

# The Role of Processing Difficulty in L2 Grammaticality Judgments

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## Abstract

The present study explores the effect of sentence processibility on L2 grammaticality judgments. In order to see if L2 learners are as sensitive to processing factors as native speakers in judging the grammaticality of a sentence, the present study asked L2 learners of English to rate the acceptability of wh-island constructions in four conditions that varied in their processing difficulty. The processing difficulty was manipulated by two factors—(a) the properties of the fronted wh-element and (b) the intervening materials between the fronted wh-phrase and its gap (i.e., filler-gap distance). The fronted wh-element was either a wh-pronoun or a *which-N* phrase; the NP arguments that intervened between the fronted wh-element and the gap was either pronouns or lexical NPs. The results showed that the native speaker group's ratings of wh-island sentences were sensitive to the processing factors: they rated the constructions with the lowest processing demand as most acceptable and those with the greatest processing demand as least acceptable. On the other hand, the Korean L2 learners did not display the same kind of sensitivity to the processing difficulty in judging sentences. The learners, including the high-proficiency group, rated the island sentences with the more intervening lexical materials as more acceptable despite of their high processing costs.

## Keywords

Processing difficulty, grammaticality judgment, L2 processing, wh-island

## Introduction

According to recent experimental studies, native speakers' judgements for island-violating sentences are often affected by the cognitive demand involved in processing the sentences, with degraded acceptability for sentences that

require higher processing costs. From a processing point of view, the unacceptability of these and other complex sentences are attributable to the limited nature of human memory resources. Given that native speakers' acceptance of sentences are affected by their processing difficulty, it is more likely for L2 learners' grammaticality judgments to be affected by processing costs, as L2 processing would suffer from even more serious lack of resource limitation. The present study addressed the role of processing difficulty in Korean EFL learners' grammaticality judgments for wh-island sentences.

## 1 Theoretical Background

In English, a wh-element cannot be extracted out of an embedded clause headed by another wh-phrase, which is called the wh-island constraint. However, island sentences starting with a *which-N* like (1a) sounds more acceptable than (1b). Likewise, island sentences with pronouns like (2a) are judged as better than those with referential nouns as in (2b)

- (1) a. ?? Which movie did Tom ask who liked?  
b. \*What did Tom ask who liked?
- (2) a. ?? What did you ask whether he liked?  
b. \*What did the editor ask whether the readers liked?

Processing-based accounts have attempted to explain such graded grammaticality as above in terms of processing difficulty: a sentence is unacceptable to the extent to which it is difficult to process. Hofmeister and Sag (2010) investigated the effect of processibility on English native speakers' acceptability judgment of complex sentences. In order to see if their judgments for island-

violating sentences are sensitive to their processing costs, Hofmeister and Sag measured the processing costs for different types of island constructions in terms of native English speakers' reaction time in critical regions (regions where filler-gap integration occurs) in a self-paced reading task. They also asked the same participants to rate the acceptability of the island constructions. They found that the participants' acceptability judgment ratings for island sentences decreased as their processing demands increased. Sprouse, Wager, and Philips (2012) further went on to question the relation between acceptability judgment and processing difficulty in terms of individual working memory capacity. Their results suggested that grammaticality is independent of individual working memory.

## 2 Method

A total of 98 Korean university students in three different proficiency levels participated in the grammaticality judgement task. In addition, 21 native speakers of English also participated in the task as a control group.

The test items included different types of wh-island constructions that varied in terms of two processing factors: (i) the amount of the intervening materials between the fronted wh-phrase and the gap inside the embedded clause and (ii) the properties of the fronted wh-phrase.

Table 1: 4 wh-island conditions

		Fronted wh-phrase	
		Which-N	What
Interveners	Pronouns	Which/pro	What/pro
	NPs	Which/NP	What/NP

In addition, some non-island wh-sentences were also included in the test items as controls.

The participants were asked to rate the grammaticality of the sentences on a 5-point Likert scale. The participants' acceptability rating were then entered into a two-way repeated-measures ANOVA (intervening materials\*fronted wh-phrase).

## 3 Results

The constructions containing a *which-N* as the fronted element were found to be rated as consistently better by both the NS and the L2 groups. There was a significant main effect of the fronted *wh*-element on L2 learners' ratings

( $F = 6.391, p < .05$ ), whereas there was no significant main effect of intervening materials ( $F = .325, p = .570$ ).

The NS control group judged the constructions containing pronoun interveners and those containing a *which-N* as better, and the main effects of the fronted wh-phrase and the intervening materials were both significant.

When analyzed by group, only the high-level learners showed significant main effect of the two processing factors: the *which-N* condition was judged as better than the *what* construction ( $F = 7.799, p < .05$ ), but the the NP condition received a higher rating than the pronoun condition ( $F = 5.406, p < .05$ ). The other two groups' judgments were much less sensitive to the wh-island effect, nor were affected by the processing factors.

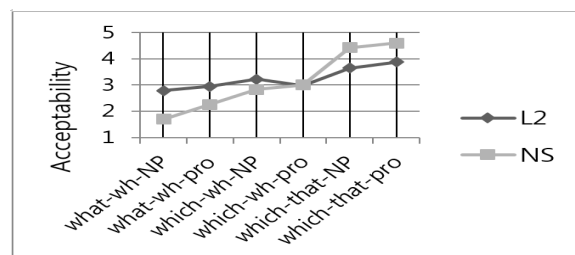


Figure 1: Acceptability ratings by condition

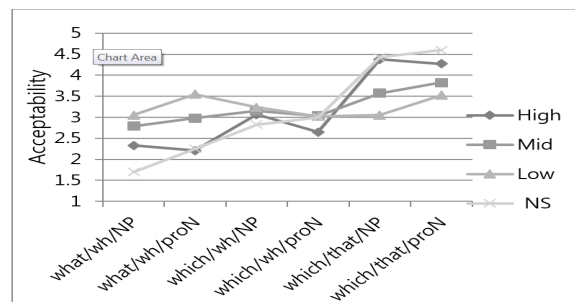


Figure 2: Acceptability ratings by level group

## 4 Conclusion

The findings that L2 participants preferred the *which-N* condition and the lexical NP condition suggest that L2 learners' acceptability judgments for wh-island sentences are affected by lexico-semantic information rather than mere processing costs.

## References

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