Korean *Wh*-island Effects in Scrambling Constructions

JUYEON CHO
Seoul National University

1 Introduction

It has been widely assumed that any gap is not allowed in the island structures due to island constraints. According to filler-gap dependencies, there exists a long-distance dependency between a gap position, which is the argument of an embedded verb, and an antecedent (or filler), which is the sentence-initial *wh*-phrase, as in (1).

(1)   *What do you wonder [whether John bought __]?

Among one type of islands in English, *whether*-island constraints do not allow any phrases to be out of *whether*-clause, leading the sentence in (1) to be ungrammatical. However, such an island violation does not occur in *wh*-in-situ languages (e.g., Japanese, Korean) as in (2).

(2)   Mwues-ul   ne-nun   [John-i ____   sa-ss-nunci]   a-ni?
        What-Acc   you-Top   J-Nom   buy-Past-Q   know-Q

Thus, the *wh*-phrase can be placed in the gap position without degrading grammaticality. However, it is controversial to interpret the sentences with *wh*-phrase, which might be moved via LF-movement, as shown in (3).

(3)   ?Nani-o$_i$ John-ga   [Taroo-ga t$_i$ katta   ka]   siritagatteiru.
        What-Acc John-Nom   Taro-Nom   buy-Past Q   want-to-know
        'John wants to know what Taro bought.'

The sentence in (3) is marginally accepted even when the *wh*-word is moved from overt *wh*-island. Although the *wh*-word is extracted, it seems to take the scope in its original embedded position. Saito (1989) claimed that question marker such as *–ka* in Japanese determines the scope of *wh*-phrases. Thus, the question-marked embedded phrase can be the proper scope for the extracted *wh*-word in (3) is. Since the movement of the *wh*-phrase is semantically vacuous regardless of its surface position, Saito considered that this kind of scrambling can be undone or undergoes reconstruction into the indirect question at LF level.

On the other hand, Miyagawa (2005) analyzed the same sentence as grammatical saying that it does not violate the *wh*-island effects in either at overt syntax or at LF. According to him, the *wh*-word in the original position can moves through the specifier of CP, which is an empty position in Japanese. This employment of the Spec of CP as an escape hatch makes the sentence circumvent the Subjacency Condition as well as the *wh*-island constraints.

Considering that *wh*-movement can occur overtly and covertly, this paper investigates the *wh*-island effects in Korean, especially in scrambling structures. To clarify whether *wh*-island effect does exist in Korean, I separate the *wh*-island effect based on where it occurs. The island effect which is caused by the overt movement out of *wh*-phrase (or scrambling) is called *wh-PF-island effect*, whereas the effect which bans the wide-scope reading for a *wh*-phrase is called *wh-LF-island effect*.

In Section 2, previous studies toward *wh*-scrambling in Korean data will be reviewed. Section 3 presents the experimental design of this paper and the results of the experiment. In the following Section 4, I will discuss the results and conclude suggesting the further direction of this study in Section 5.

2   *Wh*-island Effects in Korean

Given that *wh*-movement is free in *wh*-in-situ languages, it is still controversial whether the *wh*-word in so-called *wh*-island is compatible with wide-scope reading over the entire sentence or not. First, for the *wh*-in-situ condition, some researchers asserted that it cannot take a matrix scope out of *wh*-islands (Nishigauchi, 1990; Han, 1992; Watanabe, 1992).

(4)   (?)John-wa [Mary-ga   nani-o   katta   ka dooka]
        John-Top   Mary-Nom   what-Acc   buy-Past   whether
        siritagatte iru no?
        know-want-Q
        'What does John want to know whether Mary bought?'

They assumed that there exists a phonetically invisible movement so that it is affected by *wh*-island effect at LF, which assimilates the Subjacency Condition in the overt syntax. However, they admitted that the degree of acceptability can vary among speakers. Likewise, according to Takahashi (1993: 657), such sentences can yield ambiguous interpretation due to the fact that the question marker –*ka* has the ambiguous status between a scope-marker for a *wh*-phrase and complementizer, similar to English *whether*. If it is used as a former, the sentence (4) should be read as 'Does John want to know what Mary bought?' On the other hand, if it functions as a complementizer, the *wh*-word can have a matrix scope to be interpreted as a direct *wh*-question.

Furthermore, the ambiguity in scope interpretation is dealt with under the *wh*-scrambled condition. Aoshima et al (2003) conducted a questionnaire study showing that Japanese speakers accept the yes/no-question reading as well as *wh*-question reading. This supports that *wh*-scrambling is a true scrambling, thus results in ambiguous scope reading for *wh*-phrase. However, they posited the context which was in favor of the embedded scope reading, although the results revealed that the biased scope toward an embedded reading are not affected by context.

As for Korean, Yoon (2013) explored *wh*-island effects of Korean scrambling sentence by using an acceptability judgment test. The results demonstrated that native Korean speakers prefer embedded scope reading to matrix scope reading. Although her study proved the existence of *wh*-island, the preference to yes/no-reading would not be accepted as reliable if participants considered the tested sentences as unacceptable. It is unreliable to rate the ungrammatical sentences which are assumed to violate the *wh*-island constraints.

Unlike Aoshima et al and Yoon, Takahashi (1993) treated certain type of *wh*-scrambling as syntactic *wh*-movement. Based on his proposal, when the *wh*-phrase moves to the initial position headed by [+WH] Comp, it does not move further in LF. If the idea of Takahashi is right, the sentence such as (5) should allow only a wide-scope reading.

(5)   Nani$_i$-o John-wa [CP Mary-ga t$_i$ tabeta ka] siritagatteiru no?
      'What does John want to know whether Mary ate?

Some studies also investigated the *wh*-scrambling with regards to prosodic structures, suggesting that ambiguous scope reading is possible in specific prosody patterns (Ishihara, 2002; Kitagawa and Hirose, 2013 among others). Therefore, in order to complement the former studies, the current paper examines whether Korean native speakers have different intuition towards *wh*-PF-island effect and *wh*-LF-island effect.

3   Experiments

3.1   Research Questions and Hypotheses

To ascertain whether *wh*-island effect does exist in Korean, I distinguish two types of *wh*-islands based on where it occurs. For violation of the overt movement out of *wh*-phrase, I call this *wh*-PF-island effect. For the effect that bans the wide-scope reading for the *wh*-phrase, I call it *wh*-LF-island effect. Given that two *wh*-island effects are detected at different level, this paper provides empirical evidence toward existence of each *wh*-island effect in Korean.

The research questions are as follows:

(6)   a. Does Korean show *wh*-PF-island effect?
      b. Does Korean show *wh*-LF-island effect?

For each question, the following hypotheses can be made.

(7)   a. If overt *wh*-movement in Korean would be accepted without causing acceptability, *wh*-PF-island effect will be regarded as non-island constraint.
      b. If non-scrambled *wh*-island sentence does not allow matrix scope reading, there will be *wh*-LF-island effect. Still, both scope reading can be compatible even if the preference over one reading varies among speakers.

3.2   Method

In order to examine the *wh*-island effects in Korean, this paper follows the factorial definition of Sprouse et al (2016) with slight modifications adopted from Kim and Goodall (2016). Therefore, the current experiment was conducted under a 2 x 2 x 2 factorial design, with three factors: Structure (non-island / island), *Wh*-position (non-scrambling / scrambling) and Answer type (yes/no-answer / *wh*-answer).

The sample stimuli are represented in (8) and (9)[1] .

(8)   Questions
a. Non-island │ non-scrambling
Ne-nun   [Yeji-ka   nwuku-ul   manna-ss-ta-ko]   tul-ess-ni?
You-Top Y-Nom   who-Acc   meet-Past-Decl   hear-Past-Q
b. Non-island │ scrambling
Nwuku-ul ne-nun [Yeji-ka __ manna-ss-ta-ko tul-ess-ni?
Who-Acc   you-Top Y-Nom   meet-Past-Decl   hear-Past-Q
c. Island │ non-scrambling
Ne-nun   [Yeji-ka   nwuku-ul   manna-ss-nunci]   tul-ess-ni?
You-Top Y-Nom   who-Acc   meet-Past-Q   hear-Past-Q
d. Island │ scrambling
Nwuku-ul ne-nun   [Yeji-ka __ manna-ss-nunci] tul-ess-ni?
Who-Acc   you-Top   Y-Nom   meet-Past-Q   hear-Past-Q

(9)   Answers
a. Yes/no answer
Ung,   tul-ess-e.
Yes,   hear-Past-Decl
b. *Wh*-answer
Minsu(-lul).
M-Acc

Sixty-four items (eight tokens per each condition into four lists) were distributed using a Latin Square design. Each item consists of Question-Answer pair. All the questions are bi-clausal sentences, which contain either a declarative phrase or an interrogative phrase as a complement. Two kinds of verbs (*tutta* 'hear,' *malhata* 'say') were used in the matrix clause, while eight different kinds of verbs were used in the embedded clause. For the

---

[1] Note that wh-words in Korean can be interpreted as indefinite pronouns. In addition to the interpretation as true interrogative, the question in (8a), for example, can deliver the meaning that 'Did you know whether Yeji met someone?' This interpretation would be only compatible with yes/no answer, identical to the case where a true wh-word takes scope over the embedded scope.

consistent interpretation, a single *wh*-word *nwukwu* 'who' was used. Each list included thirty-two filler items, leading to a 2:1 ratio of fillers to target items.

Fifty-two participants were recruited. They were asked to check the acceptability of the answers, with a 7-point Likert scale task (1 at the lowest and 7 at the highest of acceptability). As noted in Kim and Goodall (2016), the felicity of question-answer pairs (e.g., (8a)-(9a), (8a)-(9b), (8b)-(9a), etc.) were measured to avoid the biased reading toward one particular scope reading and only to test the speakers' interpretation of sentences.

3.3 Results

The descriptive results are presented in Table 1 and plotted in Figure 1.

		Wh-answer	Y/N-answer	Total
Island	Non-scrambling	4.26 (2.03)	5.00 (1.80)	4.63 (1.95)
	Scrambling	3.63 (1.93)	3.31 (1.87)	3.47 (1.90)
	Total	3.94 (2.00)	4.15 (2.02)	4.05 (2.01)
Non-island	Non-scrambling	5.20 (1.75)	4.13 (1.98)	4.67 (1.94)
	Scrambling	4.24 (2.01)	2.58 (1.66)	3.41 (2.01)
	Total	4.72 (1.94)	3.36 (1.98)	4.04 (2.07)

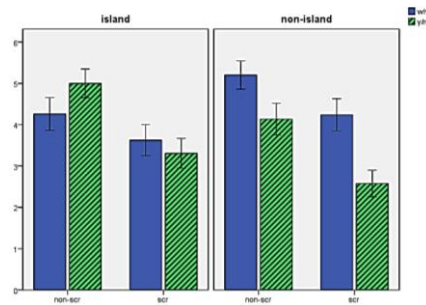Table 1. Descriptive data of the results

Figure 1. Ratings of acceptability judgment task

Although the results are not yet statistically verified, we can observe the differences between Structures (island/non-island). As for *Wh*-position, scrambled questions were rated slightly lower than non-scrambled questions, which means that scrambling might affect the acceptability of sentences. As for Answer type, participants generally preferred *wh*-answer reading which indicates that they considered the question as a direct *wh*-question. They showed a reverse pattern of preference only in the non-scrambled island

condition. This can be suggestive for existence of *wh*-LF-island effect in Korean, following the abovementioned hypothesis.

First, the ratings from each participant were transformed into z-scores independently. The z-score conversion is to eliminate the possible biases in scale between participants. Based on this standardized scale, two-way ANOVA was conducted in order to examine *wh*-PF-island in Korean. The transformation into z-scores can eliminate the biases of using scales between participants because it turns each rating into a standardized one. An interaction between Structure and *Wh*-location were calculated by differences-in-differences (DD) scores for each participant (Sprouse et al, 2016): DD = D1 (non-island/non-scrambling – island/non-scrambling) – D2 (non-island/scrambling – island/scrambling). For *wh*-PF-island, the results revealed nearly perfect linear additivity (DD score of .02). This sub-additive *wh*-island effect is detected regardless of Answer types (a *p*-value of .37 and a DD score of –.14 for y/n answer; a *p*-value of .28 and a DD score of .18 for *wh*-answer), as in Figure 2.
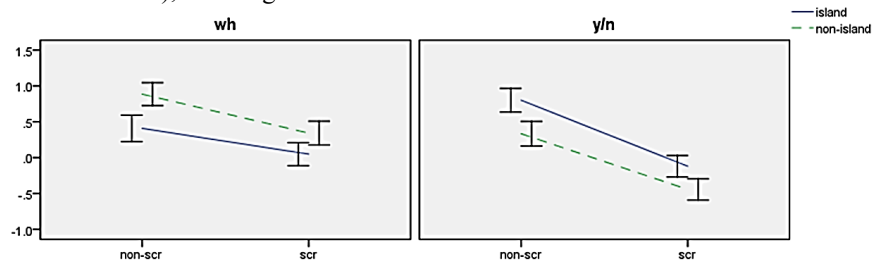

Figure 2. Interaction plot for *wh*-PF-island by Answer type

Secondly, I compare the acceptability of *wh*-in-situ sentences and *wh*-scrambled sentences, both of which contain *wh*-islands, marked with question marker *–(nun)ci*. It was tested to see if there is any island effect at LF level. Two-way ANOVA was run for *Wh*-location in each Answer type, which is displayed with the effect plot in Figure 3.
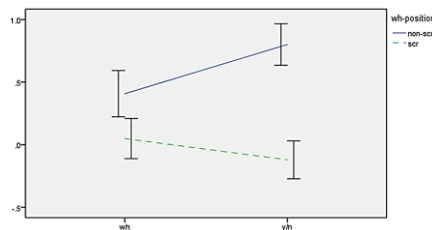

Figure 3. Interaction plot for *wh*-LF-island

Compared to the effect plot for *wh*-PF-island (Figure 2), the effect plot for *wh*-LF-island in Figure 3 has the two non-parallel lines. Accordingly, the DD score showed interaction with the score of .56 (a *p*-value < 0.05). Moreover, the gap between *Wh*-location is much bigger in yes/no answers than in *wh*-answers. This provides that an embedded scope reading is more affected by the location of *wh*-phrases: depite the fact that the sentence was preferrably read as an indirect question in non-scrambled condition, the opposite reading as a direct question was favored when the *wh*-word is scrambled to the initial of the sentence.

4   Discussion

Supporting the hypothesis, Korean native speakers are not sensitive to *wh*-PF-movement since the presence of overt *wh*-movement does not affect the acceptability of the sentences. Whether the sentence has *wh*-island or not, the differences in acceptability come from the location of *wh*-phrase. Reflecting the sub-additive results, I can see *wh*-clauses do not behave like islands – no *wh*-PF-island in Korean.

When it comes to *wh*-LF-island, however, a closer look is needed. In a non-scrambled island condition, there showed a preference of yes/no reading (z-score = .80) over *wh*-reading (z-score = .41). What it means is that when *wh*-words occur in *wh*-island, it is more likely to be associated with embedded clause. Then, we can assume that even though the overt movement is allowed, the LF movement is somewhat disallowed to be interpreted out of the island.

In a scrambled island condition, the preference of answer type shows a reverse pattern: *wh*-reading (z-score = .49) is more acceptable compared to yes/no scope reading (z-score = -.12). The results seem to be consistent with Takahashi (1993) in that matrix scope is preferred; however, both scope reading is still possible.

Overall, the results of island construction are consistent with Aoshima et al (2003): *wh*-reading is preferred for both scrambled structure, whereas yes/no reading is preferred for non-scrambled structure. However, as for non-island construction, the results of the current study are leant toward *wh*-reading, which are inconsistent with Aoshima et al (2003) showing yes/no-reading preference. Though it is not the main focus of this paper, these reverse results for non-island structure can be naturally made. Following what Saito (1989) claimed, the scope for *wh*-words should be the entire sentence in non-island sentences. Thus, *wh*-words can take scope freely in matrix clause.

Concerning that individual variations might affect the sentence interpretation, Figure 4 displayed a pattern for each subjects to see how individual participant understood the sentences with *wh*-island.
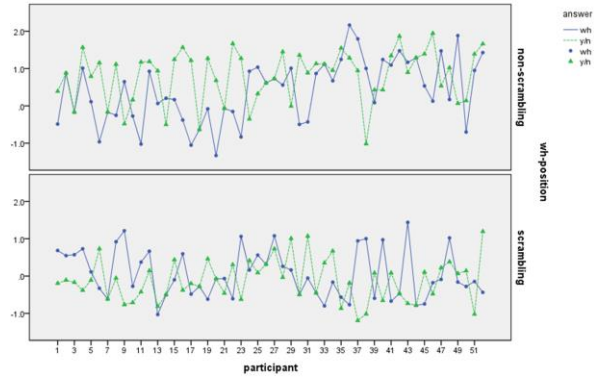
Figure 4. Individual scope preference

The general pattern for each subject is in accordance with the overall results mentioned above. Still, there are some individual variations. Regardless of Structure and *Wh*-location condition, thirteen out of fifty-two subjects give a preference for an embedded scope reading, while six of them show a preference for a matrix scope reading. The opposite pattern to the overall preference is found in the results of four participants.

The last thing to note is one type of filler items, the *wh*-island structures with specifier position of CP filled. Though it is not the main target of the current study, it is to identify whether the specifier position of CP can function as an escape hatch (Miyagawa, 2005; Han, 2015) or not. If the sentences with Spec CP filled are not compatible with wide scope reading, then their argument would be proved to be true. The filler sentences used are as shown in (10) for questions and (11) for answers. The results of raiting these sentences are illustrated in Figure 5.

(10)   Questions
        a. Spec CP island │ non-scrambling
        Ne-nun   [encey [Yoonseo-ka   nwuku-lul   honnae-ss-nunci]
        You-Top   when   Y-Nom   who-Acc   scold-Past-Q
        tul-ess-ni?
        hear-Past-Q
        b. Spec CP island │ scrambling
        Nwuku-lul   ne-nun   [encey [Yoonseo-ka   ___   honnae-ss-nunci]
        Who-Acc   you-Top   when   Y-Nom   scold-Past-Q
        tul-ess-ni?
        hear-Past-Q

(11)   Answers
         a. Yes/no answer
         Ung,   tul-ess-e.
         Yes,   hear-Past-Decl
         b. *Wh*-answer
         Seongho(-lul).
         S-Acc
         c. *Wh*2-answer
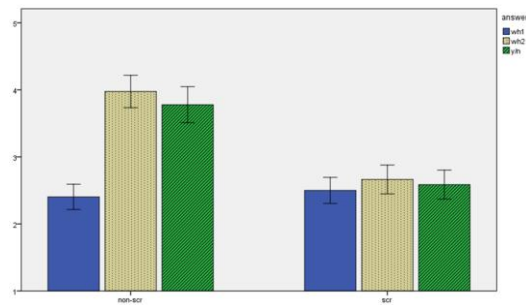   Ecey.
         Yesterday

Figure 5. Ratings for Spec CP-filled condition

Unlike Miyagawa (2005) and Han (2015) assumed, the sentence whose Spec CP position is filled can be interpreted as a direct *wh*-questions although the matrix reading is not highly preferred. If the Spec CP position was regarded as a real escape hatch, the *wh*-word in the embedded clause cannot move through the filled Spec CP and cannot be understood under matrix scope reading. However, the results demonstrated that whether that position is lexically specified or not, *wh*-word can have the widest scope above entire sentence. Hence, the specifier position of CP does not affect the acceptability of *wh*-island in Korean. It needs to be closely examined but the brief look for their idea appears to be untenable, given the current results.

Besides, the unexpected observation is made in that the *wh*-word located in Spec CP position (indicated as wh2 in Figure) is most compatible with matrix scope for both conditions. The issue of understanding islands which has the Spec CP filled would be accounted for by comparing the sentences without such islands.

5   Conclusion

This study is to investigate the existence of *wh*-island constraints in Korean scrambling constructions. By separating *wh*-PF-island and *wh*-LF-island, the ambiguous definition for island effects in Korean can be divided. The experimental findings suggested the lack of island effect with *wh*-PF-island, but the presence of effect with *wh*-LF-island.

As for *wh*-LF-island, if the *wh*-words is placed in-situ position, embedded scope reading received higher acceptability scores than matrix scope reading. This is reduced to the tendency that the speaker obeys the *wh*-LF-movement to ban the embedded *wh*-word to have a matrix scope. The opposite results were found in scrambled structures, contrary to the previous study which suggests that the embedded scope reading is favored.

The reading preference of Korean speakers accorded with Takahashi (1993) in terms of high preference for interpretation as a direct question. However, since it is not limited to *wh*-movement, it is more in line with Saito's (1989) claim that *wh*-scrambling can be undone at LF.

There still remain some issues toward how to account for the *wh*-reading preference in the overall perspective. It can be clarified with consideration of other syntactic and semantic properties of *wh*-movement and scrambling. Further study with more controlled experiment stimuli is needed to contribute to clarifying ambiguous interpretation of *wh*-scrambling constructions.

References

Aoshima, S., Phillips, C., & Weinberg, A. 2003. Processing of Japanese *wh*-scrambling constructions. *Japanese/Korean Linguistics* 12: 179-191.

Han, H. S. 1992. Notes on reflexive movement. *Journal of East Asian Linguistics* 1(2): 215-218.

Han, H. R. 2015. Scrambling Out of a *Wh*-Island: Types and Acceptability. *The Journal of Sudies in Lnguage* 31(1): 157-177

Ishihara, S. 2002. Invisible but audible *wh*-scope marking: *Wh*-constructions and deaccenting in Japanese. *Proceedings of WCCFL* 21: 180-193.

Kim, B., & Goodall, G. 2016. Islands and Non-islands in Native and Heritage Korean. *Frontiers in psychology* 7: 134.

Kitagawa, Y., & Hirose, Y. 2012. Appeals to prosody in Japanese *Wh*-interrogatives—Speakers' versus listeners' strategies. *Lingua* 122(6): 608-641.

Miyagawa, S. 2005. EPP and semantically vacuous scrambling. *The free word order phenomenon: Its syntactic sources and diversity,* 181-220.

Nishigauchi, T. 1990. *Quantification in the Theory of Grammar*, Dordrecht: Kluwer.

Saito, M. 1989. Scrambling as semantically vacuous A'-movement. *Alternative Cnceptions of Prase Sructure,* 182-200.

Sprouse, J., Caponigro, I., Greco, C., & Cecchetto, C. 2016. Experimental syntax and the variation of island effects in English and Italian. *Natural Language & Linguistic Theory* 34(1): 307-344.

Takahashi, D. 1993. Movement of *wh*-phrases in Japanese. *Natural Language & Linguistic Theory* 11(4): 655-678.

Watanabe, A. 1992. Subjacency and S-structure movement of *wh*-in-situ. *Journal of East Asian Linguistics* 1(3): 255-291.

Yoon, J. M. 2013. Undoing and *wh*-island effects of scrambling in Korean. *Studies in Generative Grammar* 23(1): 41-63.