

Wh-island Effects in Korean Scrambling Constructions

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Abstract

This study examines the wh-island effects in Korean. Since wh-in-situ languages like Korean allow wh-scrambling, the absence of wh-island constraints is accepted. However, it is controversial whether wh-clauses can take a matrix scope or not. In order to clarify the issue of wh-islands in Korean, the current paper designed an off-line experiment with three factors: island or non-island, scrambling or non-scrambling, and embedded scope or matrix scope. The following acceptability judgment task revealed that wh-PF-island does not exist but wh-LF-island plays a role in Korean. Among results of wh-LF-island, it was observed that a majority of speakers prefer the matrix scope reading.

1 Introduction

It has been widely assumed that gap position cannot occur inside the island structures due to island constraints. In terms of filler-gap dependencies, there exists a gap position, which is the argument of an embedded verb, and an antecedent (or filler), which indicates the sentence-initial wh-phrase in (1).

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

As one of islands in English, whether-island constraints do not allow any phrases to be out of whether-clause, the sentence in (1) becomes

ungrammatical. However, wh-in-situ languages, such as Korean, do not exhibit such island effects as in (2).

- (2) Mwues-ul ne-nun [John-i ___ sa-ss-nunci]
What-Acc you-Top J-Nom buy-Past-Q
a-ni?
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 can undergo the LF-movement, as shown in (3).

- (3) ?Nani-o_i John-ga [_{WH-ISL} Taroo-ga t_i
What-Acc John-Nom Taro-Nom
katta ka siritagatteiru.
buy-Past Q want-to-know
'John wants to know what Taro bought.'

The sentence in (3) contains the wh-word extracted 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 indicates the scope of wh-phrases, so that the proper scope for the extracted wh-word in (3) is the question-marked embedded phrase. 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 showing 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 move 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 Subadjacency 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. The following section 3 presents the experimental design of this paper and the results of the experiment. In section 4, I will discuss the results and proceed to conclusion 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
John-Top Mary-Nom what-Acc buy-Past
ka dooka] siritagatte iru no?
whether 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 Subadjacency Condition in the overt syntax. However, they admitted that the degree of acceptability can vary among speakers. Likewise,

Takahashi (1993: 657) presented that 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, then sentence (4) should be read as 'Does John want to know what Mary bought?' If it functions as a complementizer, on the other hand, the wh-word can have a matrix scope to be interpreted as a direct wh-question.

Furthermore, the ambiguity in scope interpretation is also observed for the wh-scrambled condition. Aoshima et al (2003) suggested a questionnaire study showing that Japanese speakers permit the interpretation of yes/no question as well as that of wh-question. This supports that wh-scrambling is a true scrambling and it 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 context does not affect the biased scope toward an embedded reading.

As for Korean, Yoon (2013) conducted an acceptability judgment test for wh-island effect of scrambling. 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 acceptability of 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. He suggested that 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-o John-wa [CP Mary-ga t_i tabeta ka]
siritagatteiru no?
'What does John want to know whether Mary
ate?

There also exist some studies which treat the wh-scrambling with reference 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, this 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 attempt to distinguish the wh-island 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 the research questions, the hypotheses are 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

To examine the wh-island effects in Korean, this paper follows the factorial definition of Sprouse et al (2016) with slight modifications. Also, answer type was designed following 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 target sentences are represented in (8) and (9)¹.

(8) Questions

a. Non-island | non-scrambling

Ne-nun [Yeji-ka nwuku-ul manna-ss-ta-ko]
 You-Top Y-Nom who-Acc meet-Past-Decl
 tul-ess-ni?
 hear-Past-Q

b. Non-island | scrambling

Nwuku-ul ne-nun [Yeji-ka __ manna-ss-ta-ko]
 Who-Acc you-Top Y-Nom meet-Past-Decl
 tul-ess-ni?
 hear-Past-Q

c. Island | non-scrambling

Ne-nun [Yeji-ka nwuku-ul manna-ss-nunci]
 You-Top Y-Nom who-Acc meet-Past-Q
 tul-ess-ni?
 hear-Past-Q

d. Island | scrambling

Nwuku-ul ne-nun [Yeji-ka __ manna-ss-nunci]
 Who-Acc you-Top Y-Nom meet-Past-Q
 tul-ess-ni?
 hear-Past-Q

(9) Answers

a. Yes/no answer

Ung, tul-ess-e.
 Yes, hear-Past-Decl

b. Wh-answer

Minsu(-lul manna-ss-ta-ko / nunci tul-ess-e).
 M-Acc meet-Past-Decl / -Q hear-Past-D

Thirty-two items (4 tokens for each condition) were used in the experiment. 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. The matrix verbs used were *tutta* ‘hear,’ *malhata* ‘say,’ while the embedded verbs include *mannata* ‘meet,’ *ttaylita* ‘hit,’

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.

chingchanhata ‘compliment,’ *paysinhata* ‘betray.’ For the consistent interpretation, a single wh-word *nwukwu* ‘who’ was used. The experiment contains forty-eight filler items, leading to a 1.5:1 ratio of fillers to target items.

Twenty participants 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 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 basic descriptive results are presented in Table 1 and illustrated in Figure 1.

		Wh-answer	Y/N-answer	Total
Island	Non-scrambling	4.70 (1.93)	5.70 (1.50)	5.20 (1.79)
	Scrambling	4.24 (2.06)	3.58 (1.83)	3.91 (1.97)
	Total	4.47 (2.00)	4.64 (1.98)	4.55 (1.99)
Non-island	Non-scrambling	5.81 (1.33)	4.29 (2.03)	5.05 (1.87)
	Scrambling	4.80 (1.93)	2.65 (1.57)	3.73 (2.06)
	Total	5.31 (1.73)	3.47 (1.98)	4.39 (2.07)

Table 1. Descriptive results of the data

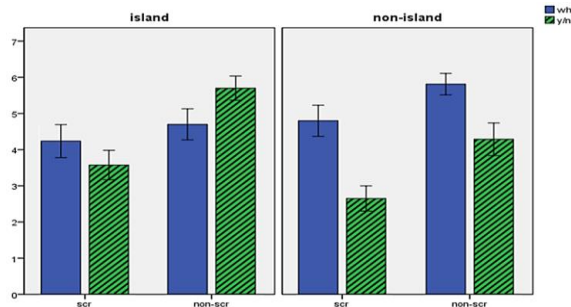


Figure 1. Ratings of acceptability judgment task

Although the results need to be statistically verified, there show little 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. For Answer type, participants generally preferred wh-answer reading which indicates that they considered the question as a direct wh-question. Only the non-scrambled island condition exhibits a reverse pattern of preference. This can

be suggestive for existence of wh-LF-island effect in Korean, following the hypothesis above.

First, based on the transformed z-scores, two-way ANOVA was conducted in order to examine wh-PF-island in Korean. The transformation into z-scores can eliminate the biases of scales among participants because it makes 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). The results are plotted in Figure 2.

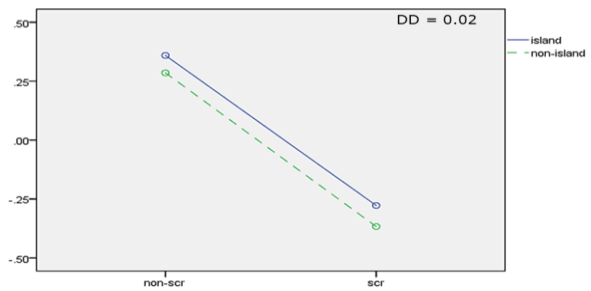


Figure 2. Interaction plot for wh-PF-island

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 .21 and a DD score of -0.24 for y/n answer; a p -value of .18 and a DD score of -0.27 for wh-answer), as in Figure 3.

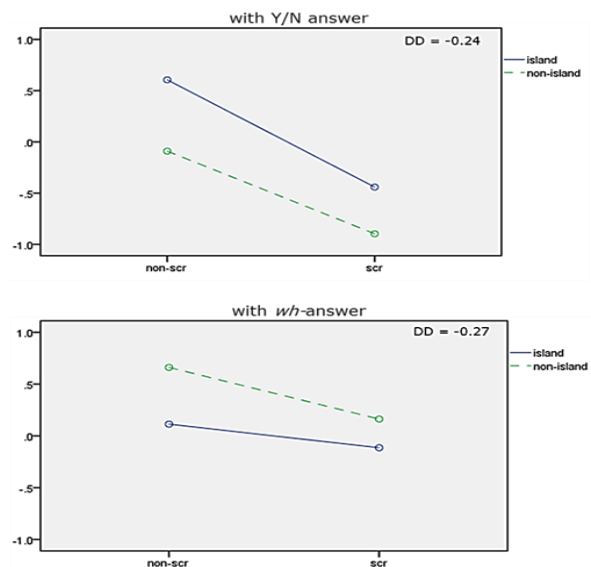


Figure 3. Interaction plot for wh-PF-island by Answer type

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 4. The DD scores for their interaction are also given.

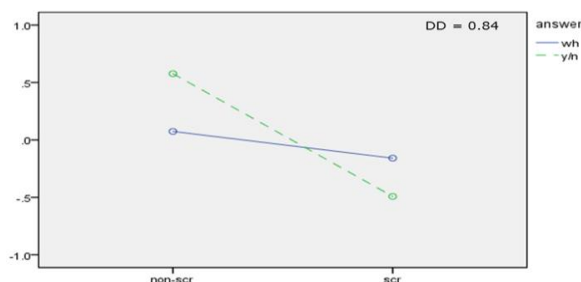


Figure 4. Interaction plot for wh-LF-island

Compared to the effect plot for wh-PF-island (Figure 2), the effect plot for wh-LF-island in Figure 4 has the two non-parallel lines. Accordingly, the DD score showed interaction with the score of .84. 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: even though the sentence was inclined to be read as an indirect question in non-scrambled condition, the same reading was not chosen 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, indicating the absence of wh-PF-island in Korean.

When it comes to wh-LF-phrase, however, a closer look is needed. In a non-scrambled island condition, there showed a preference of yes/no reading (z -score = .58) over wh-reading (z -score = .07). What it means is that when wh-words occur in wh-island, it is more 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 = -.15) is more acceptable compared to yes/no scope reading (z -score = -.49). 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 lean 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 easily illustrated. Following Saito (1989), the scope for wh-words is the entire sentence in non-island sentences. Thus, wh-words can freely take scope in matrix clause.

Concerning the individual variations, Figure 5 displayed a pattern for each subjects to see how individual participant interpreted the sentences with wh-island.

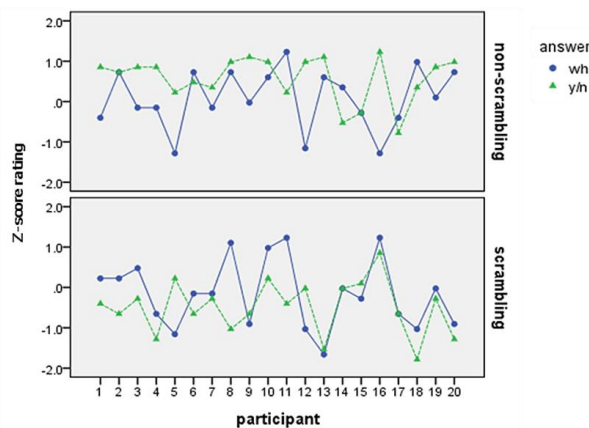


Figure 5. Individual scope preference

The general pattern for the subjects follows the results mentioned above. Still, there are some individual variations. Four out of twenty subjects exhibits a preference over an embedded scope reading but three of them show a preference over a

matrix scope reading, regardless of Structure and Wh-location condition.

Last thing to note is about one type of filler items of the experiment, 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). If the sentences with Spec CP filled are not compatible with wide scope reading, then their argument can be supported. The filler sentences used are as shown in (10) for questions and (11) for answers. The results of interpreting those sentences are illustrated in Figure 6.

(10) Questions

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

(11) Answers

- a. Yes/no answer
 Ung, tul-ess-e.
 Yes, hear-Past-Decl
- b. Wh-answer
 Seongho(-lul honnae-ss-nunci tul-ess-e).
 S-Acc scold-Past-Q hear-Past-D
- c. Wh2-answer
 Ecey (honnae-ss-nunci tul-ess-e).
 Yesterday scold-Past-Q hear-Past-D

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. 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 cannot be maintained with the current results.

Besides, one unexpected result is 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 current experiment suggested the lack of island effect with wh-PF-island, but the presence of effect with wh-LF-island.

For wh-LF-island, the results vary between scrambled and non-scrambled structures. When the wh-words is placed in-situ, embedded scope reading received higher acceptability scores than matrix scope reading. This indicates that the speaker obeys the wh-LF-movement to ban the embedded wh-word to have a matrix scope. The reverse results were exhibited from scrambled structures, contrary to Yoon (2013)'s generalization that embedded scope reading is more accepted.

The results displayed the consistent preference pattern with Takahashi (1993) in terms of high preference for interpretation as a direct question. However, since it is not limited to wh-movement, it seems to follow the Saito (1989) arguing that wh-scrambling can be undone at LF.

There remain some issues toward how to illustrate the wh-reading preference in overall

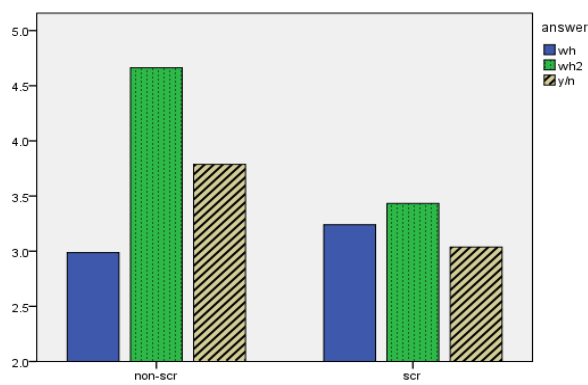


Figure 6. Ratings for Spec CP-filled condition

condition. 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.

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