The Acquisition of the Surface Morphological Properties of Relative Clauses and *Wh*-questions in English by Adult Japanese Speakers

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Abstract

The purpose of the present study is to investigate the acquisition of the surface morphological properties of relative clauses and *wh*-questions in English by adult Japanese-speaking learners of English as a Foreign Language (EFL). The differences in the structures of relative clauses and *wh*-questions between English and Japanese are great, and therefore, these two structures in English are considered difficult to learn for adult Japanese EFL learners. In order to examine at which level of English proficiency they can overcome these difficulties and show the same understanding as English native speakers, a grammaticality judgement task was administered to 287 adult Japanese EFL learners with elementary to advanced proficiency and 16 native speakers of English. As a result, there was a proficiency-related increase in possible correct judgement, and adult Japanese EFL learners showed the same understanding of relative clauses as English native speakers when they reached the post-intermediate level and also the same understanding of *wh*-questions as English native speakers when they arrived at the advanced level. These results uphold the Minimal Trees Hypothesis, advocated by Vainikka and Young-Scholten (1994, 1996a, 1996b, 1998a, 1998b, 2002), which proposes that, like L1 learners, adult L2 learners gradually build up syntactic structures from lexical to functional projections.

1 Introduction

One of the interesting topics in second language (L2) acquisition research is to account for how syntactic knowledge develops over time (Hawkins, 2001). In other words, we need to investigate why some grammatical properties are acquired earlier than others and why some grammatical properties remain difficult even for advanced L2 learners.

The purpose of the present study is to investigate the acquisition of the surface morphological properties of relative clauses and *wh*-questions in English by adult Japanese-speaking learners of English as a Foreign Language (EFL). The differences in the structures of relative clauses and *wh*-questions between English and Japanese are great, and these two structures are both generated utilising *wh*-movement, which is not involved in building these Japanese counterparts. Thus, relative clauses and *wh*-questions are considered difficult to learn for adult Japanese EFL learners. Therefore, we need to examine at which level of English proficiency they can overcome these difficulties and show the same understanding as English native speakers.

2 Theoretical Background

Within the Minimalist Program (Chomsky, 1995, 1998), overt movement is only allowed when it is motivated by the presence of a strong formal feature. In relative clause and *wh*-question formation, it is assumed that English and Japanese vary in the feature specifications of functional category C (Complementiser) which determine how their properties are realised.

In the case of relative clause formation, following Takeda (1999), English has the strong feature [+R] in C, which needs to be checked off against the relative pronoun/operator with a feature [+R], and, therefore, drives relative-operator movement in the overt component, as in (1a). If he relative pronoun stays in situ, the resulting structure is ruled out as ungrammatical, as in (1b). In Japanese, on the other hand, there is a predication type relation with no operator (and no C), and no feature-driven movement is required due to the lack of the operator and the feature [+R], as in (2) (see Takeda, 1999 for details).

(1)   a. The book [which$_i$ [John bought t$_i$]] was interesting.

   b. *The book [John bought which] was interesting.

(2)   *[[John-ga   katta]   hon]-wa   omosirokatta*

   John-Nom   bought-Past   book-Top   interesting was

   'The book which John bought was interesting.'

In the case of *wh*-question formation, English has the features [+wh, +Q] in C, which are both strong features and, therefore, force *wh*-operator movement and subject-auxiliary inversion, as in (3). However, a [wh] feature in Japanese is weak, so that it does not drive *wh*-operator movement, as in (4), although a [Q] feature has the same property as in English.

(3)   [What]$_i$ are$_j$ [you t$_j$ reading t$_i$]?

(4)   *Anata-wa   nani-o   yonde   imasu   ka?*

   You-Top   what-Acc   reading   are   Q

   'What are you reading?'

3 The Study

3.1 Research Questions

(1) At which level of English proficiency can adult Japanese EFL learners overcome the difficulties and show the same understanding as English native speakers?

(2) Are there any differences in the development of the surface morphological properties between relative clauses and *wh*-questions?

3.2 Experimental Design

3.2.1 Participants

The experiment was undertaken with 287 native speakers of Japanese and 16 native speakers of English as participants for the study, who lived either in Japan or in the UK at the time of the experiment. Japanese EFL learners were divided into 5 proficiency groups (elementary, pre-intermediate, intermediate, post-intermediate and advanced) on the basis of performance on an independent measure of proficiency: the Oxford Placement Test (OPT) (Allan, 1992). The age that participants started learning English was above 10, and the age range was 18 to 47. 16 native speakers of English were randomly selected for the experiment as a control group.

Details of the number of participants, the average age, and the scores on the OPT in each group are summarised in Table 1. A one-way ANOVA showed that there was a statistically significant difference among the five proficiency groups of native Japanese speakers (F (4, 282) = 1046.123, $p < .01$). A *post hoc* comparison test (by Scheffé) indicated statistically significant differences between all the possible pairs ($p < .01$). This means that there is a completely developmental sequence in terms of the general English proficiency level, as the OPT predicted.

Table 1 Participant details

| Group | N | Age | Oxford Placement Test | | | | |
			Range	Mean	SD	Min	Max
Elementary	104	19.11	105 - 119	112.72	4.462	105	119
Pre-intermediate	96	19.63	120 - 134	125.82	4.175	120	134
Intermediate	46	21.61	135 - 149	141.91	4.371	135	149
Post-intermediate	33	25.67	150 - 169	158.33	5.010	150	168
Advanced	8	29.50	170 - 200	175.50	4.598	170	184
Native control	16	26.88	-	-	-	-	-

3.2.2 Test Instrument

The test instrument was a written grammaticality judgement task with 43 items. The participants were asked to read sentences and rate the grammaticality of them on the 5-point scale indicated. The sentences fell into the following two groups (with 7 categories):

(1) The sentences which involve grammatical relative clauses with *wh*-operator (8 items), complementiser *that* (5 items) and null operator or complementiser (4 items), and ungrammatical

ones with *who(m) that* or *which that* (5 items) and resumptive pronoun (5 items):

The boy who(m) I kicked yesterday broke the window.	(-2 -1 0 +1 +2)
The picture that you are looking at was painted by Picasso.	(-2 -1 0 +1 +2)
The friend they lent money to bought a very big house.	(-2 -1 0 +1 +2)
*The woman *who that* is singing on the stage is my wife.	(-2 -1 0 +1 +2)
*The classmate that you don't like *him* is very unkind.	(-2 -1 0 +1 +2)

(2) The sentences which display grammatical *wh*-questions (8 items) and ungrammatical ones with no subject-auxiliary inversion (8 items):

What did your girlfriend want to talk about?	(-2 -1 0 +1 +2)
*Whose house Sandy's father is going to build?	(-2 -1 0 +1 +2)

The participants were asked to judge the grammaticality of each sentence by circling one of the numbers on the scale. They were told that +2 meant that the sentence was 'completely grammatical', -2 that it was 'completely ungrammatical', and -1, 0 and +1 were gradations between the extremes to be used if they thought the sentence was more or less grammatical. Detailed instructions were given on the use of the scale prior to testing, and there were initial practice items for information before the test began. They had just 10 seconds to judge each sentence.

3.2.3 Data Analysis Procedure

In the data analysis process, we measured the distance of learners' judgments from the correct responses and converted their judgments to point from 0 to 4. Therefore, on the sentences in the test which were presumed to be grammatical at the outset of the study, participants' responses were scored in the following way:

	Raw score	Score
Definitely possible	+2	4
Probably possible	+1	3
Not sure	0	2
Probably impossible	-1	1
Definitely impossible	-2	0

On the sentences in the test which were presumed to be ungrammatical at the outset of the study, participants' responses were scored in the following way:

	Raw score	Score
Definitely possible	+2	0
Probably possible	+1	1
Not sure	0	2
Probably impossible	-1	3
Definitely impossible	-2	4

3.2.4 Results and discussion

The results of the grammatical relative clauses with *wh*-operator, complementiser *that* and null operator or complementiser are presented in Tables 2, 3, and 4, respectively. The results of the ungrammatical relative clauses with *who(m) that* or *which that* and resumptive pronoun are given in Tables 5 and 6, respectively. These tables compare the mean scores for six groups. In both grammatical and ungrammatical relative clauses, participants' mean scores should approach 4 (maximum score) if they judge correctly, and their mean scores should approach 0 (minimum score) if they judge incorrectly. Significant differences between Japanese and native speakers' responses on the basis of one-way ANOVAs (analysis of variance) with rating of grammaticality as the dependent variable and participants' L2 proficiency level as the independent variable are indicated by an asterisk.

The results show that there are no significant differences in mean scores between post-intermediate group and natives and between advanced group and natives in all the grammatical and ungrammatical relative clauses (see Table 2 to 6). This means that adult Japanese EFL learners who have reached, at least, the post-intermediate proficiency level perform within the range of native speakers of English in rating surface morphological properties of relative clauses.

Table 2 Grammatical relative clauses involving a *wh*-operator in English

Group	Mean	SD
Elementary	1.980*	0.577
Pre-intermediate	2.316*	0.672
Intermediate	2.821*	0.753
Post-intermediate	3.557	0.434
Advanced	3.594	0.452
Native control	3.648	0.414

* = significantly different from NC (native control) ($p < .01$ or $p < .05$)

Table 3 Grammatical relative clauses involving *that* in English

Group	Mean	SD
Elementary	2.254*	0.682
Pre-intermediate	2.377*	0.759
Intermediate	2.570*	0.734
Post-intermediate	3.048	0.621
Advanced	2.950	0.805
Native control	3.575	0.326

* = significantly different from NC (native control) ($p < .01$ or $p < .05$)

Table 4 Grammatical relative clauses involving a null operator and a null complementiser in English

Group	Mean	SD
Elementary	1.988*	0.675
Pre-intermediate	2.247*	0.698
Intermediate	2.424*	0.691
Post-intermediate	2.758	0.683
Advanced	2.656	0.611
Native control	3.422	0.546

* = significantly different from NC (native control) ($p < .01$ or $p < .05$)

Table 5 Ungrammatical relative clauses involving a doubly-filled complementiser (*wh(m) that* or *which that*) in English

Group	Mean	SD
Elementary	2.402*	0.736
Pre-intermediate	2.625*	0.791
Intermediate	2.765*	0.755
Post-intermediate	3.382	0.780
Advanced	2.800	0.614
Native control	3.525	0.619

* = significantly different from NC (native control) ($p < .01$ or $p < .05$)

Table 6 Ungrammatical relative clauses involving resumptive pronouns in English

Group	Mean	SD
Elementary	1.875*	0.652
Pre-intermediate	2.019*	0.840
Intermediate	2.852*	0.759
Post-intermediate	3.406	0.670
Advanced	3.550	0.791
Native control	3.538	0.460

* = significantly different from NC (native control) ($p < .01$ or $p < .05$)

The results of the grammatical and ungrammatical *wh*-questions are presented in Tables 7 and 8, respectively. In both grammatical and ungrammatical *wh*-questions, participants' mean scores should approach 4 (maximum score) if they judge correctly, and their mean scores should approach 0 (minimum score) if they judge incorrectly. Significant differences between Japanese and native speakers' responses on the basis of one-way ANOVAs with rating of grammaticality as the dependent variable and participants' L2 proficiency level as the independent variable are indicated by an asterisk.

The results show that there are no significant differences in mean scores between advanced group and natives in all the grammatical and ungrammatical *wh*-questions (see Tables 7 and 8), meaning that adult Japanese EFL learners who have reached the advanced proficiency level perform within the range of native speakers of English in rating surface morphological properties of *wh*-questions.

Table 7 Grammatical *wh*-questions in English

Group	Mean	SD
Elementary	2.656*	0.495
Pre-intermediate	2.871*	0.561
Intermediate	2.910*	0.554
Post-intermediate	3.216*	0.550
Advanced	3.328	0.495
Native control	3.656	0.358

* = significantly different from NC (native control) ($p < .01$ or $p < .05$)

Table 8 Ungrammatical *wh*-questions without subject-auxiliary inversion in English

Group	Mean	SD
Elementary	1.791*	0.609
Pre-intermediate	1.967*	0.685
Intermediate	2.454*	0.836
Post-intermediate	2.864*	0.872
Advanced	3.047	0.732
Native control	3.547	0.440

* = significantly different from NC (native control) ($p < .01$ or $p < .05$)

To sum up, the results suggest that adult Japanese EFL learners perform within the range of native speakers (1) in rating the surface morphological properties of relative clauses when they reach the post-intermediate proficiency level and (2) in rating the surface morphological properties of *wh*-questions when they reach the advanced proficiency level.

4 Conclusion

The finding of this study is that there was a proficiency-related increase in possible correct judgement, and adult Japanese EFL learners showed the same understanding of relative clauses as native speakers when they reached the post-intermediate level and the same understanding of *wh*-questions as native speakers when they arrived at the advanced level. There is a difference in their rating the surface morphological properties between relative clause and *wh*-questions, both of which utilise *wh*-movement. However, further research is needed to explain this difference.

The results also support the Minimal Trees Hypothesis, advocated by Vainikka and Young-Scholten (1994, 1996a, 1996b, 1998a, 1998b, 2002), which proposes that, like L1 learners, adult L2 learners gradually build up syntactic structure from lexical to functional projections.

References

Allan, D. (1992). *The Oxford Placement Test*. Oxford: Oxford University Press.

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

Chomsky, N. (1998). *Minimalist Inquiries: The Framework*. MIT Occasional Papers in Linguistics, No. 15.

Hawkins, R. (2001). *Second Language Syntax: A Generative Introduction*. Malden, MA: Blackwell Publishers.

Takeda, K. (1999). *Multiple Headed Structures*. Unpublished Ph.D. dissertation, University of California, Irvine.

Vainikka, A. and M. Young-Scholten. (1994). Direct access to X'-theory: evidence from Korean and Turkish adults learning German. In Hoekstra, T. and B. D. Schwartz. (eds.). *Language Acquisition Studies in Generative Grammar* (pp. 265-316). Amsterdam: John Benjamins.

Vainikka, A. and M. Young-Scholten. (1996a). Gradual development of L2 phrase structure. *Second Language Research*, 12, 7-39.

Vainikka, A. and M. Young-Scholten. (1996b). The early stages in adult L2 syntax: additional evidence from Romance speakers. *Second Language Research*, 12, 140-176.

Vainikka, A. and M. Young-Scholten. (1998a). Morphosyntactic triggers in adult SLA. In Beck, Maria-Luise. (Ed.) *Morphology and its Interfaces in Second Language Knowledge* (pp. 89-113). Amersterdam: John Benjamins.

Vainikka, A. and M. Young-Scholten. (1998b). The initial state in the L2 acquisition of phrase structure. In Flynn, S., G. Martohardjono, and O'Neil, W. (Eds.). *The Generative Study of Second Language Acquisition* (pp. 17-34). Hillsdale, NJ:Lawrence Elbaum Associates Publishers.

Vainikka, A. and M. Young-Scholten. (2002). Restructuring the CP in L2 German. In Skarabela, B, A. Fish. and A. H.-J. Do. (Eds.) *Proceedings of the 26th Annual Boston University Conference on Language Development* (pp. 712-722). Somerville, MA: Cascadilla Press.

Appendix

The sentences used in the task

(1) Grammatical relative clauses involving a *wh*-operator

1. The young man who always helped us was named George.   (S)
2. The boy who(m) I kicked yesterday broke the window.   (O)
3. The girl for whom I have bought a computer is my sister.   (IO)
4. The woman from whom I received a present is in London.   (OBL/Pied-piping)
5. The box which they kept their money in has been stolen.   (OBL/Stranding)
6. The man whose feet are very big has bought new shoes.   (GEN/S)
7. The woman whose son you met last night is a good actress.   (GEN/O)
8. The man whom Paul runs faster than is a baseball player.   (OCOMP)

(2) Grammatical relative clauses involving *that*

9. The student that wrote this letter must be very crazy. (S)

10. The young lady that I employed last month works hard. (O)

11. The woman that Charles gave a gift to looked very happy. (IO)

12. The picture that you are looking at was painted by Picasso. (OBL)

13. The friend that I am taller than does not play basketball. (OCOMP)

(3) Grammatical relative clauses involving a null operator and a null complementiser

14. The house you can see over there was built ten years ago. (S)

15. The friend they lent money to bought a very big house. (D)

16. The magazine we got the information from is useful. (OBL)

17. The girl I sing better than has decided to study abroad. (OCOMP)

(4) Ungrammatical relative clauses involving *who/whom/which that*

18. *The woman who that is singing on the stage is my wife. (S)

19. *The mirror which that Judy broke was very expensive. (O)

20. *The cats which that I gave the milk to were very small. (IO)

21. *The woman whom that we talked with was our teacher. (OBL)

22. *The boy whom that I studied harder than passed the exam. (OCOMP)

(5) Ungrammatical relative clauses involving resumptive pronouns

23. *The building that it stands near the lake is our hotel. (S)

24. *The classmate that you don't like him is very unkind. (O)

25. *The student that I lent the book to her studied hard. (IO)

26. *The city that my uncle came from it is far from here. (OBL)

27. *The trees that you are shorter than them are falling down. (OCOMP)

(6) Grammatical *Wh*-questions

28. Who came to see you last night?

29. What did the woman decide to do for her daughter?

30. What did your girlfriend want to talk about?

31. Whose shoes are you going to borrow today?

32. When did your son go to Paris to study French?

33. Why was Andy surprised to receive the letter from Tom?

34. Who(m) does the woman know that Janet loved?

35. What language is it necessary for Bob to learn?

(7) Ungrammatical *Wh*-questions without subject-auxiliary inversion

36.   *Who your favorite baseball player is?

37.   *What the woman and her husband wanted to do?

38.   *What your grandfather complained about?

39.   *Whose house Sandy's father is going to build?

40.   *Why the mother was worried about her son?

41.   *Where Catherine got such a great idea?

42.   *Which medal it was possible for Mark to win?

43.   *Which country you believe that Japan attacked?