【研究ノート】

Mapping and spellout problems in Japanese learners' English wh-questions

Hideki yokota

Gifu University of Medical Science

要旨

第二言語習得（SLA）においてWH移動に関して、これまで普遍文法（UG）の制約に基づくアプローチから、下接の原理（subjacency）の習得の他、多くの研究がなされてきた。White (1989)やSchwartz & Sprouse (1996)を始めとして、それらの研究の多くは、SLAにおいてもUGは機能すると主張している。

本研究では、初級日本人英語学習者（JLE）を対象に長距離wh疑問文の抽出タスクを行ったところ、wh コピー疑問文（例：Which do you think which flower does she like?）とともに、 What…wh… 構造（例：What do you think which flower she likes? ）やHow... wh…構造（例：How do you think what color she likes? ）が観察された。このようなデータは、先行研究によっても観察されているものだが、本研究では、copy theory of spellout（例：Bobaljik, 1995）とMissing Surface Inflection hypothesis (MSIH)（例：Lardiere , 1998a, 1998b）の両者をもとにGeneralized Spellout Deficitを仮定し、JLEによって産出されたデータの分析を試みる。そしてそれによって、次のような結論に達する：(i) UGは、SLAにおいても機能している。(ii) L2学習者の誤りは、wh連鎖(wh-chain)におけるどのwh-operatorのコピーに対し、どのように音声をマッピングするかという点において問題がある。

Keywords: SLA, wh-movement, copy operation, mapping problem, universal grammar

キーワード：第二言語習得、wh疑問文、コピー操作、マッピング問題、普遍文法

1. Introduction

Universal Grammar (UG) is assumed as part of an innate faculty of human language. It includes invariant principles and parameters allow for variation among languages. Consequently, in the Second Language literature, the availability of UG in L2 acquisition (SLA) has been debated in the UG framework. Though so far the

availability of UG has been supported by many previous works (e.g., White, 1989; Schwartz & Sprouse, 1996), there exist two distinct viewpoints: the *Missing Surface Inflection hypothesis* (MSIH) (e.g., Haznedar & Schwartz, 1997; Lardiere, 2000; Prévost & White, 2000) and the *Representational Deficit Hypothesis* (RDH) (e.g., Smith & Tsimpli, 1995; Tsimpli, 2003; Hawkins, 2005a) (for further details, see Section 2.3).

This paper reports on an elicited study designed to explore the range of structures produced by elementary Japanese Learners of English (JLEs) in contexts where native English speakers use long-distance (LD) wh-questions, resulting in that not only apparent *wh-copying* questions (e.g., *Which* do you think *which flower* does she like?), but *What...wh...* structures such as *What do you think which flower she likes?* and *How... wh...* structures such as *How do you think what color she likes?* were observed. Based on the *copy theory of spellout* (e.g., Bobaljik 1995; Brody 1995; Pesetsky 1997, 1998) and MSIH, I will assume the *Generalized Spellout Deficit* and argue that *what* and *how* at the initial position of wh-questions produced by JLEs are default values of wh-operator. As a consequence, examination of the syntax of the structures produced by the JLEs leads us to the two main conclusions that (i) UG principles constrain the syntactic representations formed by L2 learners and (ii) learners differ in where and how they spell out the copy in a wh-chain, which implies that L2 learners have mapping problem in SLA as pointed out in MSIH.

2. Theoretical Background

2.1 Wh-movement vs. wh-in-situ

Wh-questions in English (in non-echoic contexts) require obligatory movement of a wh-expression such as *what, which book, whose* to the front of the interrogative clause as in (1):

(1) a. *What*$_i$ is she doing t_i?

b. *She is doing *what*? (ungrammatical as a non-echoic question)

There are two movement operations which take place in an English wh-question like (1a). One is movement of *what* to the front of the sentence, and the other is movement

of the auxiliary *is* in front of the subject *she*. These two movement operations are traditionally termed *wh-movement* and *subject-auxiliary inversion* respectively. LD wh-questions in English also require a wh-phrase to move to the front of the main clause as in (2a). If not, the outcome is an ungrammatical sentence as in (2b).

(2) a. *What* do you think John bought?
b. *Do you think John bought *what*?

In contrast, wh-fronting is optional in Japanese – both in short-distance questions as in (3), and in LD questions as in (4):

(3) a. kanojo-wa *nani*-o kaimashita ka
she-Top *what*-Acc bought Q
b. *nani*-o kanojo-wa kaimashita ka
what-Acc she-Top bought Q

(4) a. Anata-wa kanojo-ga *nani*-o katta to omoimasu-ka
you-Top she-Nom *what*-Acc bought C think Q
b. *nani*-o anata-wa kanojo-ga katta to omoimasu-ka
what-Acc you-Top she-Nom bought C think Q

In order to account for the availability of both types of Japanese wh-questions, wh-fronting and wh-in-situ, a number of analyses have been proposed such as the same overt operation of wh-movement to spec-CP as in English (e.g., Takahashi, 1993), covert movement to spec-CP at LF (logical form)[1] (e.g., Nishigauchi, 1999), movement of a null wh-operator to the edge of CP in the narrow syntax (e.g., Watanabe, 1992), and movement of a wh-expression to spec-TP (e.g., Miyagawa, 2005).

The overall conclusion to be drawn from the discussion here is that whereas English has overt wh-movement to spec-CP, the question of whether Japanese has a parallel wh-movement operation or not is a matter of ongoing debate. However an interesting account for wh-questions has been proposed. Let us see the copy theory of spellout in the next subsection.

2.2 Copy theory of spellout

The *copy theory of movement* was developed by Chomsky (e.g., 1998, 2001) suggested that moved constituents leave behind a copy of themselves. In English, only the highest copy in a movement chain receives an overt spellout as illustrated in (5).

(5) [CP *What* [C *is*+Q] [TP she ~~is~~ doing ~~what~~]]

Under the *copy theory of spellout* (e.g., Bobaljik 1995, 2002; Brody 1995; Pesetsky 1997, 1998), UG allows parameterized choices regarding which copies in a movement chain get spelled out overtly. In other words, it is determined which of copies is phonetically realized (Reintges, LeSourd, and Chung, 2006). Language-specific phonological constraints determine that the copy privileged for pronunciation is the highest in languages such as English (Nissenbaum, 2000) or the lowest in languages like Japanese (e.g., Brody, 1995; Pesetsky, 1997, 1998; Bobaljik, 2002).

Thus the distinction between overt and covert movement is the matter of which copy is pronounced. The assumption on copy implies that L2 learners will mix up where they should pronounce a copy (and how many copies) in wh-questions in SLA, if UG is activating in interlanguage grammar. Following these lines, in the case of JLEs, it is predicted that they will be confused about which copy should be pronounced in wh-questions in English (Radford & Yokota 2006).

2.3. MSIH & RDH in SLA

Let us move on to L2 literature and look at recent two models of SLA developed within the minimalist framework of Chomsky (1995).

The *Missing Surface Inflection Hypothesis* (MSIH) (e.g., Haznedar & Schwartz, 1997; Lardiere, 1998a, 1998b, 2000; Prévost & White, 2000) suggested that the lack of or the variable use of surface forms in L2 grammar cannot be necessarily taken as the evidence leading the conclusion that UG does not operate in SLA, but rather it should be considered that the variation of forms in interlanguage reflects a mapping problem from the abstract features to the surface morphological forms. Furthermore MSIH claimed that L2 learners make use of 'default' forms (verbs lacking overt inflection) in mapping morphological forms onto abstract features (tense or agreement). On the

other hand, Tsimpli (2003) proposed a (*Partial Access*) model called the *Representational Deficit Hypothesis* (RDH) (e.g., Smith & Tsimpli, 1995; Hawkins, 2005a, b). Under RDH, any uninterpretable features which are not selected in the L1 grammar will not be available for post-critical-period L2 learners to utilize in their morphosyntactic representations. Hawkins & Chan (1997), Hawkins (2005a) and Hawkins & Hattori (2006) analyzed the acquisition of wh-movement in SLA on the basis of RDH, concluding that wh-movement in JLEs' interlanguage grammar is driven by a different feature from an uninterpretable wh-feature.

It should be noted here that MSIH has not argued about L2 acquisition of wh-questions so far. Since, in Haznedar & Schwartz (1997), Lardiere (1998a, 1998b, 2000) and Prévost & White (2000), their participants' problems essentially lie in spelling out tense and agreement, MSIH itself would not predict any errors on wh-questions. However Hawkins (2005b, p24) states, "The MSIH/RDH debate is a sign of progress in understanding the nature of SLA. The concepts and constructs to which both accounts appeal are independently motivated. The fact that they are shared by both theories allows meaningful comparison of evidence supporting, or inconsistent with, each." Following this concept in SLA research, one can generalize MSIH beyond what Lardiere (1998a, 1998b, 2000) claimed (on tense and agreement) and assume that, in other abstract features as well as tense and agreement features, L2 learners can have mapping problems. Andrew Radford (personal communication) suggested the *Generalized Spellout Deficit* in (6);

(6) *Generalized Spellout Deficit*:

L2 learners have problems with spellout

– i.e. with what gets spelled out where and how

Given the *Generalized Spellout Deficit* (GSD) in (6), we can predict that, in English wh-questions, L2 learners will be confused about which copy in a wh-chain should be spelled out where and how. In this respect, GSD is compatible with the *copy theory of spellout*. Additionally, GSD based on MSIH can envisage the use of 'default' forms by L2 learners in English wh-questions.

3. Existing Studies in SLA

3.1 Wakabayashi & Okawara (2003)

Wakabayashi & Okawara (2003) administered a LD *wh*-question Elicited Production Task (EPT) to 16 Japanese university students learning English. Their test procedure was almost the same as Crain & Thornton (1998). They devised a 'guessing game' which asked the participants to elicit information from a colored puppet such as Mr. Blue and Mr. Yellow. For example, the participants were required to ask Mr. Blue what he thought was in the bag. Their target sentences were the following in (7).

(7) a. *What* do you think is in the bag?
b. *Who* do you think loved Mr. Yellow?
c. *What* do you think Mr. Yellow eats?
d. *Who* do you think Mr. Yellow loved?

The participants produced not only target-like structures as in (7) but also some types of errors as in (8):

(8) a. *What* do you think *who* loved Mr. Yellow?
b. *How* do you think *who* bought this pen?
c. *Who* do you think *did* Mr. Yellow kiss?
d. *What* do you think *does* Yellow eat?
e. Do you think *what* is in the bag?
f. Do you think *who* Mr. Yellow loved?
g. *What* do you think *who* did he love?
h. *What* do you think *which snack* will he eat?

Wakabayashi & Okawara categorized the sentences in (8) into four types: 'partial movement' (following Crain & Thornton 1998) as in (8a,b), dummy do/auxiliary raising as in (8c,d), 'no top wh' as in (8e,f), and 'partial movement + over-insertion' as in (8g, h). They accounted for the results based on 'strength (weak [+wh] vs. strong [+wh])', 'economy operation' and 'the lack of the relevant items'. The details of their account will not be discussed here (see Wakabayashi & Okawara 2003 pp.234-239), since

Chomsky (2001) has eliminated the account for wh-movement based on feature strength (strong/weak).

3.2 Yamane (2003)

Yamane (2003) administered EPT[2], to test the acquisition of English *wh*-questions by JLEs. Two different groups of 30 elementary students 18-24 years of age were tested on their ability to produce sentences which would involve LD wh-movement and concomitant pied-piping of subordinate material. In the EPT, her participants were asked to translate written Japanese sentences into written English sentences. The following range of translation types were produced by the participants in the results (Yamane 2003, p.53):

(9) Types of sentence produced by participants in Yamane's translation task

a. Full wh-movement: utterances with the full wh-phrase in matrix spec-CP
   e.g., *Whose present do you think he likes best?*

b. Noun stranding: utterances with the wh-word in matrix spec-CP, stranding the modified N
   e.g., *Whose do you think he likes present best/Whose do you think present he likes best?*

c. Noun stranding with a determiner-like element modifying the stranded N
   e.g., *Whose do you think the present he likes best?*

d. Partial wh-movement: utterances with a WH scope marker in matrix spec-CP and the wh-phrase in embedded spec-CP
   e.g., *What do you think whose present he likes best?*

e. Partial wh-movement with subject-auxiliary inversion in the embedded clause
   e.g., *What do you think whose present does he like best?*

f. Wh-copy: utterances with the wh-phrase occurring in both matrix and embedded spec-CPs
   e.g., *Whose present do you think whose present he likes best?*

g. Ø in matrix spec-CP: utterances with no wh-expression in the matrix clause, and the wh-phrase in the embedded spec-CP
   e.g., *Do you think whose present he likes best?*

h. Double questions: utterances consisting of two questions

e.g., *Whose present does he like best, do you think?*

Yamane argued that some non-native wh-questions produced by her participants are parallel to types of structure found in L1 grammars and the other structures correspondent to adult grammars of other languages, reaching her conclusion that all the relevant types of data in her study are constrained by UG.

Thus various types of LD wh-questions were reported in SLA. If GSD based on the copy theory of spellout and MSIH is on the right track, we will find mapping errors on copying operation of wh-questions in SLA. From GSD and the previous L2 studies, the following research questions will arise:

(10) a. Will JLEs make mapping errors on their wh-questions in L2?

b. Will JLEs' errors on wh-questions be constrained by UG?

4. The Study

4.1 Participants

In this section, I report on an experimental study of LD wh-pied-piping[3] (Ross 1986), which involved administering an elicited production task to 39 Japanese high school students aged 15-16 years who had been studying English for a 3-year and 3-month period. Their English was assessed as being at *elementary* level through Global Test of English Communication (GTEC) which can be converted to TOEFL scores algorithmically. They achieved a mean TOEFL score of 427 (the range being from a minimum 394 to a maximum 472).

4.2 Experimental Procedure

The aim of this study was to see what range of structures the participants would produce in contexts where native speakers would use structures like (11i-iv) which involve LD wh-movement with pied-piping of subordinate material.

(11) i. *What color* do you think she likes?

ii. *Which flower* do you think she likes?

iii. *How many flowers* do you think I should buy?

iv. *Whose MD walkman* do you know she uses?

The procedure used to elicit the target sentences are given in (12)[4]. Instructions were given to the participants in writing in Japanese, and have been translated into English for convenience. A similar elicitation procedure was used for all the target sentences in (11).

(12) One day, Taro introduced Hanako to John. John fell for her and could not get her out of his mind. So he decided to ask Taro about Hanako. Say what question John asked (using *think*) which led to Taro's reply:

John: .....? Taro: I think she likes blue.

4.3 Results and Discussion

Since my concern here is with wh-movement, I will not comment in any detail on other types of incidental error such as omission of third person singular *-s* in the present tense made by participants in this study.

Around a third of the overall responses produced by participants were LD questions showing native-like wh-movement as in Table 1. *Number* indicates the raw number of the 39 respondents who gave the relevant response:

Table 1: LD wh-questions with pied-piping of subordinate material

Type	Subtype/Sentence	Number
i	(a) *What color/s* do you think she like/s?	11
	(b) *What color* do you think to Hanako like?	1
	(c) *What* do you think her favorite color?	1
ii	(a) *Which flower/s* do you think she like/s?	11
	(b) *Which flower* do you think to Hanako like?	1
iii	(a) *How many (flower/s)* do you think I should buy?	9
	(b) *How many* do you think I should buy *it*?	5

iv	Whose (MD) walkman do you know she use/s?	7

The data in Table 1 suggest that the learners are able to produced LD wh-questions with concomitant pied-piping.

In addition to target-like sentences, the participants produced several types of structures. The first type of sentence produced by the participants involve structures like those in Table 2 below, seemingly comprising a matrix clause followed by an interrogative clause showing movement of a wh-phrase to the front of the complement clause.

Table 2: Wh-movement to front of embedded clause

Type	Subtype/Sentence	Number
i	(a) Do you think *what color* she like?	1
ii	(a) Do you think *which flower* she like?	1
	(b) Do you think *which flower* does Hanako like?	1
iii	(b) Do you think *how many flowers* should I buy (for her)?	2
iv	(a) Do you know *whose (MD) walkman* she uses/use?	3
	(b) Do you know *whose (MD) walkman* does/did she use?	4
	(c) I wonder *whose walkman* it is.	1

This type of sentences are potentially parallel structures like Wakabayashi & Okawara's (2003) 'no top wh' as in (8e, f) and 'Ø in matrix spec-CP' (Yamane, 2003) as in (9g). Given GSD discussed in Section 2.3., the sentences in Table 2 will have a representation illustrated as in (12).

(13) [CP ~~what color~~ [C Do+Q] you think [CP *what color* [C ø] she likes]]

A further type of sentence structure produced by 3 of the participants in this study were *wh-splitting* structures (see the table below) containing a wh-quantifier positioned at the front of the matrix clause, with a modified noun expression stranded in the complement clause.

Table 3: Wh-splitting structures (matrix wh-word + modified nominal in complement clause)

Type	Subtype/Sentence	Number
i	(a) *What* do you think *color* she like/s?	2
	(b) *What* do you think that she likes *color* the best?	1
ii	(a) *Which* do you think *flower* she likes?	1
iii	(a) *Whose* do you know *MD walkman* she uses?	1

These sentences are parallel structures like (9b) 'noun stranding' (Yamane 2003). Thornton (1995) deals with similar L1 sentences by positing that learners who produce such structures are at an *Optional Pied-Piping* stage during which C attracts a wh-word to become its specifier and optionally pied-pipes subordinate material along with it. As shown in Section 2.3, under GSD, UG allows parameterized choices regarding which copies in a movement chain get spelled out overtly. On this view, all the sentences in Table 3 would involve movement of the whole wh-phrase *what color/which flower/whose MD walkman* to spec-CP position in the embedded clause, followed by movement of the wh-word on its own to spec-CP position at the front of the matrix clause, so that (ia) in Table 3 would have the structure shown in simplified form in (14):

(14) [CP *What* ~~color~~ [C do] you think [CP ~~what~~ *color* [C ø] she likes ~~what~~ ~~color~~]]]]

As for (ib) in Table 3, the structure will be illustrated as in (15):

(15) [CP *What* ~~color~~ [C do] you think [CP ~~what~~ ~~*color*~~ [C that] she likes ~~what~~ color the best]]]]

A further type of structure produced by participants in this study is *wh-doubling* structure (called 'partial wh-movement' in Wakabayashi & Okawara 2003 and Yamane 2003) like those in Table 4:

Table 4: Wh-doubling

No.	Subtype/Sentence	Number
i	(a) *What* do you think *what color* she likes?	3
	(b) *What* do you think *what/which* color does she like?	2
	What do you think *what* is the color she likes?	1
	(c) *What* do you think about *what color* she likes?	1
	(d) *How* do you think *what color* she likes?	2
	(e) *How* do you think that *what color* she likes?	1
ii	(a) *What* do you think *which flower* she likes?	3
	(b) *What* do you think *which flower* does she like?	2
	(c) *What* do you think about *which flower* she likes?	1
	(d) *How* do you think *which (flower)* she likes?	2
	(e) *How* do you think that *which flower* she likes?	1
	(f) *Which* do you think *which flower* does she like?	1
iii	(a) *What* do you think *how many flowers* I should buy?	3
	(b) *What* do you think *how many flowers* does I should buy?	1
	(c) *What* do you think about *how many flowers* I should buy?	1
	(d) *How* do you think *how many them/flowers* I should buy?	2
	(e) *How* do you think that *how many flowers* I should buy?	1
iv	(a) *What* do you know (that) *whose walkman* she uses?	2
	(b) *What* do you know *whose MD walkman* is that?	1
	(c) *How* do you know *whose walkman* she use/uses?	2

Some of the structures in Table 4 might appear to involve a form of *wh-copying* under which an overt copy of the wh-operator appears at the beginning of both the matrix clause and the complement clause, so giving rise to *which...which...* questions like (16a) below, *what...what...* questions like (16b), and *how...how...*questions like (16c):

(16) a. *Which* do you think *which flower* does she like?

b. *What* do you think *what color* does she like?

c. *How* do you think that *how many flowers* I should buy?[5]

It might be then supposed that the errors made by the relevant learners are to spell out wh-phrases on the edge of both clauses, rather than just on the edge of the main-clause (Radford & Yokota 2006).

However the four participants in this study who produced *what...what* questions (Participants 2, 6, 25 and 29) also produced *what...which* questions, and two of them (Participants 2 and 25) also produced *what...how* and *what...whose* questions. Likewise, the three participants who produced *how...how* questions (Participants 4, 12 and 15) also produced *how...what* and *how...which* questions, and two of them (Participants 12 and 15) also produced *how...whose* questions. The more general picture painted by the relevant distributional facts is that wh-doubling involves, not wh-copying, but rather the production of the two (more general) different types of wh-doubling structure shown in schematic form below:

(17) a. *What...wh...*

b. *How... wh...*

(17a) represents a structure containing *what* at the beginning of the matrix clause and a wh-expression (containing *what, which*, *how* or *whose*) at the beginning of the complement clause, and (17b) a structure containing *how* at the beginning of the matrix clause and a wh-expression (containing *how, what, which* or *whose*) at the beginning of the embedded clause[6]. At this point, it is implausible to account for these structures based on only the copy theory of spell-out.

One possible way round this problem is to treat *what* and *how* at the beginning of the matrix clause as default values of wh-operator. MSIH suggested that L2 learners utilize 'default' forms in mapping morphological forms onto the relevant features. Assuming *what* and *how* are *default values* of wh-operator, L2 learners will make use of either of them at the sentence initial position of LD wh-questions such as '*What* do you think who John met yesterday?' Hence, GSD, which is based on MSIH and the copy theory of spellout, can predict that JLEs' L2 grammar will produce mapping errors between wh-operators and wh-words/phrases. Additionally MSIH and the copy theory of spellout maintain that UG is fully available in L2 grammar. Hence, all the structures produced by the L2 learners in the study conform to UG principles: this

seems to provide us with evidence that SLA is constrained by UG.

5. Conclusion

Thus this paper reported on an elicited study designed to explore the range of structures produced by elementary JLEs in contexts where native English speakers use LD wh-questions. The results showed that the participants produced 'no top wh' structures (e.g., *Do you think what color she like?*) in Table 2 and wh-splitting structures (e.g., *What do you think color she likes?*) in Table 3, wh-doubling errors in Table 4 including apparent *wh-copying* questions (e.g., *Which* do you think *which flower* does she like?), *What...wh...* structures such as *What do you think which flower she likes?* and *How... wh...* structures such as *How do you think what color she likes?*.

Under GSD in (6), it would correctly predict all these L2 wh-movement errors if these are taken to result from correct wh-movement, and spelling out the wrong copy in a wh-chain. GSD following the MSIH[7] also implies that it will be plausible to take *what* and *how* at the initial position of *What...wh...* structures and *How... wh...* structures produced by JLEs as default values of wh-operator. Additionally it can envisage even target-like structures in Table 1, in which JLEs successfully map the right wh-words onto wh-operators and spellout them. Along the same lines, the relevant data, excepting *double questions* in (9h),[8] in Wakabayashi & Okawara (2003) and Yamane (2003) can be explained by GSD.

As a consequence, from the examination of the syntax of the structures produced by the JLEs, two conclusions are drawn: firstly that UG principles constrain the syntactic representations formed by L2 learners; secondly that learners differ in which position(s) and how they spell out the copy in a wh-chain, which imply that L2 learners have mapping problems in SLA as pointed out in Lardiere (1998a, 1998b, 2000).

Acknowledgement

Part of this paper was presented at the J-SLA summer seminar 2005. I would like to thank the audience there for their valuable comments. I am grateful to Andrew Radford and three anonymous reviewers for helpful comments and suggestions on an earlier version of this paper.

Notes

[1] This is a *covert* movement after syntactic operations have taken place in wh-in-situ languages such as Chinese.

[2] Yamane (2003) designed two sets of GJT to 54 college students to 30 adult Japanese learners of English (age 18-24). However those tests will not be discussed, since the production data by JLEs are focused on.

[3] I used wh-pied-piping questions expecting that they will clearly show the property of wh-phrase copying. However this study will not directly argue Left Branch Condition/LBC violation.

[4] Since this EPT was a preliminary experiment for Radford & Yokota (2006), the procedure of this study was almost the same as their study.

[5] This sentence involves a landing sites' problem, which requires further research.

[6] *What* and *How* at the beginning of the matrix clause are called 'scope-marker wh-words' in Thornton & Crain's (1994) terminology. However, it is not clear why only *what* and *how* appear as scope-markers.

[7] The RDH cannot predict the bias between the frequent use of 'what' and 'how' and the other wh-words as illustrated in Table 4. In other words, given the RDH, various wh-words should be randomly used at the initial position of the LD questions.

[8] (8h) has two independent questions.

References

Bobaljik, J. (1995). *Morphosyntax: The Syntax of Verbal Inflection*, PhD diss., MIT.

Bobaljik, J. (2002). A-chains at the PF-interface: Copies and "covert" movement. *Natural Language and Linguistic Theory* 20, 197-267.

Brody, M. (1995). *A Radically Minimalist Theory*, MIT Press, Cambridge Mass.

Chomsky, N. (1995). *The Minimalist Program*, MIT Press, Cambridge Mass.

Chomsky, N. (1998) *Minimalist Inquiries: The Framework*, MIT Occasional Papers in Linguistics, no 15 (also published in R. Martin, D. Michaels and J Uriagereka (eds) *Step by Step: Essays on Minimalism in Honor of Howard Lasnik*, MIT Press, Cambridge Mass., pp. 89-155).

Chomsky, N. (2001). *Beyond Explanatory Adequacy*, unpublished manuscript, MIT.

Crain, S., & Thornton, R. (1998). Investigations in Universal Grammar: A guide to experiments on the acquisition of syntax and semantics. Cambridge, MA: MIT Press.

Hawkins, R. (2005a). Revisiting wh-movement: the availability of an uninterpretable [wh] feature in interlanguage grammars. In *Proceedings of the 7th Generative Approaches to Second Language Acquisition Conference* (GASLA 2004), ed L. Dekydtspotter et al, Somerville, MA: Cascadilla Proceedings Project. 124-137.

Hawkins, R. (2005b). Explaining Full and Partial Success in the Acquisition of Second Language Grammatical Properties. *Second Language* Vol.4, 7-25.

Hawkins & Chan, C. (1997). The partial availability of Universal Grammar in second language acquisition: the 'failed functional features hypothesis'. *Second Language Research* 13, 187-226.

Hawkins. & Hattori, H. (2006). Interpretation of English multiple wh-questions by Japanese speakers: a missing uninterpretable feature account. *Second Language Research* 22, 269-301.

Haznedar, B & Schwartz, B D. (1997). Are there optional infinitives in child L2 acquisition?. In Hughes, E., Hughes, M. & Greenhill, A. (eds) *Proceedings of the 21st annual Boston University conference on language development.* Somerville, MA: Cascadilla Press.

Lardiere, D. (1998a). Case and tense in the 'fossilized' steady state. *Second Language Research* 14, 1-26.

Lardiere, D. (1998b). Dissociating syntax from morphology in a divergent L2 end-state grammar. *Second Language Research* 14, 359-375.

Lardiere, D. (2000). Mapping features and forms in second language acquisition. In Second language acquisition and linguistic theory, J. Archibald (ed). Malden, MA: Blackwell.

Miyagawa, S. (2005). On the EPP. *Proceedings of the EPP/Phase Workshop*, MIT Working Papers in Linguistics.

Nissenbaum, J W. (2000). *Investigations of covert phrase movement.* Doctoral dissertation, MIT.

Nishigauchi, T. (1999). Quantification and *wh*-constructions. In Tsujimura, N. ed. *A Handbook of Japanese Linguistics.* Blackwell, New York, 268-296.

Pesetsky, D. (1997) Optimality Theory and Syntax: Movement and Pronunciation, in D. Archangeli & D.T. Langendoen (eds) *Optimality Theory: An Overview*, Blackwell, Oxford, 134-170.

Pesetsky, D. (1998) Some optimality principles of sentence pronunciation, In P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis & D. Pesetsky (eds) *Is the Best Good Enough?* MIT Press, Cambridge, 337-383.

Prévost, P. & White, L. (2000). Missing surface inflection or impairment in second language acquisition? Evidence from tense and agreement. *Second Language*

Research 16, 103-133.

Radford, A & Yokota, H. (2006) UG-constrained wh-movement in Japanese learners' English questions. *Second Language* Vol.5, 61 – 94.

Reintges, C.H, LeSourd P. and Chung, S. (2006). Movement, Wh-Agreement, and Apparent Wh-in-situ. In *Wh-Movement: Moving On*, edited by Lisa Lai-Shen Cheng and Norbert Corver. Cambridge, Mass.: MIT Press.

Ross, J.R. (1986) *Infinite Syntax!* Ablex Publishing Corporation, Norwood, New Jersey.

Schwartz, B. & Sprouse, R. (1996). L2 cognitive states and the full transfer/full access model' *Second Language Research* 12, 20-32.

Smith, N & Tsimpli, I-M. (1995). *The mind of a savant: language learning and modularity*. Oxford:Blackwell.

Takahashi, D. (1993). Movement of wh-phrases in Japanese. Natural Language and Linguistics Theory 11, 655-678.

Thornton, R. (1995) Referentiality and *Wh*-movement in Child English: Juvenile *D-Link*uency, *Language Acquisition* 4, 139-175.

Thornton, R. & Crain, S. (1994). Successful cyclic movement, in Hoekstra & Schwartz (eds), 215-252.

Tsimpli, I-M. (2003). Features in language development. Paper presented at the Eurosla conference, University of Edinburgh.

Wakabayashi, S. & Okawara, I. (2003). Japanese learners' errors in long distance wh questions. In Shigenori Wakabayashi (Ed.). *Generative Approaches to the Acquisition of English by Native Speakers of Japanese*, 214-245, Berlin: Mouton de Gruyter.

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

White, L. (1989). *Universal grammar and second language acquisition*. John Benjamins.

Yamane, M. (2003). *On the Interaction of First Language Transfer and Universal Grammar in Adult Second Language Acquisition: Wh-Movement in L1-Japanese/L2-English Interlanguage*, PhD diss., University of Connecticut, Storrs.