuna-ta/*nukuna-ta/*amuto anita/*Yona-man ita/*Yona-cocha ita/
 {*anyone-be/*anyone-be/*anyone Neg be/*Yona-only be/*Yona-even be/
 *Yona-pakkey ani-(i)-ta.}

*Yona-except Neg-(be)-Dec.}

'The students who came to the graduation party wearing a suit are
 {*anyone/*no one/*only Yona/*even Yona/*except for Yona.}'

An important prediction that the above suggestion makes is that as for group B, only a group reading (i.e. a singleton set) is available and individual members cannot be extracted from the set. Since the input of an interrogative function comes into as a group, the distributive reading is not available here.

Does it need to undergo a nominalization process? Is it implausible for the items to be an input to the interrogative function in its <e,t> state? If the type mismatch is simply the only trigger that forces the condition of an input as a uniform <e> type, it may somehow be a stipulative explanation. However, this convertibility to nominalized items can be also applied by an explanation similar to Tomioka's argument. In Korean, topicalized items are generally expected to be nominalized. It is also understood as a peg in a sense of Landman (1986). A peg of a question constitutes something that the question is asking about.

Whatever it is called, whether it is topic or a peg, the position prior to a wh-phrase means that it is at the stage where a wh-interrogative meaning is already formed to ask about. It means that the pre-placed item does not contribute to form the property of a wh-phrase. For instance, in a felicitous wh-question (2b) *mues-ul Yona-man mekessni?* 'What did only Yona eat?', when the 'only'-phrase follows a wh-phrase, the 'only'-phrase contributes to form the property of a wh-phrase. The property of a wh-phrase corresponds to a set of things that has been eaten by only Yona. In contrast to this, in a sentence with the reversed word order in which the only-phrase precedes the wh-phrase, the 'only'-phrase does not contribute to form the property of a wh-phrase. That is, here, the property of a wh-phrase corresponds to a set of things that are eaten. The wh-question is not about something that only Yona has eaten but about

something that simply has been eaten. This is more of a simple description rather than a systematic analysis of the intervention effect. However, when this description meets a formal analysis of interpretation of *wh*-interrogatives suggested in George (2011), it turns out to be quite successful in supplementing the semantic version of this type-mismatch problem in his suggestion. The next section accounts for how the type mismatch problem is interpreted semantically by not forming proper informative content in the sentences with IE.

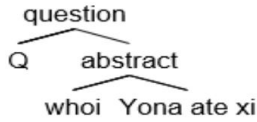
3. Improper formation of informative content with IE

A virtue of George (2011) is to capture the point of strong exhaustivity. His basic idea is that when a *wh*-interrogative expresses non-exhaustive reading, a *wh*-phrase contributes to express a membership of it in a specific set formed from the remnants of a *wh*-interrogative sentence except a *wh*-phrase. Compared to this, when a strong exhaustivity is expressed, a *wh*-phrase expresses a property (that is, a set itself) but not a membership. For instance, as for a *wh*-question, 'who came to the party?', if there are three people who came to the party, namely, {Ann, Ben, Chris}, then in the non-exhaustive reading, the answer simply provides the membership information such that Ann belongs to the set who came to the party, and Ben and Chris, too. In the same situation, the strongly exhaustive answer defines the set of party comers as {Ann, Ben, Chris}. This means that Ann, Ben, and Chris and no one else came to the party. That is, it includes negative information regarding other members in the contextual domain. So, in order to have a strong exhaustivity in the interrogative meaning, negative meaning also should be properly included in the compositional process.

I will point out that two things are violated in the compositional process of *wh*-interrogative sentences with the intervention effect. First, the order of 'intervener + *wh*-phrase' does not form an appropriate set for a *wh*-phrase which faithfully expresses the original intention of a *wh*-interrogative meaning. Second, the order of 'intervener + *wh*-phrase' cannot provide valid negative information which should be present in strong exhaustive reading. Let us see the two points in more detail in the following. George (2011) makes a suggestion of the following structure for a *wh*-interrogative construction:

(19) a. What did Yona eat?

b. Tree of (19a)



A wh-interrogative consists of two parts, Q and what George calls abstract. This abstract part is, again, divided into a wh-phrase and the remnant which bears a wh-phrase trace in it, which has been pointed out in the previous section regarding whether a quantified DP is included or not. What is new about George’s suggestion is that the function of a wh-phrase can vary in the abstract. It can have an existential quantifying force and express a membership of a set constructed from the ‘abstract minus wh-phrase’ part. That is, the wh-phrase is supposed to scope over the part, let’s call it S. In the exhaustive reading, an exhaustive operator X is introduced and the composition process works in a slightly different way. The following compares the semantics of two versions of answers:

(20) a. $\lambda p_{\langle s,t \rangle} \exists y_e (p = \lambda w_s (\text{food}(w,y) \ \& \ \text{ate}(w, \text{Yona}, y)))$

b. $\lambda p_{\langle s,t \rangle} \exists S_{\langle e,t \rangle} (p = w_s (S = \lambda x_e (\text{food}(w,y) \ \& \ \text{ate}(w, \text{Yona}, y))))$

For the meaning of (20) to work well, the set corresponding to S should be well established. However, in the word order of ‘intervener + wh-phrase’, a problem arises in forming this set S, as previously pointed out. With an intervener ‘only Yona’, the sentence is interpreted as follows.

(21) $\lambda p_{\langle s,t \rangle} \forall z (z \in [\text{Yona}]_{\text{ALT}} \ \& \ z \neq \text{Yona} \rightarrow \exists S_{\langle e,t \rangle} (p = \lambda w_s (S = \lambda x_e (\text{food}(w,y) \ \& \ \neg \text{ate}(w, z, y))))$

It is a set of propositions that for the alternative members of $[\text{YONA}]_F$ a property is formed as they did not eat some food. By having an intervener ‘only Yona’ scoping over a wh-phrase (following the surface scope of a given word order in Korean) the property set S formed from the given order does not

express the intended proper wh-question meaning. It is a question about the set of food which was not eaten by non-'Yona's, which does not make sense. This is not a desirable result that we want to get by asking a wh-question.

The second problem that arises in the wh-question with 'intervener + wh-phrase' order in exhaustive reading is that negative information which is supposed to be delivered in this reading is not properly formed in the order with IE. Here I provide an informal description of negative meaning for answers for wh-questions in a normal version and an IE version respectively. The sentence, 'what did Yona eat?' is examined with an intervener *Yona-man* 'only Yona', *amwuto* 'no one' and *nukuna* 'anyone/everyone.' (22)-(23) and (24)-(25) compare the negative meaning of wh-questions in a normal version and in an IE version.

- (22) $\exists >$ (a) only, (b) no, (c) any
 Food set in a context C: {a, b, c}
 mues-ul (a) Yona-man/(b) amuto/(c) nukuna mek-((b)ci anh)-ess-no?
 What (a) Yona-only/(b) no one/(c) any/everyone eat-((b) Neg)-Past-wh-Q?
 (a) What did only Yona eat? (b) What did no one eat? (c) What did anyone eat?
- (23) a. Positive Information: $S=\{a\}$: 'a' is eaten by only Yona
 Negative Information: $S'=\{b, c\}$: 'b, c' are not eaten only by Yona but by someone else.
 b. Positive Information: $S=\{a\}$: 'a' is eaten by no one.
 Negative Information: $S'=\{b, c\}$: 'b, c' are eaten by someone.
 c. Positive Information: $S=\{a\}$: 'a' is eaten by anyone (with domain widening).
 Negative Information: $S'=\{b, c\}$: 'b, c' are not eaten just by anyone.

In (23), the negative information is properly formed. However, in the reversed order, the situation is different. It is illustrated in the following:

- (24) (a)only, (b) no, (c) any > wh-phrase
 Food set in a context C: {a, b, c}
 (a){Yona-man/(b) amuto/(c) nukuna} mues-ul mek-((b)ci anh)-ess-no?

(a){Yona-only/(b) no one/(c) any/everyone} what eat-((b) Neg)-Past-wh-Q?

(a)#For only Yona, what did he eat?

(b)#For no one, what did he eat?

(c)#For anyone, what did he eat?

(25) a. Positive Information: $S=\{a\}$: being eaten by someone

As for only Yona, the property of the set $\{a\}$ that has been eaten by someone holds.

Negative Information: $S'=\{b, c\}$: not being eaten by someone

As for only Yona, the property of the set $\{b,c\}$ that has not been eaten by someone holds.

b. Positive Information: $S=\{a\}$: being eaten by someone

As for no one, the property of the set $\{a\}$ that has been eaten by someone holds.

Negative Information: $S'=\{b,c\}$: not being eaten by anyone

As for no one, the property of the set $\{b,c\}$ that has not been eaten by someone holds.

c. Positive Information: $S=\{a\}$: being eaten by someone.

As for anyone, the property of the set $\{a\}$ that has been eaten by someone holds.

Negative Information: $S'=\{b,c\}$: not being eaten by anyone.

As for anyone, the property of the set $\{b,c\}$ that has not been eaten by anyone holds.

As observed in (25), the property of set S and S' are identical across the three examples since the quantifying items are out of the scope of the sets, S and S' . This makes a difference not only in the positive information provided by the answer but also in the negative information. Let us make this point clear by putting one of these examples under a specific context.

(26) Context: There are three kinds of food A, B, and C and three people Yona, Mina, and Hana at a party. Here are the lists of pairs of food and its consumers: Food A = Yona, Food B = Yona, Mina, Food C = Yona, Hana.

Here is a strong exhaustive answer for the wh-question with a wh-phrase + *Yona-man* order (non-intervention effect) for the situation in (26).

(27) Q: What did only Yona eat? (*mues-ul* + *Yona-man*)

A: *Yona-man umsik A-lul mek-ess-e. (talun umsik-un Yona-man mek-ci*
Yona-only food A-Acc eat-Past-Dec. (other food-Nun Yona-only eat
anh-ass-e).
Neg-Past-Dec.)
 ‘Only Yona ate food A. (Other foods are not eaten by only Yona.)’

The usage of the question in (27) is good having answers properly formed. However, with the reversed order, a different answer is obtained.

(28) A: *Yona-man umsikA, B-lul ta mek-ess-ko C-lul mek-ci anh-ass-e.*
Yona-only food A, B-Acc all eat-Past-Dec C-Acc eat Neg-Past-Dec.
 ‘Only Yona ate both of food A and B and did not eat food C.’

This is not an expected answer for the question of ‘what did only Yona eat?’ This can only be a partial answer about people’s property regarding the food consumption at a party, which makes a completely different question from the originally intended one. For the purpose of saving space, I will not lay out further examples such as (28) for other cases of interveners. However, we can predict now what kind of problems the quantifying items will meet when they have scope over a wh-phrase and are required to have a strong exhaustive reading. These discrepancies between the originally intended meaning of a wh-question and the reading we actually get from the scope enforced by a word order are all results of the undesirable scope effect.

Now we have the same question as raised in section 2. Are all the items that bear a scope regarding a wh-phrase categorized to be interveners? The answer will be the same as that given in the previous section. The items that are eligible to undergo the proper type shifting process and shifted to <e> type (either via Lower or via BE + nominalization ^) do not make scope ambiguities. Only those items that remain to be purely quantificational attribute to scope ambiguity and form different properties that depend on word order.

Through the discussion in sections 2 and 3, we have concluded that the IE is derived from inappropriate composition of *wh*-interrogatives based on an improper combinatorial property of the so-called interveners and their contribution to wrong informational content of *wh*-questions. Before concluding this paper, we need to check whether other alternative analyses are available. I will introduce a couple of (relatively) recent semantic approaches to the IE in the following section and add some brief comments on them.

4. An overview of the previous approaches

4.1 Focus interrupts the proper binding between Q-operators and *wh*-phrases: Beck (2006) and Kim (2006)

Under the assumption that interveners are focused items, *wh*-phrases and interveners share common properties in that they are not constants, but rather are interpreted as variables. This idea is the foundation of arguments from Beck (2006) and Kim (2006) that the binding of a *wh*-phrase to its respective Q-operator is not successful in the presence of another variable, the alleged intervener. The semantics of questions are intensely evaluated in classic studies by Hamblin (1973) and Karttunen (1977), both of whom arrive at similar conclusions that a question cannot be a proposition as a proposition is in a statement, but a question is, in fact, a set of propositions.¹⁰ The same line of thought appears in the alternative semantics of focused sentences in a study by Rooth (1995). In the case of a *wh*-question, it cannot be interpreted as its ordinary values as the focused version can. When a sentence has an ordinary value, it is interpreted as a proposition. However, when a sentence involves a *wh*-phrase and a Q-operator, a *wh*-phrase must have a focus value. On the other hand, the \sim operator resets the focus semantics to ordinary semantics after completion of its evaluation. Beck's analysis (2006) is rooted in this point. The \sim operator evaluates all focus in its syntactic scope and neutralizes their

¹⁰ There is a difference between these studies. For Hamblin (1973), the meaning of a question is a set of all possible answers, but for Karttunen (1977), the meaning of a question is a set of only true answers. The difference between them does not make a difference in this study.

contribution. In the example (29), cited from Beck (2006), the Q operator meets *Minsu-man* ‘only Minsu’ prior to the wh-phrase, evaluates its focus semantic value and resets it to an ordinary value. When the wh-phrase finally has to be evaluated, the prior process induces a crash in semantic interpretation, which Beck diagnoses as the cause of intervention effects. She assigns an ungrammatical status to (29) and contributes its ungrammaticality to (30).¹¹

- (29) *Minsu-man nuku-l po-ass-ni?
 Minsu-only who-Acc see-Past-Q
 ‘Who did only Minsu see?’ (Beck 2006: 1)

- (30) a. *Only Minsu saw who?
 b. [CP Q2 [IP3 only C [IP2 ~ C [IP1Minsu F1 saw who2]]]] (Beck 2006: 16)

In Beck’s (2006) system, IP1 is undefined for any assignment function *g*, since the wh-phrase’s ordinary translation is undefined due to the intervention of focused phrase ‘Minsu’. The bare focused phrases must be regarded as interveners in this system. Even if one does not give credit to this kind of judgment evidence, especially that which may be potentially controversial, the IE with ‘only’ or other interveners such as *amuto* ‘any (no) one’ are bad while the bare focused ones are judged to be fine. For an analysis to successfully work, the difference in the intuition should be explained, which is not done at all in previous research arguing that any focused item should be an intervener. These points lead us to explore other alternative analyses for the intervention effect. Now let us examine another suggestion in Tomioka (2008) in the next subsection.

4.2 Improper correspondence between syntactic structure and information structure: Tomioka (2007, 2008)

The gist of Tomioka’s analysis (2007, 2008) is that the information structure that appears in typical IE data does not correspond to the information structure

¹¹ In the original example of Beck (2006), the diagnose in (30) was described as ‘Only John saw who?’. In order to match (30) to (29), Beck’s Korean example, I have substituted the name ‘John’ with ‘Minsu’ for the consistency.

that a *wh*-interrogative sentence is supposed to have. He suggests that the concept of focus has an influential role in intervention effects, but clarifies that the appropriate meaning of focus is not equivalent to the meaning of focus illustrated in Beck (2006) and Kim (2006). Focus in Tomioka (2007, 2008) refers to a sentential focus, which expresses the informational status, constituting an information structure component. He argues that intervention effects appear when interveners correspond to the sentential focus in the information structural partition of a sentence. Accordingly, it does not matter whether or not the focus operator (\sim operator) *c*-commands a *wh*-phrase. This completely distinguishes this analysis from other arguments. Interestingly, what he focuses on is not how intervention effects occur, but rather how intervention effects are cancelled. Rather than asking how the *c*-commanding relation between a semantically-focused item and a *wh*-phrase induces an intervention effect, he starts from asking questions why the reversed order improves the intervention effect. The answer to this question imposes a crucial assumption that the position of a *wh*-phrase can influence the intonation pattern of a sentence. The key point here is that the pitch of the following constituents of a *wh*-phrase is significantly suppressed, and this is the feature to which Tomioka pays special attention. That is, when a so-called intervener precedes a *wh*-phrase, it is not prosodically influenced by the presence of the *wh*-phrase. However, by being placed after a *wh*-phrase, the intervener is naturally prosodically reduced. In other words, when an intervener is placed in a prosodically reduced position, its information state cannot avoid belonging to the background. Tomioka makes another argument that interveners cannot be topic items and accordingly, they cannot appear in the backgrounded portion of an information structure.

One advantage of this analysis is that it is not compromised by the existing problem of the identification of interveners. Since the point of this analysis is not to determine how IE occurs, but rather to determine how IE is cancelled, categorizing all the interveners under the single term of anti-topical items is a very strong aspect of this analysis.

Despite this virtue, I cannot help being pessimistic about Tomioka's approach. There is a requisite presupposition for this argument to materialize. The presupposition is that the phonological condition of a constituent determines the informational status of the constituent. However, I am very skeptical about

this underlying assumption. A prosodic effect is a tool to represent the informational status of a target phrase, but this rule does not apply the other way around. The presupposition of Tomioka is the opposite: the prosodic condition determines the informational status of an item. I cannot credit this aspect of Tomioka's argument. The informational status of an item or the information structure of a sentence should be completely dependent on context, including the knowledge state of participants in the conversation. The informational status of an item or the information structure of a sentence should not be dependent on any other conditions, including the prosodic condition.¹²

Although I cannot agree with his line of reasoning, his insight about ATI deserves to be entertained. I am on the same page with him in that IE sentences are not regarded to be especially marked with the so-called intervener quantifiers but rather the non-intervener sentences with quantifiers are saved from the potential intervention effect. The analysis in this paper has been an attempt to provide an explanation for the kind of semantic crash that occurred based on a similar observation by Tomioka. Since the quantifying items unconvertible to <e> type also cannot easily be topics or pegs in Landman's (1986) sense, the description itself that interveners are ATIs may be on the right track.¹³

12 Let us consider the following example.

- (i) mwues-ul, YONA-man, mina-hantey cwu-ess-no?
 what-Acc [YONA-ONLY] Mina-to give-Past-wh-Q?
 'What did only Yona give to Mina?'

This example inserts a pause after the wh-phrase and places a prosodic accent on the following phrase, Yona-man 'only Yona'. By doing this, the target phrase 'only Yona' is no longer in a phonologically reduced position, which means that the prosodic condition does not assure the informational status of the target phrase. The order of the words, however, still matters.

13 A reviewer of *Linguistic Research* mentioned Tomioka's (2007) embedded wh-question example of the following.

- (i) Ne-nun [CP nwukwuna-ka mues-ul ilk-ess-ta-ko] sayngkaha-ni?
 you-top everyone-nom what-acc read-Past-Dec-Comp think-Q?
 'What do you think that everyone read?'

In the embedded question, although the intervener precedes a wh-phrase in the surface order, the presupposition of the question differs from the non-embedded one. The question presupposes that there is something that everyone has read and asks a listener's opinion of it. I have claimed that the type-mismatch problem is led to the formation of different predicate setting that the wh-phrase is formed about in George's (2011) framework. If this is considered only in the

5. Summary

In this paper, we have discussed why a certain group of lexical items cannot appear in a specific order in *wh*-interrogative sentences. Instead of the existing analysis that explains the failure of proper binding between a *wh*-phrase and its Q-operator due to the interference of a focus item, this paper has suggested that the quantificational properties of interveners and the informative content delivered by the different scope between a *wh*-phrase and an intervener should be investigated more carefully. The proposed analysis states that interveners are not just focused items, but rather lexical items with quantificational force and scope and not eligible for type-shifting. This view on interveners coincides with the intuition revealed in early research on the IE such as by Beck and Kim (1997) under the purely syntactic approach, which is later substituted with the more semantically triggered view.

Regarding their explanation of interveners in Korean, Beck and Kim's initial insight that interveners may be quantifiers is on the right track. What is missing in the insight is the explanation for how the exclusion of numerous quantifiers from being interveners is possible, which made them unable to extend their NPI analysis to the whole class of quantifiers. Another factor that has misguided the initial approach of Beck and Kim is their syntactic approach on this problem. If quantifying interveners build a barrier for LF movement as they have suggested for NPI, the exclusion of some specific class of quantifiers from the barrier position would be difficult to understand. I provide an alternative suggestion for this syntactic approach, while still maintaining the original intuition that interveners are quantifying items.

The following have been suggested as triggers for quantifying items to be potential interveners. In the compositional process of *wh*-interrogatives, quantifiers are prohibited to scope over a *wh*-phrase for two reasons: (1) the combinatorial mismatch and (2) formation of an improper set whose meaning is supposed to be formed for a *wh*-phrase to apply to. If scope is what matters,

type-mismatch analysis, the above example is problematic. There remains the issue of compositional process how the embedded one is exactly composed, but what is clear at this point is that the embedded *wh*-phrase has a predicate of ' λx . x is being eaten by anyone (everyone)'. This makes a difference between an embedded and non-embedded version of *wh*-questions.

there is a way for potential interveners to escape from the intervener status. Through type shifting, they could avoid the combinatorial mismatch problem. Also, being interpreted as individual items makes them unable to have a scope interaction with a *wh*-phrase. This explains why they do not trigger any problem in forming proper informative content.

One virtue of this proposed analysis is that it does not subsist on the old syntactic or semantic linking problems, but rather explores a new possibility for greater understanding of the issue of IE in Korean. What is missing in this paper is a cross-linguistic survey of interveners in various languages.¹⁴ Despite this shortcoming, I believe that this approach is still promising because the characteristic properties of lexical items are varied across languages. Considering that the interveners in different languages seem to share some common property but are not exactly identical, it has been challenging to unite all types of discrepancies among interveners in various languages. However, if a certain lexical item which can be type shifted to an individual type in some language is not eligible to do that in another language, these languages will have different inventories of interveners. A good example of this is *taypupun* 'most' in Korean since it can have predicative usage in Korean but is purely quantificational in English. As I have admitted previously, more systematic cross linguistic research on interveners is missing in this research and required in order to obtain more generality in future research.

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14 This has been also pointed out as a weakness of this paper by a reviewer of *Linguistic Research*. I agree that more cross-linguistic data on IE and the class of interveners in those languages are required to confirm the point argued in this paper. In addition, if it can be examined whether the non-intervener quantifiers can have distributive reading and used as predicates is accompanied, it would improve the argument of this paper.

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