

# The Scope Principle in L2 Grammar

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## I. Introduction

The issue of whether the innate language faculty (Universal Grammar) is still operative to second language (L2) acquisition has been much debated since the early 1980s. One position is that principles constrained by UG control L2 grammars, based on the subadjacency principle (Bley-Vroman, Felix & Ioup, 1988; Schacher, 1989) and the binding principles (Cook, 1990; Hiramawa, 1990; Toratani, 1995). In contrast, the Full Transfer/ Full Access Hypothesis (FT/FA) by Schwartz and Sprouse (1996) claims that L2 learners use the entirety of their L1 grammar as the initial hypothesis for the L2 grammar. In spite of different approaches, most current theories of L2 acquisition have assumed that UG continues to operate in L2 acquisition at the final state of development, whereas first language (L1) plays a significant role at the initial state.

In this paper I investigate the availability of UG in Korean EFL learners' grammar in terms of the Scope Principle (May, 1985) with the use of the Truth Value Judgment Task. This principle, which provides an example of proposed principles of UG, is concerned with the scope interaction of a quantifier and a *wh*-phrase and *wh*-movement at LF. For example, May

(1985) observed that quantified expressions as in (1) and (2) are interpreted differently depending on the scope relation between a quantifier and a *wh*-phrase at LF.

- (1) Who has everything?
- (2) What does everyone have?

The sentence (1) allows only collective interpretation, whereas the sentence (2) allows both collective and distributive interpretation. In other words, the response to the sentence (1) can only be "Mary has everything (collective interpretation), whereas the response to the sentence (2) can be either "Everyone has a book (collective interpretation)" or "Mary has a book and a pen, Tom has three books, ..." (distributive interpretation)". In order to explain the unambiguity of (1) and the ambiguity of (2), let us take a look at their LF-representation, as shown in (3) and (4):

(3) *Who* has *everything*?

LF: [S' Who<sub>1</sub> [S ti [VP everything<sub>2</sub> [VP has t2 ]]]]



(4) *What* does *everyone* have?

LF: [S' What<sub>1</sub> [S everyone<sub>2</sub> [S does t2 [VP have ti ]]]]



The LF-movement shown in (3) and (4) leads to new c-command relations. These relations are treated in the Scope Principle, defined as follows:

(5) The Scope Principle:

A quantifier A has scope over a quantifier B in case A

c-commands a member of the chain containing B (Aoun & Li, 1989).

In (3), the *wh*-phrase *who* has scope over the universal quantifier *everything*, whereas *everything* does not scope over the *wh*-phrase *who* or the trace of *who* ( $t_1$ ). This scope relation allows only collective interpretation. Accordingly, the response to the example (1) can only be "Mary has everything (collective interpretation). In contrast, the example in (4) is scopally ambiguous in that it leads to two interpretations. First, like (3), the *wh*-phrase *what* has scope over the universal quantifier *everyone*. Accordingly, this scope relation makes collective interpretation available. In contrast with (3), the universal quantifier *everyone* has scope over the trace of *what* ( $t_1$ ), as shown in (4). This scope relation makes distributive interpretation available. Accordingly, the response to the example (2) can be either "Everyone has a book (collective interpretation)" or "Mary has a book and a pen, Tom has three books, ... (distributive interpretation)".

It is generally assumed that LF shares certain properties of syntactic rules mapping onto S-structure. Both levels have *wh*-movement to A'-position (COMP). At both levels, moves *wh*-elements leave the empty categories which create a certain relation with the *wh*-elements. May (1985) argues that *wh*-movement at LF originates in UG. Accordingly, if adult L2 successfully observe movement and scope relations in LF, namely, if they successfully interpret the ambiguity of the quantified sentences as in (2), then we might be able to conclude that the Scope Principle is operative in adult L2 grammar, thereby supporting that UG is available in L2 acquisition.

Based on that fact, it is predicted that children learning L1 will not need anything from their environment to determine the property of the Scope Principle. Namely, children learning L1 will have no problems in interpreting the ambiguous sentences collectively and distributively, supporting that the UG-based Scope Principle operates in L1 acquisition. In addition, L2 learners' availability of distributive interpretation can imply the existence of movement and scope relations at LF, which will support the accessibility of UG. Therefore, if Korean EFL learners successfully access the distributive interpretation in ambiguous sentences, then we will be able to conclude that the Scope Principle continues to operate in adult L2 grammar, showing that UG is available in L2 acquisition.

Let us now turn to the quantified sentences containing a *wh*-phrase in Korean to examine the feasibility of L1 transfer. Interestingly, the scope interaction of a quantifier and a *wh*-phrase in Korean is different from that in English. Korean quantified and *wh*- sentences are limited to the collective interpretation of an ambiguous sentences like *What does everyone have?*, regardless of their word orders at S-structure.

- (6) a. nuka            motunkes-ul        kachiko issni?  
       who-Nom everything-Acc    have-Q  
       'Who has everything?' (collective interpretation)
- b. motunsaram-i    mueos-ul        kachiko issni?  
       everyone-Nom what-Acc     have-Q  
       'What does everyone have?' (only collective  
       interpretation)

For instance, the response to the sentence in (6b), which allows both collective and distributive interpretations in English, is restricted to the collective interpretation in Korean. Hence, the fact that distributive interpretation does not exist in Korean grammar shows that knowledge of the Scope Principle is not available to Korean L1 grammar.

Given that fact, it would be interesting to examine whether Korean EFL learners will observe the UG-based Scope Principle. In addition, it would be interesting to see whether the advanced EFL learners will obey the Scope Principle, whereas the intermediate EFL learners will be affected by their L1 grammar. Therefore, the research questions can be formulated as follows:

- (i) Do adult L2 learners observe the UG-based Scope Principle which is not available in their L1? More specifically, do Korean EFL learners successfully interpret the ambiguity of the quantified sentences in (2)?
- (ii) Can the availability of UG at the final state and strong L1 effects at the initial state be confirmed by the experiment, through dividing Korean EFL learners into two groups, such as the advanced group and the intermediate group based on their TOEFL score?

## II. Experiment

In order to find out how Korean EFL learners interpret (un)ambiguous sentences containing *wh*-phrases and quantifiers, 40 Korean EFL learners and 10 native speakers of English (as a

control group) participated in this experiment. In addition, the Korean EFL participants were divided into two subgroups: the TOEFL group with scores over 600 (the TOEFL above 600 group) and the TOEFL group with scores below 520 (the TOEFL below 520 group). As in the experiment on Japanese by Miyamoto and Yamane (1996), I used the Truth Value Judgment Task (TVJT), which was originally developed by Crain and McKee (1985) in their study of L1 acquisition. This task involved eighteen pictures and two experimenters. The first experimenter explained a picture and asked the second experimenter a target question (i.e., (un)ambiguous sentences with *wh*-phrases and quantifiers). The second experimenter repeated the target question, then provided an answer. The participants were supposed to judge the truth value of the whole statement of the second experimenter.

Two types of sentence structures were investigated, repeated here as (7a) and (7b):

- (7) a. Who has everything? (unambiguous; collective interpretation)
- b. What does everyone have? (ambiguous; collective/distributive interpretations)

Table 1 summarizes six types of pattern generated from these two sentence structures:

Table 1  
Summary of Experimental Sentence Types

|        | Sentence Type | Interpretation | Statement |
|--------|---------------|----------------|-----------|
| Type 1 | (7a)          | Collective     | True      |
| Type 2 | (7a)          | Collective     | False     |
| Type 3 | (7a)          | Distributive   | False     |
| Type 4 | (7b)          | Collective     | True      |
| Type 5 | (7b)          | Collective     | False     |
| Type 6 | (7b)          | Distributive   | True      |

Each type was designed to see whether subjects can access one kind of interpretation except Type 3. Type 3 was generated from (7a), the unambiguous sentence *Who has everything?*, where the distributive interpretation is theoretically impossible.

The overall correct response rate is shown in Table 2:

Table 2  
Overall Correct Response Rate in Each Type

| Group        | Type 1<br>(n=3) | Type 2<br>(n=2) | Type 3<br>(n=3) | Type 4<br>(n=3) | Type 5<br>(n=2) | Type 6<br>(n=3) |
|--------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Advanced     | 100%<br>(60)    | 100%<br>(40)    | 93.3%<br>(56)   | 100%<br>(60)    | 100%<br>(40)    | 0.08%<br>(5)    |
| Intermediate | 100%<br>(60)    | 100%<br>(40)    | 95%<br>(57)     | 100%<br>(60)    | 100%<br>(40)    | 0.02%<br>(1)    |
| Controls     | 100%<br>(30)    | 100%<br>(20)    | 93.3%<br>(28)   | 100%<br>(30)    | 100%<br>(20)    | 93.3%<br>(28)   |

First, all of the groups (the advanced group, the intermediate group, and the control group) accepted true statements of the collective interpretation of the unambiguous question *who has everything* (Type 1) and rejected its false statements (Type 2) 100% of the time. Next, all of the

groups accepted true statements of the collective interpretations of the ambiguous sentence *What does everyone have?* (Type 4) and rejected false statements (Type 5) 100% of the time.

As mentioned above, Type 3 is associated with the distributive interpretation of the unambiguous sentences, where the distributive interpretation is theoretically impossible. All of the groups rejected false statements of the distributive interpretation (Type 3). On the other hand, the data from Type 6 is significantly different from the other types, as shown in Table 2. Both the advanced group and the intermediate group constantly rejected the distributive interpretation of the ambiguous sentence *What does everyone have?*, whereas the control group accepted the distributive interpretation (93.3% of the time).

### III. Summary and Discussion

Let me summarize what I have found. First, as for the unambiguous sentences like *Who has everything?*, both the Korean EFL subjects and the English native subjects accepted the collective interpretation and rejected the distributive interpretation. Therefore, it shows that like English native speakers, Korean EFL learners had no problem in interpreting the collective interpretation in unambiguous *wh-* and quantified sentences. Second, as for the ambiguous sentences like *What does everyone have?*, both collective and distributive interpretations were available to the English native subjects (L1 learners), whereas the collective interpretation was only available to the advanced EFL subjects as well as the intermediate EFL subjects. Therefore,



the results suggest that the UG-based Scope Principle does not seem to constrain Korean EFL learners' grammar, showing that UG might not be available at L2 acquisition. Instead of the availability of UG, I suggest that the Korean EFL learners' preference to collective interpretations in ambiguous sentences containing a quantifier and a *wh*-phrase might be due to strong L1 effects.

On the other hand, the results of my experiment are quite different from those in Miyamoto and Yamane (1996). They examined the availability of UG in Japanese L2 learners of English based on the Scope Principle, using the same method and similar materials as I did. What they found is that as for the ambiguous quantified sentences, Japanese EFL subjects accepted both collective (100%) and distributive (71.11%) interpretations, even though their L1 grammar does not allow the distributive interpretation in ambiguous sentences. Therefore, they conclude that the Scope Principle is available to adult L2 grammar, and that UG operates in L2 grammar. However, Miyamoto and Yamane did not provide an answer for the question of why Japanese EFL subjects significantly preferred the collective interpretation to the distributive interpretation in ambiguous sentences.

Finally, the remaining important question is why Japanese EFL learners observed the Scope Principle, whereas Korean EFL learners did not, in spite of the fact that both Japanese L1 grammar and Korean L1 grammar do not allow the distributive interpretation in ambiguous quantified sentences. This is an important question which I unfortunately cannot answer in this paper.

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