Acquiring English *Wh* Questions by Korean L1ers

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Lee, Eun Kyeong. **"Acquiring English *Wh* Questions by Korean L1ers."** *Studies in English Language & Literature* **43.4 (2017): 231-250.** This paper explored L2 acquisition pattern of English *Wh*-questions by Korean L1 learners(L1ers): how do Korean L1ers acquire *wh*-subject and *wh*-object respectively in simple clause and embedding clause and which syntactic properties are involved? Here are three hypotheses to raise the curiosities: First, Hypothesis 1 presents L2ers would master *wh*-subject more easily than *wh*-object, Next, as for Hypothesis 2 the embedding depth will be a vital factor in L2 learning. Lastly, Hypothesis 3 assumes that proportion on subject & object extraction is asymmetrical. Via the experiment of 150 L2ers Hypothesis 1, 2 and 3 seem persuadable: *wh*-subject's priority over *wh*-object, accessible complexity rating plus nearly balanced percentage on subject & object gap. Therefore, this paper verifies that both English L1ers and L2ers would hold a similar mastering status. (Jeonju University)

Key Words: *Wh* question, Korean L1er, L2 acquisition, complexity, asymmetry
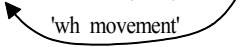
I. Introduction

Based on syntactic theories, English L2 acquisition for Korean learners(L1 learners, L1ers) has been considered general but sometimes curious to many researchers. Among a variety of topics involved, a *Wh*-question pattern is focused on to verify that subject-object master for Korean L1ers is parallel or unparallel compared to English L1ers' asymmetry: it is curious that English L1ers & L2ers

would follow the similar or different flow and what its subsequent reasons are.

Linguistic theories differ in their treatment of *wh* questions. In transformational grammar and its variants(e.g., N. Chomsky 1977, 1981), the *Wh* word originates in a sentence-internal position and is then moved to the beginning of a sentence, leaving behind a 'gap' in the direct object position. Hence a sentence such as *What should Lucy buy*? is associated with the two syntactic representations in (1).

(1) a. initial or underlying structure: Lucy should buy *what*.
   b. After movement :   What should Lucy buy _____?
                              'wh movement'

In other vein, *wh* questions are formed directly without an underlying structure or a movement operation. This way in (2) follows the categorial grammar(Bach 1981) and head-driven phrase structure grammar (Pollard, 1988). Starting from the bottom up, this feature is passed from VP originating from S category immediately. This S links the *wh*-word referring to the missing NP of the object position. The [-NP] feature is thus canceled, resulting in a final sentence where *what* works as a verb's object. As the [-NP] feature is 'passed up' the syntactic structure from the gap, this approach is mentioned as a feature-passing analysis.

(2)
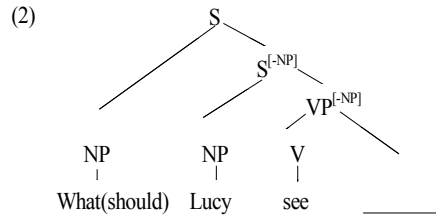
The chapter is organized as follows: Section II introduces the previous analysis of *wh*-question master in child language and its processing interpretation. In section III, this paper presents the experiment procedure including its subject and three

hypotheses toward Korean L1ers. Section IV explores its result and corresponsive discussion. Finally, section V summarizes the main conclusion.

II. Previous Linguistic Research

2.1 A *wh* Subject & Object Preference[1]

Stromwold (1995) examined *wh* questions of 12 English-speaking children to decide the relative order of emergence of subject and object *wh* words(e.g., *Who will help Sue*? vs. *Who will Sue help?*) The parents-child interactions began when the children were aged 1;2-2;6 and ended when they were 2;3-6;0.[2] He identified about 13,000 utterances using *who*, *what*, or *which,* leading somewhat unclear result in Table 1. Despite a clear preference for *what* object questions(OQ) over *what* subject questions(SQ), this reflects that inanimate subjects are rare in children's speech and

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[1] 14-month study of 7 children aged 22 months by L. Bloom, Merkin, and Wootten(1982:1091) reports the developmental order in (i). Early emergence of *where(*80%) and *what* is due to their relative frequency. The early predominance of *what* over *who* is why children know people around them than they are to know all the things they see. Also, Clancy(1989:337) says that the order in (i) is partly decided by cognitive factors in that *wh* words refer to objects and easily perceivable relation, while late acquisition(e.g., *when, why, how*) needs understanding of time and causality.

(i) Developmental Order for *wh* word:

     1) where & what (26 months)   2) who (28 months)
     3) how (33 months)   4) why (35 months)
     5) when & whose & which (after 36 months)

Accordingly, via the predictable hypotheses and actual experiment Kim & Park(2001) report that Korean learners(middle school students) aged 13 to 15 absolutely follow the above *wh*-words' developmental order of native speakers in (i). It means that as for L2 learners the mastering degree is individually different depending on types of *wh* words. Here, what is the matter is that Korean English textbooks do not reflect this acquisition status, confirming that this inconsistencies should be improved in written aids for the effective step-by-step *wh*-words learning.

[2] All figure present in the previous research of this paper means the real age of L1ers: 1;2, 1 year 2 months and 2;6, 2 years 6 months.

that even adults rarely use *what* SQ. Matters are also complex for *who* questions; children produced much more SQ than OQ(on average 63% of their *who* questions were SQ). On the other hand, Stromwold notes that 6 children made *who* OQ before *who* SQ by the overall SQ's frequency.

Table 1. Number of Children in Whom Particular Types of *wh* Questions Emerged First.

Type of Question	subject pattern	object pattern	both at the same time
wh questions overall	3	5	4
who question[a]	4	6	1
what question	0	8	4
which question[b]	0	5	1

a. One child produced no novel *who* subject or object questions

b. Only 6 children produced *which* questions

Do experimental studies provide a clearer picture of whether the acquisition device has a preference for *wh* SQ or OQ? By Tyack & Ingram(1977)'s study in Box 1 they found a strong preference for *wh* SQ, with performance on *wh* OQ slightly above 50% for all age groups. These results in Table 2 coincide closely with those obtained by Ervin-Tripp (1970). Comparable, albeit fragmentary, results are reported by Stewart(1976) for *which* N phrases in subject and object position. However, Stewart & Sinclair (1975) report the reverse preference, although their experiment involved older children(aged 5-9) and used the form *whom* rather than *who* for OQ. To complicate matters still further, Cairns and Hus (1978) report no significant difference in children's ability to comprehend *who* SQ and *who* OQ.

Box 1 & The study: Tyack & Ingram 1977

Subjects: 100 children divided into 5 groups consisting of 20 children each(10 boys and 10 girls) in the following age ranges: Group A: 3;0-3;5 Group B: 3;6-3;11 Group C: 4;0-4;5   Group D: 4;6-4;11   Group E: 5;0-5;5

Sentence Types: (6 tokens of each type)

   who subject: Who is helping the boy? & *who* object: Who is the boy helping ___?

Task: Children answered *wh* questions about the events depicted in a series of photographs.

Table 2 Results of the Comprehension Task(percentage correct)

Age Groups						
Type	A	B	C	D	E	Mean
Subject	72	82	72	90	83	80
Object	52	55	60	60	55	56

Box 2 & The Study: Wilhelm & Hanna 1992

Subjects: 11 children aged 3;4-4;4 (6 boys and 5 girls)

Sentence Types: (3 tokens of each type)

　　who subject: who is helping the boy? & *what* subject: What is pushing the boy?

　　who object: who is the boy helping ? & *what* object: What is the boy pushing ?

Task: Two experimenters presented the child with a picture(fig.7.1) depicting an action
　　involving two participants, one of whom was covered over. The child was then given
　　a prompt such as the following(for the *who* object sentence type): The experiment
　　began with the two experimenters modeling a series of examples; only one child
　　refused to participate or did not understand what was expected.

　　　　Experimenter I: The monkey is pushing someone, and I know who.

　　　　Experimenter II: Can you make up a question to find out who?

Turning now to the production of *wh* questions under experimental conditions, a
small study by Wilhelm & Hanna (1992) reports a preference for subject *wh* words
in Table 3. The younger children did poorly on both SQ and OQ, getting fewer than
half right. The older children did poorly on the OQ(with a success rate of only
50%) but performed relatively well on the SQ(70% correct). Interestingly, the most
common structural error involved production of a SQ when an OQ was called for
(21 of 120 responses). The reverse error was extremely rare (3 out of 120
responses). This strongly suggests a preference for SQ.

Table 3. Results of the Production Task (out of 30 tokens)

Age Groups		
Type	3;4-3;6(5 children)	4;1-4;7(5 children)
subject *wh*	12(40%)	21(70%)
object　*wh*	13(43.3%)	15(50%)

2.2 Syntactic Adequacy for Subject Question

Yoshinaga (1996)'study in Table 4 shows strong priority for *wh* SQ. These results are not attributed to the experience effects. Stromswold's(1995:32) analysis of 12 adult-to-child speech samples shows SQs are not the most frequent type of *who* question in all adults speech. Moreover, his results in Box 3 also showed a strong preference for *what* SQs over *what* OQs in children's scores; yet *what* SQs were far less frequent than *what* OQs in 12 adult speech samples by Stromswold.

Box 3 & The study: Yoshinana 1996

Subjects: 21 children(3 2-year-olds, 9 3-year-olds, 11 4-year-olds)
Sentence Types: (4 tokens of each type)
Who subject: Who is helping the boy? & Who object: Who is the boy helping ___?
Task: as in the Wilhelm and Hanna study

Table 4. Results of the Production Task(percentage correct)

	Age Groups			
Type	2-year-olds	3-year-olds	4-year-olds	Total
subject *wh*	100	97.2	88.6	93.5
object *wh*	8.3	41.7	79.6	55.4

As two patterns in (3), OQ differs from SQ in trying subject-verb inversion and in starting from the usual English SVO order. These OQ's properties complicate this pattern, making it a challenge for young learners to produce and understand.

(3) a. *Subject wh question*:

    Who   is helping Mary?

    subject   ↑   verb   object

       uninverted aux

b. *object wh question:*

    Who   is Mary   helping?

    object   ↑ subject verb

      inverted aux

Another possibility touches the 'distance' between the sentence-initial *wh* and its gap.

Regardless of how the *wh* word links the gap, the relation in *wh* OQ extends over both S and VP boundary: in (5) the categories blocking the *wh* word and its gap are underlined. So, a processing difficulty for adults increases with the distance between the gap and its 'filler'. Let us look at the rule in (4)

(4) A structure's complexity increases with the number of XP categories(S, VP, etc.) between a gap and the element with which it is associated.
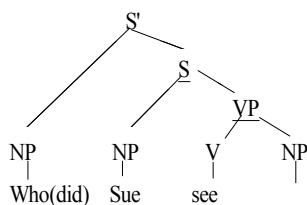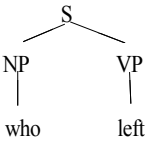
(5) *Movement analysis:*   *Feature-passing analysis*:
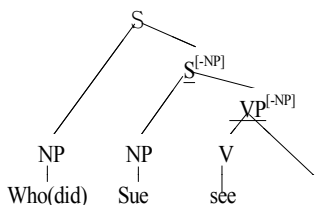

In movement, complexity relies on the number of XPs that the *wh* word moves over to the sentence-initial position. Reversely, non-movement complexity is by the number of times the [-NP] feature appears on an XP. In both theories, *wh* OQs in (5) have a complexity rating 2. In *wh* SQ, matters are complex in that it is unclear whether the *wh* word remains in subject position as (6a) or whether it moves vacuously to the left as (6b) (Chomsky1986a:48ff&Gazdar1981). On this formation, they have complexity rating of 1 or 0, less than 2 given to *wh* OQ.

(6) a. *Wh word stays in subject position, hence no gap. complexity rating=0:*

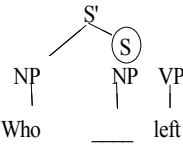   *Movement analysis*   *Feature-passing analysis*
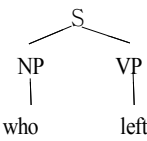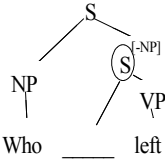

  b. *Wh word appears in pre-sentential position. Complexity rating=1:*

     Movement analysis   *Feature-passing analysis*

A survey(Box 4) by Hildebrand (1984,1987) shows whether this difference is cleared in the syntactic development; in Table 5 Type I is the easiest structure with 83% success rate for 4-year-olds and 94% for 6-year-olds. This was better than Type II(46% for 4-year-olds), which in turn was better than Type III(31%).

Table 5 Results of the Imitation Task(percentage correct) (from Hildebrand 1984:69)

Type	4-year-olds	6-year-olds	8-year-olds	10-year-olds
I	83	94	97	100
II	46	80	86	97
III	31	78	89	89

Box 4: The study: Hildebrand 1987

Subjects: 48 children: 12 4-years-olds, 12 6-year-olds, 12 8-year-olds, and 12 10-year-olds
Task: imitation of sentences containing gaps inside various types of categories. Test sentences
     were all roughly equal in length.
Sentence Types: Type I(4 tokens): *gap inside an S and a VP:*
     What [s did the little girl [vp hit ___ with the block today]]?
     Type II(4 tokens): *gap inside an S, a VP, and a PP:*
     What [s did the little boy [vp play [pp with ____] behind his mother]]?
     Type III (3 tokens): *gap inside an S, a VP, a NP and an PP*:
     What [s did the boy [vp read [np a story[pp about ____]] this morning]]?

Errors reported by Hildebrand are also revealing. Especially interesting is the fact that 84% of the children's errors on the Type II and III patterns involved restructuring as in (7) so that the gap no longer occurred within the PP, reducing the distance between it and the sentence-initial *wh*-word. Namely, Hildebrand's findings are consistent with the suggestion that the acquisition device is sensitive to the 'structural distance' between a gap and the matching *wh*-word.

(7) *Restructuring of Type II sentence:*
    What [s did he [VP play [PP with ___]]]? → What [s did he[VP play ___]]?
    complexity rating=3   complexity rating =2

2.3 Ambiguity & Subject-Object Asymmetry in Embedded Clause

The earliest extraction (8) hints that any embedded gaps are relatively difficult unlike matrix gaps. This evidential idea in Box 5 causes the potential ambiguity in (9), so that *when* could ask the saying time or the hurting time. Here, hearing the properly illustrated story, children linked *when* with the embedded verb(answer='when he fell from tree') or the matrix(answer='when he had bath').[3]

(8) What (d') you [this look like ___]?

(9) When did the boy say [he hurt himself __①__] __②__]?
      interpretation 1: *when* =the hurting time & interpretation 2: *when*= the saying time

Box 5 & The Study: de Villers, Roeper, and Vainikka 1990
___
Subjects: 25 children aged 3;7-6;11 (12 boys and 13 girls)
Sentence Types: wh *argument:* Who did the girl ask [to help]?
                    wh *adjunct*: When did the boy say [he hurt himself]?
Task: the children had to answer *wh* questions after hearing a story illustrated by pictures.

___
[3] "The boy loves to climb trees in forest. One day he slipped and fell to the ground. He picked himself up and went home. That night when he had bath, he found big bruise on this arm. He said to Dad, "I must have hurt myself when I fell this afternoon."*When did the boy say he hurt himself?*"

In *wh* argument, in (10) *wh* word can be interpreted as the object of the matrix verb *ask*(①) or embedded verb *help*(②). At this time, the subjects were present in this type of story.[4] If children respond by saying 'Bert', we infer that they treat *who* as object of *ask*. But if they answer by saying 'Kermit', we infer that they analyze *who* as object of *help*(the 'long-distance'(LD) interpretation).

(10) Who did the girl ask ___①__ [to help __②__]?

Table 6 Results of Long-Distance Study(%)(de Villiers, Roeper, and Vainikka 1990:270)

sentence type	LD Interpretation	Non-LD Interpretation
wh argument	32	68
wh adjunct	44	50

Table 6 summarizes the results of de Villiers et al.'s experiment; exceptionally, the LD response used to refer to the interpretation to associate the *wh* word with the embedded clause. Here, the first interesting finding was that the younger children gave the LD response more often than the older children. They suggest younger children may not realize that matrix verb *ask* permits an NP complement in the indirect question(as in *I asked [John] [to leave]*). Another interesting fact is to be a trend to link 'unassociated elements' with the most recently heard clause despite grammar violation. Namely, the young sensitive to the sentence length and complexity succumb to this strategy easily than the old. So, they have trouble remembering the matrix verb until they have finished processing the stimulus sentence.

The embedding depth has the contrast in (11). The two patterns are similar in inversion and word order, but they differ in the gap depth: it is split from the associated *wh* word by three XP nodes in (11a) and by four in (11b).

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[4] "Kermit and Cookie Monster were baking. Big Bird came in and wanted to help someone. He wanted to do his favorite kind of baking. but he didn't know who he should help. So he asked Bert if he could help Kermit. *Who did Big Bird ask to help?*"

(11) Subject gap & Object gap in an embedded clause:

    a. Who [$_s$ do you [$_{VP}$ think[$_s$ _____ saw Mary]]]? *complexity rating=3*

    b. Who [$_s$ do you [$_{VP}$ think [$_s$ Mary [$_{VP}$ saw ___]]]]? *complexity rating=4*

Stromswold (1995) notes that 11 of the 12 children produced biclausal questions of the *wh* object extraction and only one aged 5;0 led the *wh* subject extraction. Meanwhile, Yoshinaga (1996) used a production task of biclausal SQ and OQ from 17 children aged 3 and 4. The children were far more successful at producing SQ than OQ(75%vs.51%), meaning that embedding depth is quite picky. But it is unclear how this result is reconciled with Stromswold' findings of *wh* OQ extraction preference on children's spontaneous speech.[5]

III. Procedure & Hypothesis

3.1 Subject & Procedure

3.1.1 Subject Selection

The subject of this experiment targeting *Wh* SQ & OQ mastering degree is divided into the four differentiated groups(G1: low, G2 & G3: mid-level,[6] G4: upper-mid, G5: high-level), which are surveyed to check English L2 ability toward Korean L1ers. Each group includes 30 students (total 150) who are taking English class this semester as liberal arts in J University located in Jeonju. In detail, G1 consists of the second graders taking English basic conversation. G2 and G3,

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[5] Crain & Thornton (1991:333n.) report that as for '*that*-trace effect' test, children had less trouble producing subject gap(ungrammatical) rather than object gap(grammatical) in embedded clause; subject phrase extraction is blocked in case that the clause begins with the complementizer *that*. Actually, many complement clauses are infinitival(e.g., *We decided [. to visit Mary]*), in which case the embedded subject is not visually overt and therefore not able to be questioned.

[6] G2 and G3 as mid-level are simultaneously selected in that they are different graders with the same subject(Toeic Listening).

mid-level are the first and second graders attending TOEIC listening class as the required course. G4, upper-middle level, focuses on TOEIC reading class students going on this semester. G5, the highest level of advanced English grammar, is the third graders majoring in English Education. This division is to organically gauge each group's acquisition speed and its subsequent results according to the classified level.

3.1.2 Procedure

After syntactic identity of four items such as *wh*-word's position alteration, embedding complexity and subject & object asymmetry is explained from the experimenter, the main test with all 11 sentences is conducted about 10 minutes in order. English L2ers on class are asked to mark the *wh*-word's original position it occupies before it moves to the sentence-initial position. Especially, in the case of semantic ambiguity of *wh* argument & adjunct(item 3), the participants are subject to write down what it means in Korean simultaneously with the derived position being checked. This is to double-check how the syntactic property causing the interpretive confusion may influence semantic transparency.

Table 7. The target sentences of English *wh*-questions

Task: This test is to evaluate *wh*-word's understanding degree by looking into its extraction spot before it is moved over. On the basis of your syntactic intuition mark promptly the originally derived position of *wh*-word posited in the sentence-initial position among the given options(the item 1 through the item 4 below & especially item 3 is added with interpretation chance in Korean):		
Pilot Sample 1) Who _*t*_ is hitting you? & Who are you hitting _*t*_ ?		
Pilot Sample 2) What _*t*_ is touching you? & What are you touching _*t*_ ?		
Item 1	1) Who [$_S$ ① is [$_{VP}$ helping the boy ②]]?	
	2) Who [$_S$ ① is the boy [$_{VP}$ helping ②]]?	
	3) What [$_S$ ① is [$_{VP}$ pushing the boy ②]]?	

	4) What [s ① is the boy [vp pushing ②]]?
Item 2	5) What [s ① will Sue [vp say ②]]?
	6) What [s ① will Sue [vp talk ② [pp about ③]]]?[7]
	7) What [s ① will Sue [vp read ② [np book ③ [pp about ④]]]]?[8]
Item 3	8) Who [s did the girl [vp ask ① [to help ②]?
	☞ _____(Korean)
	9) When [s did the boy [vp say [he hurt himself ①] ②]?
	☞ _____(Korean)[9]
Item 4	10) Who [s do you [vp think ① [s ② saw Mary]]]?
	11) Who [s do you [vp think ① [s Mary [vp saw ②]]]?

3.2 Expected Hypothesis

Let us elaborate on three predictions this paper presents contingent on the section 2's linguistic sketch. It is the matter how much these conceivable assumptions as illustrated in (12) below would match the results yielded from English L2ers in the field. Meanwhile, both their consistencies(acceptance) and inconsistencies(rejection) involved in the viewpoint of the syntactic perspective will be most likely to be worthy of deserving if served as persuadable reasons.

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[7] Lee (2015,2016) insists that an individual verb's s-selection is quite demanding considering English L2ers should recognize that verb, *talk* bears intransitive property in advance. In case of *wh*-word's extraction spot, the same vein including a verb's fitted requirement is applied.

[8] The complexity degree in (i-iii) below is the same as the item 2 in Test Model, which shows that (i) means vt(*hit*)'s object, (ii) verb phrase(*play wit*h)'s object, (iii) preposition(*about*)'s object.

　　i) What [s did the little girl [vp hit___ with the block today]]?
　　ii) What [s did the little boy [vp play [with ____] behind his mother]]?
　　iii) What [s did the boy [vp read [np a story [pp about ____]] this morning]]?

[9] As for *wh*-question inversion(wh Aux S), Lee (2011) argues that L1ers(preschool children) had more success in argument *wh*-questions than in adjunct ones, that L1ers produced more inversion errors with why-questions compared to other *wh*-questions and this argument-adjunct asymmetry was not found in the input frequency data, thus approving the structure-based generative approach.

(12) Hypothesis 1: Subject *wh*-word can be acquired more easily than object *wh*-word

   Hypothesis 2: Complexity degree regarding embedding depth will be so conclusive in English L2 learning environment.

   Hypothesis 3: Subject & object asymmetry seems to be somewhat challengeable in terms of the syntactically extracted structure. (matrix & embedded clause)

IV. Result & Discussion

4.1. Total Figure

Overall correction rates in Table 8 are as follows: item 1(88+79+87+80=84%) > item 4(59+65=62%) > item 2(63+53+47=54%) > item 3(28+15+13+27=21%).[10] Based on this fact, here are three properties to notice: First, from item 1 subject *wh*-word is mastered more easily than object *wh*-word. Next, in terms of item 2 of complexity degree, it is shown that embedding depth is closely associated with the acquisition order. Lastly, subject & object asymmetrical status seems to be clear by half and half as seen in item 4 consisting of a main and an embedded clause.

Table 8

G*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8,①)&(8,②)		(9,①)&(9,②)		(10)	11
G1	22	20	24	22	22	14	10	11(6)	17(5)	17(3)	12(3)	16	18
G2	26	23	26	23	16	10	6	12(4)	16(4)	12(5)	16(6)	13	18
G3	26	23	24	24	17	13	17	15(9)	12(4)	12(4)	15(8)	16	15
G4	28	24	29	23	19	19	14	15(8)	14(6)	11(5)	17(7)	18	20
G5	30	28	27	28	21	23	24	17(15)	11(4)	5(3)	23(17)	25	27
M**	88%	79%	87%	80%	63%	53%	47%	47%(28)	47%(15)	38%(13)	55%(27)	59%	65%

In what follows, apart from item 1, 2 and 4, item 3 is very distinct by catching

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[10] This figure indicates an average of each item by dividing a total value into item's number.

the ambiguity induced by the extracted *wh*-word, not syntactic focus. Namely, rather than judge (un)grammaticality it is important for L2ers how exactly to match *wh*-word's original position and its subsequent meaning. As shown in Table 8(8① through 9②), there is considerable confusion between *wh*-word's derived position and its construction, which directly reflects inconsistencies that each interpretation rate (49%, 31%, 34%, 49% in order) is about 50% or far below in reference to its initial marking rate (47/28, 47/15, 38/13, 55/27). This is quite different from Table 6 in section 2 confirming that Non-LD interpretation is approached much more lightly than LD interpretation. Probably, it is obvious that many English L2ers do not establish the syntactic building and semantic understanding at the same time, compared with English L1ers;[11] from Table 7 direct semantic interpretation for L2ers seems to interrupt and vagues the syntactic distinction sensitive to the movement distance.

4.2 Hypothesis 1

The first hypothesis shows that subject *wh*-word is most likely to be mastered more easily compared to object *wh*-word. Table 9 below supports this assumption to some degree in that most groups would correct SQ with (1) & (3) lightly higher than OQ with (2) & (4) except for G3's (3) & (4) and G5's (3) & (4)(88+87=88% > 79+80=80%). This reflects that whereas the younger children performed very well on SQ over OQ, adult speech showed remarkable downturn on SQ in subsection 2.1(cf. Wilhelm & Hanna(1992), Stromswold 1995, Yoshinana 1996). In other words, as times go, L1ers made SQ and OQ's frequency gap narrow by the learned circumstances. Likewise, adult L2ers are under strong influence the word order in definition (3) and syntactic distance in tree diagram (5) given that the former would prioritize usual uninverted SVO English order and the latter consider the distance between subject or object *wh*-word's fronted position and its original trace. So, based

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[11] This argues that L2ers' grammatical base should be acquired firmly in advance.

on these real evidences Hypothesis 1 is accepted.

Table 9

G*	(1)	(2)	(3)	(4)
G1	22	20	24	22
G2	26	23	26	23
G3	26	23	24	24
G4	28	24	29	23
G5	30	28	27	28
M**12	88%	79%	87%	80%

4.3 Hypothesis 2

The second hypothesis is that complexity degree of embedding depth is very influential in English L2 learning process. Table 10 demonstrates that the correction rate of the sentence (5), (6) and (7) in item 2 is 63%, 53%, 47%, respectively, making confirmation that the more stacked embedding is, the more difficult the track of *wh*-word's original position is. For example, in case of basic and mid level, G1(22%,14%,10%), G2(16%,10%,6%) and G4(19%,19%,14%) show the gradual downgrading from the sentence 5 to 7 and G3, flexible numbering(17%,13%,17%). On the other hand, the highest level, G5 presents the relatively reverse effect that upgrading is emerging up(21%, 23%, 24%). It follows that G5 has already posited the advanced learning status about the grammatical source such as (in)transitivity verb plus preposition's intrinsic property. However, from the total average (63%, 53%, 47%) of Table 10 above, Hypothesis 2 is also considered resonable.

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12 G* and M** in all Tables(8 through 11) mark group and mean(average) value, respectively.

Table 10

G*	(5)	(6)	(7)
G1	22	14	10
G2	16	10	6
G3	17	13	17
G4	19	19	14
G5	21	23	24
M**	63%	53%	47%

4.4 Hypothesis 3

The last hypothesis this paper puts forward suggests that the extracted figure of a subject and object gap in embedded clause will be somewhat asymmetrical in spite of complexity rating.

Table 11

G*	(10)	(11)
G1	16	18
G2	13	18
G3	16	15
G4	18	20
G5	25	27
M**	59%	65%

Unlike other items, item 4 including a sentence 10 & 11 would bear complex structure holding two *wh*-gaps that one is an object position in a matrix transitive verb, *think* and the other is a subject or an object position in an embedded transitive verb, *saw*. In this same vein, this item is also related with the complex rating mentioned in item 2, assuming that the former is complexity rating, 3 and the latter, 4. However, more importantly, the above Table 11 presents an unexpectedly asymmetrical figure, considering that its overall correction rate is 59%(subject) to 65%(object) by 6%: each proportion in illustrated G1 through G5 is not lopsided and but nearly balanced (16:18, 13:18, 16:15, 18:20, 25:27). In other words, this

data is very similar to Stromswold(1995)'s object preference versus Yoshinaga(1996)'s subject preference discussed in the example (11) of subsection 2.3. Therefore, Hypothesis 3 is naturally accepted.

V. Conclusion

This paper examined the acquisition pattern of English w*h*-questions among korean L1ers, based on SQ & OQ's distribution polarity in a simple sentence as well as a complex sentence. Here are allegedly three predictions to solve the syntactic puzzles for English L2ers: Hypothesis 1 mentions that *wh* SQ can be acquired more comfortably than *wh* OQ, Hypothesis 2 points out that the embedding degree will have strong influence on L2 acquisition and in Hypothesis 3 an asymmetrical test in SQ & OQ is dealt with. Accordingly, via the real experiment it is argued that three hypotheses proved to be considerably reasonable: first, SQ's priority over OQ's is identified, next, the complexity rating on embedding is so decisive to judge the (un)acceptability and lastly, the gap percentage in an SQ and OQ's embedded clause is nearly asymmetrical by half and half. Therefore, this shows that item 1, item 4, item 2 and item 3 are mastered in order, which means that a grammatical factor(item 2 & item 3) of each verb would be applied more toughly than syntactic gap distance(item 1 & item 4) for L2ers. Ultimately, from three assumptions, this paper verifies that English L1ers and L2ers would bear almost the same acquisition process with only a different target.

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