The Effect of a One-Year Difference on Japanese High School Students' Metacognitive Awareness of EFL Reading

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ABSTRACT

This study investigates whether a one-year difference in EFL target language experience affects Japanese senior high school readers' metacognitive awareness or judgements about their reading ability and strategies and explores to what extent the metacognitive awareness of the same students changes according to an additional year of language experience. The subjects consisted of 120 Japanese senior high school students. They were given the same questionnaire of metacognitive awareness in December, 1998 that they had taken in December, 1997.

The results revealed that whether the students increased in target language experience by one year or not, no significant difference was found between the two grades in terms of their confidence in the use of top-down strategies, and repair strategies. Furthermore, the students' perceptions of effective global, or top-down strategies did not increase after one year, while those of effective local or bottom-up strategies tended to decrease in the second year. The students showed a higher score for their awareness of effective global strategies both in the tenth and eleventh grades than that of local strategies. Concerning difficulty-causing items, the students perceived local items as less difficult in the eleventh grade than in the tenth grade, although they did not significantly differ in their perceptions of difficulty-causing global strategies between the two grades. Besides, the students perceived global items as more difficult than local items in each grade.

1. Introduction

Metacognitive studies are important in terms of what they reveal about reading processing. Research on reading strategies (e.g., Devine 1984; Barnett 1988; Carrell 1989; Tsudajuku 1992; Zhang 1994; Hirano 1998) has shown the relationship between reading comprehension and ESL/EFL readers' knowledge or perceptions of their reading and reading strategies, i.e., metacognitive awareness.

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Some research with Japanese students (e.g. IIjima 1998; Hirano 1998; Hirano 1999) has investigated the effect of differences in grade level or the number of years of target language experience on their metacognitive awareness or perceptions of reading strategies. Using different students in different grades, IIjima (1998) and Hirano (1999) investigated the effect of grade difference on Japanese senior high school students' metacognitive awareness or perceptions of reading strategies. However, little research has dealt with different grades of the same students to explore their longtidunal change in their perceptions of reading ability and reading strategies when they take English classes without any specific instructional training in the use of reading strategies.

The present study longtidunally investigates Japanese high school students' metacognitive awareness in order to examine the extent to which the same students without explicit meetacognitive strategy training differ in the two grades (i.e., the tenth and eleventh grades) in their metacognitive awareness or perceptions of about their reading abilities (i.e., their confidence) (Carrell 1989: 125), repair strategies, effective strategies, and what causes them difficulty.

2. Method

2.1 Subjects

The participants consisted of 120 Japanese high school EFL students in four classes from one public senior high school in Niigata Prefecture. There were 51 males and 69 females. When they were in the first year (i.e. in the tenth grade, ranging in age from 15 to 16), they took a questionnaire in metacognitive awareness in December, 1997. They also took the same questionnaire one year later in December, 1998 in the second year (i.e. in the eleventh grade, aged 16 to 17). For the first-year data, 120 out of the 131 students in Hirano (1999) participated in the study. They were enrolled in English I in the first year, and in the second year, English II. Since the purpose of the present study was to investigate

Table 1   Metacognitive Questionnaire

	(Item No.)
1) Confidence	6 statements (1,2,3,4,5,6)
2) Repair	5 statements (7,8,9,10,11)
3) Effective	17 statements
a) global strategies	6 statements (14,17,20,31,34,36)
b) local strategies	11 statements (12,13,15,16,18,19,29,30,32,33,35)
4) Difficulty	8 statements
a) global strategies	3 statements (26,27,28)
b) local strategies	4 statements (21,22,23,24,25)

(Hirano 1998: 37, based on Carrell 1989)

the effect of the difference in one year of study in regular English classes, no specific reading strategies had ever been practiced by the time of data collection in December, 1998. Neither the students' teachers nor the English textbooks they used had referred to the use of reading strategies. No language proficiency scores were available for these students.

2.2 Materials

The questionnaire translated in Japanese was the same as the one used in Hirano (1998, 1999), which was mainly based on Tsudajuku's (1992) questionnaire with some modifications. All of the items (except No. 23 and No. 29) in the metacognitive awareness questionnaire were originally taken from Carrell (1989: 131-132) (see Appendix). A five-point Likert Scale (1 =strongly disagree, 5=strongly agree) was used.

Carrell (1989) classified metacognitive awareness into four components: (1) confidence in reading ability, (2) repair strategies, (3) effective strategies, and (4) difficult-strategies (see Table 1). The effective strategies and things that make reading in English difficult are subcategorized into (1) sound-letter, (2) word-meaning, (3) grammatical structures, (4) content details, (5) text gist, (6) background knowledge, and (7) textual organization. (1), (2), (3), (4) are related to local, bottom-up types of reading strategies, while (5), (6), (7) are global, top-down types of reading strategies.

2.3 Procedure

As mentioned above, the questionnaire in metacognitive awareness was given twice to the students one year apart. Immediately after the second-year students listened to their teachers' brief explanation about what English paragraphs, main ideas, topic and support-ing sentences were, they were administered the same metacognitive awareness question-naire that they had previously taken in the first year. They completed the questionnaire within 20–22 minutes.

2.4 Data Analysis

The first-year and second-year data were compared for data analysis. Two-way ANOVAs were employed to find out whether a one-year difference in EFL experience affected (1) students' awareness of 36 individual items of the questionnaire, and (2) the difference between their perceptions of global and local strategies.

3. Results

3.1 Differences in individual items of metacognitive awareness

The means and standard deviations for items are shown in Table 2. As Table 3 indicates, the order of items was rearranged so that the item with the highest score would come on the top of each category. Two-way (grade X item) ANOVAs were conducted to find out which items showed significant differences between the two grades and whether

Table 2   Means and SDs for the Items on the Questionnaire

Item No.	Grade 10 (n=120) Mean(SD)	Grade 11 (n=120) Mean(SD)
1) Confidence		
1	2.78(0.74)	2.66(0.88)
2	2.86(0.94)	2.82(1.03)
3	2.83(0.93)	2.70(0.91)
4	2.48(0.92)	2.56(0.98)
5	3.08(1.06)	3.13(1.08)
6	3.16(1.02)	3.08(1.06)
2) Repair		
7	3.50(1.10)	3.58(1.06)
8	3.54(0.94)	3.72(1.07)
10	4.04(1.04)	3.89(1.12)
11	2.31(1.07)	2.35(1.02)
3) Effective		
12	2.59(1.08)	2.47(1.03)
13	3.91(0.89)	3.70(0.96)
14	4.31(0.74)	4.17(0.87)
15	3.08(1.07)	2.71(1.09)
16	3.43(0.95)	3.33(1.03)
17	2.73(0.88)	2.84(0.94)
18	3.82(0.93)	3.58(1.00)
19	2.99(0.85)	2.99(0.97)
20	3.09(1.02)	3.23(1.07)
4) Difficulty		
21	2.43(0.97)	2.41(1.07)
22	2.88(1.18)	2.58(1.19)
23	4.11(0.88)	4.10(0.85)
24	4.08(0.86)	3.90(0.98)
25	1.81(0.94)	1.78(0.93)
26	2.69(0.88)	2.63(1.01)
27	3.71(1.00)	3.94(0.88)
28	3.28(0.92)	3.46(1.01)
5) Effective		
29	3.80(1.02)	3.74(0.97)
30	3.83(1.18)	3.62(1.13)
31	4.13(0.86)	4.03(0.90)
32	3.08(1.13)	3.09(1.16)
33	3.37(1.09)	3.54(0.99)
34	3.24(1.06)	3.11(1.00)
35	3.24(0.99)	3.28(0.89)
36	3.60(1.10)	3.73(0.91)

Table 3   Means and SDs for the Items on the questionnaire

	Item No.	Grade 10 (n=120) Mean(SD)	Item No.	Grade 11 (n=120) Mean(SD)
1) Confidence				
	6	3.16 (1.02)	5	3.13 (1.08)
	5	3.08 (1.06)	6	3.08 (1.06)
	2	2.86 (0.94)	2	2.82 (1.03)
	3	2.83 (0.93)	3	2.70 (0.91)
	1	2.78 (0.74)	1	2.66 (0.88)
	4	2.48 (0.92)	4	2.56 (0.98)
2) Repair				
	10	4.04 (1.04)	10	3.89 (1.12)
	9	3.61 (1.01)	9	3.73 (1.08)
	8	3.54 (0.94)	8	3.72 (1.07)
	7	3.50 (1.10)	7	3.58 (1.06)
	11	2.31 (1.07)	11	2.35 (1.02)
3) Effective				
	14 (G)	4.31 (0.74)	14 (G)	4.17 (0.87)
	13 (L)	3.91 (0.89)	13 (L)	3.70 (0.96)
	18 (L)	3.82 (0.93)	18 (L)	3.58 (1.00)
	16 (L)	3.43 (0.96)	16 (L)	3.33 (1.03)
	20 (G)	3.09 (1.02)	20 (G)	3.23 (1.07)
	15 (L)	3.08 (1.07)	19 (L)	2.99 (0.97)
	19 (L)	2.99 (0.85)	17 (G)	2.84 (0.94)
	17 (G)	2.73 (0.88)	15 (L)	2.71 (1.09)
	12 (L)	2.59 (1.08)	12 (L)	2.47 (1.03)
4) Difficulty				
	23 (L)	4.11 (0.88)	23 (L)	4.10 (0.85)
	24 (L)	4.08 (0.86)	27 (G)	3.94 (0.88)
	27 (G)	3.71 (1.00)	24 (L)	3.90 (0.98)
	28 (G)	3.28 (0.92)	28 (G)	3.46 (1.01)
	22 (L)	2.88 (1.18)	26 (G)	2.63 (1.01)
	26 (G)	2.69 (0.88)	22 (L)	2.58 (1.19)
	21 (L)	2.43 (0.97)	21 (L)	2.41 (1.07)
	25 (L)	1.81 (0.94)	25 (L)	1.78 (0.93)
5) Effective				
	31 (G)	4.13 (0.86)	31 (G)	4.03 (0.90)
	30 (L)	3.83 (1.18)	29 (L)	3.74 (0.97)
	29 (L)	3.80 (1.02)	36 (G)	3.73 (0.91)
	36 (G)	3.60 (1.10)	30 (L)	3.62 (1.13)
	33 (L)	3.37 (1.09)	33 (L)	3.54 (0.99)
	34 (G)	3.24 (1.06)	35 (L)	3.28 (0.89)
	35 (L)	3.24 (0.99)	34 (G)	3.11 (1.00)
	32 (L)	3.08 (1.13)	32 (L)	3.09 (1.16)

Note: G=global strategy; L=local strategy

Table 4   Results of Two-Way ANOVAs: Individual Items

Category	Grade(A)	Item(B)	Interaction (A×B)
	F	F	F
Confidence	0.55	17.46**	0.78
Repair	1.22	65.13**	1.13
Effective	3.84	75.28**	2.92** Items 13,15,18 ----Grade 10>Grade 11* Grade 10----Item 14>13=18>16>20=15=19>17=12 Grade 11----Item 14>13=18>16=20>19=17=15>12, Item 19>15
Difficulty	0.36	162.47**	2.94** Item 22----Grade 10>Grade 11** Item 27----Grade 11>Grade 10* Grade 10----Items 23=24>27>28>22=26>21>25 Grade 11----Items 23=27=24>28>26=22=21>25
Effective	0.08	26.50**	1.67

*p< .05   **p< .01

there were differencs in order of the means of items in each of the categories. The results of ANOVAs are shown in Table 4.

For confidence items and repair stategies, neither main effect for grade nor the grade x item interaction were significant. Only the main effects for item were significant: for confidence items, F $(5,595)$ =17.46, p<.01; for repair strategies, F $(4,476)$ = 65.13, p< . 01. That is, irrespective of grade, the pattern of the order of means for confidence items were Item 6 = Item 5 >Item 2 =Item 3 =Item 1 > Item 4 (p< .05). The total students scored significantly highest in Item 6 ('I have a good sense of when I understand something and when I do not') and Item 5 ('I am able to use my prior knowledge and experience'), followed by Item 2 ('I am able to recognize the difference between main points and details'), Item 3 ('I am able to relate information'), and Item 1 ('I am able to anticipate what will come next'), and then Item 4 ('I am able to question the significance or truthfulnes of what the author says').

Concerning repair strategies, regardless of grade, the order of means was Item 10 > Item 9 = Item 8 = Item 7 > Item 11(p< .05). Item 10 ('I look up unknown words in a dictionary') scored significantly higher than Items 9 ('I go back to a point before the problematic part'), 8 ('I reread the problematic part'), 7 ('I keep on reading'), followed by

Item 11 ('I give up').

Regarding effective strategies, the main effect for grade was not siginificant. However, both the main effect for item and the grade x item interaction were significant: $F(8, 952) = 75.28$, $p < .01$; $F(8,952) = 2.92$, $p < .01$, respectively. Significant differences were found between the grades in the three items, i.e. Items 13, 15 and 18; $F(1,119) = 5.17$, $p < .05$; $F(1,119) = 10.33$, $p < .01$; and $F(1,119) = 6.22$ $p < .05$, respectively. The students scored higher in the first year than in the second year on three items: 'understanding the meaning of each word' (Item 13), 'being able to pronounce each whole word' (Item 15), and 'looking up words in the dictionary' (Item 18). The scores for these three bottom-up strategies decreased in the second year. Furthermore, the results of multiple comparisons of items revealed that for Grade 10, the order of the means was Item 14 (overall text meaning) > Item 13 (word meaning) = Item 18 (use dicitionary) > Item 16 (grammatical structures) > Item 20 (text organization) = Item 15 (pronounce word) = Item 19 (details of the content) > Item 17 (relate to the topic) = Item 12 (sounding out parts of words). Grade 11, on the other hand, showed the pattern of the order of means: Item 14 (overall text meaning > Item 13 (word meaning) = Item 18 (use dicitionary) > Item 16 (grammatical structures) = Item 20 (text organization) > Item 19 (details of the content) = Item 17 (relate to the topic) = Item 15 (pronounce word) > Item 12 (sounding out parts of words) (Item 19 > Item 15).

Interestingly, the common aspects in both grades were that they were most strongly aware of the effectiveness of the top-down strategy ' getting text gist'(i.e. Item 14). However, the students in both grades tended to agree to the least extent that 'mentally sounding out parts of the words' was effective for reading.

For difficulty-causing items, the main effect for item and the grade x item interaction were significant : $F(7,833) = 162.47$, $p < .01$; $F(7,833) = 2.94$, $p<.01$, respectively. There were significant differences were found between the grades in 'pronunciaton of the words' (Item 22), and 'getting the overall meaing of the text' (Item 27): $F(1,119) = 10.32$, $p < .01$; $F(1,119) = 5.00$, $p < .01$, respectively. Furthermore, differences among items were significant at grades 10 and 11: $F(7,8339) = 103.43$, $p < .01$; $F(7,833) = 102.39$, $p < .01$, respectively. In other words, the students perceived the pronunciation of words as causing less difficulty in the second year than in the first year. On the other hand, they tended to agree more strongly in the second year than in the first year that to 'get overall text meaning' (Item 27) made reading difficult. In no other items, were the differences between the two grades significant. The results of multiple comaparisons indicated that the pattern of the order of means was: for Grade 10, Item 23 (understanding word meanings) = Item 24 (grammatical structures) > Item 27 (overall text meaning) > Item 28 (text organization) > Item 22 (pronunciation of words) = Item 26 (the use of background knowledge) > Item 21 (sounds of individual words) > Item 25 (alphabet); for Grade 11, Items 23 = 27 = 24 > 28 > 26 = 22 = 21 > 25.

For both grades, the students' perceptions that the two bottom-up items, i.e., under-

standing word meanings (Item 23) and the grammatical structures (Item24) make their reading difficult scored significantly highest, while the score for the bottom-up item 'alphabet' (Item 25) was significantly the lowest. The interesting difference between the grades is that the score for 'getting overall text meaning' (Item 27) also was significantly the highest in the second year, but not in the first year.

With respect to the perceptions of the characteristics of good readers, only the main effect for item was significant, $F_{(7,833)} = 26.50$, $p < 01$. Neither the main efffect for grade nor the interaction was significant. Irrespective of grade, 'understand overall text meaning' (Item 31) scored significantly ($p < .05$) higher than Items 29 (understand word meanings), 30 (sound out words), and 36 (text organization), followed by Item 33 (guess at word meanings), and then by Item 35 (content details), Items 34 (the use of background knowledge), and 32 (use a dicitionary): Items $31 > 29 = 30 = 36 > 33 > 35 = 34 = 32$. Like the perceptions of effective strategies mentioned above, all students agreed most strongly that the ability to get text gist was one of the characteristics of good readers. Ignoring grade, on the other hand, the studetns' scores for perceptions of the two bottom-up items, i.e. word meanings (Item 32) and content details (Item 35) were significanlty the lowest.

3.2 Categories of metacognitive awareness: comparisons of global and local strategies

At the next step, the 31 items (i.e. the items except repair strategies) were placed into two categories, global and local strategies. ANOVAS were performed in order to determine whether one-year difference in EFL experience affected the subcategories of their metacognitive awareness: confidence (global) items, effective-global, effective-local, difficulty-causing global and difficulty-causing local strategies. Table 5 presents the means and standard deviations of global and local strategies for each grade as well as the results of a one-way ANOVA. 2 (grade) X 2 (strategy type: global vs. local) ANOVAs were performed to examine the interactions between group and strategy type. The results of two-way ANOVAs are shown in Table 6.

3.2.1 Confidence items

As shown in Table 5, there was no significant difference between the two grades, $F_{(1,119)} = 0.55$, ns. A one-year difference in students' target language experience did not affect their confidence in the use of top-down strategies.

3.2.2 Effective strategies

Table 6 indicates that for effective reading strategies, the main effect for grade was not significant. The main effect for strategy type was significant, $F_{(1,119)} = 19.70$, $p < .01$; the interaction between grade and strategy type tended to be significant, $F_{(1,119)} = 3.07$, $p < .10$. That is, although the difference between grades in effective global strategies was not significant, grade 10 tended to score significantly ($p < .10$) higher than grade 11 for effective local strategies. Furthermore, the studetnts' perceptions of effective global stlategies scored significantly ($p < .01$) higher than those of effective local strategies in

both grades.

3.2.3 Difficulty-causing items

For the difficulty-causing strategy, the results of the two-way ANOVA indicated that the main effect for strategy type was significant, $F(1,1199) = 28.40$, $p < .01$, though that for grade was not significant. The interaction between grade and strategy type was significant, $F (1,119) = 7.11$, $p < .01$, indicating that the differences in grade significantly affected those in strategy type. The analysis of the interaction revealed that there was no significant difference between grades in difficult-global strategies. However, grade 10 scored significantly ($p < .05$) higher than grade 11 for difficulty-causing local strategies. Multiple comparisons by the LSD revealed that scores on the perceptions of global strategies as causing students difficulty were significantly higher than those of local strategies for each grade level.

4. Discussion

4.1 Differences in metacognitive awareness of individual items

For effective strategies, the items which scored highest among the effective strategies in both grades were Items 14 and 31. These items are 'getting text gist.' The means were over 4.0 for each grade level. One explanation for this is that according to the Course of Study published by the Ministry of Education, Japanese teachers of English should stress this aspect in reading.

It is to note that the means for students' perceptions of the use of background knowledge as effective were below 3.0 in both grades. Especially, the first-year students showed significanlty the lowest score in their perceptions of Item 17. Furthermore, th students' perceptioins of the use of background knowledge as a sign of good readers (Item 34) also was the lowest. It is necessary to emphasize more its use in English classes.

4.2 Differences in metacognitive awareness of global and local strategies

The students did not show more confidence in the use of top-down strategies in the second year than in the first year. This finding is supported by Hirano (1998), who reports that students' confidence in their reading ability did not differ between the tenth and twelfth graders who were different students. Hirano's (1998) findings also revealed that the degree of the students' confidence in their reading ability to use top-down strategies did not increase until the students reached the graduate level. Students' confidence in their own reading ability seems to take a lot of target language experience and develop at a later stage.

The one-year difference in students' target language experience tended to affect their perceptions of effective local strategies and affected those of difficulty-causing local strategies. The first-year students' perceptions of effective local strategies significantly tended to decrease in the second year. Furthermore, those of local strategies as causing

Table 5 Means and Standard Deviations of Global and Local Strategies

| | | Strategy Type | |
| | | Global strategies Mean (SD) | Local strategies Mean (SD) |
Category	Grade		
1) Confidence	Grade 10	2.86 (0.59)	
	Grade 11	2.82 (0.66)	
		$F(1,119)=0.55$, ns	
2) Effective	Grade 10	3.52 (0.55)	3.37 (0.47)
	Grade 11	3.52 (0.59)	3.28 (0.51)
3) Difficulty	Grade 10	3.22 (0.64)	3.06 (0.59)
	Grade 11	3.34 (0.66)	2.95 (0.56)

Table 6 Results of Two-Way ANOVAs: Global and Local Strategies

| Category | Grade(A) | Strategy Type(B) | Interaction (A×B) |
	F	F	F
Effective	1.09	19.70**	3.07+ Global strategies---Grade 10=Grade 11 Local strategies ----Grade 10>Grade 11+ Grade 10 ---- Global > Local** Grade 11 -----Global > Local**
Difficulty	0.01	28.40**	7.11** Global strategies---Grade 10= Grade 11 Local strategies ---Grade 10 >Grade 11* Grade 10 ----Global > Local * Grade 11 ----Global > Local **

+p<.10   *p<.05   **p<.01

difficulty decreased one year later.

For global strategies, on the other hand, no significant difference was found between the two grades in terms of confidence items, effective strategies and difficulty-causing items (except Item 27, 'grasp the overall meaning'). Whether the students increased one year in target language experience or not, there was no siginificant change in metacognitive awareness of almost all global items between the two grades.

It is interestng to note that irrespective of one year's difference, students' perceptions of global strategies scored significantly higher than those of local strategies for effective strategies and difficulty-causing items. The students perceied global strategies as more effective and causing more difficulty than local strategies both in the first and second years.

5. Conclusion

The present study investigated whether one-year longitudinal increase in EFL language experience would affect Japanese high school students' metacognitive awareness (i. e., judgments) about their reading abilities (i.e., their confidence), and reading strategies. The findings of the present study indicated that for effective and difficulty-causing items, the students were less strongly aware of bottom-up strategies as a whole in the second year than in the first year. However, the one-year increase in language study did not affect the students' perceptions of their reading ability, effective-global strategies and the difficulty-causing global strategies except for one item relating to text gist.

This study dealt with only a one-year difference in EFL experience for the same high school students. Further research should investigate the effect of more than one year of study on their awareness about reading ablity and reading stategies.

Acknowledgements

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Appendix: Questionnaire

Item	Statement

A) Confidence
   When reading silently in English,
1. I am able to anticipate what will come next in the text.
2. I am able to recognize the difference between main points and supporting details.
3. I am able to relate information which comes next in the text to previous information in the text.
4. I am able to question the significance or truthfulness of what the author says.
5. I am able to use my prior knowledge and experience to understand the content of the text I am reading.
6. I have a good sense of when I understand something and when I do not.

B) Repair
   When reading silently in English, if I don't understand something,
7. I keep on reading and hope for clarification further on.
8. I reread the problematic part.
9. I go back to a point before the problematic part and reread from there.
10. I look up unknown words in a dictionary.
11. I give up and stop reading.

C) Effective
   When reading silently in English, the things I do to read effectively are to focus on
12. mentally sounding out parts of the words.
13. understanding the meaning of each word.
14. getting the overall meaning of the text.
15. being able to pronounce each whole word.
16. the grammatical structures.
17. relating the text to what I already know about the topic.
18. looking up words in the dictionary.
19. the details of the content.
20. the organization of the text.

D) Difficulty
   When reading silently in English, things that make the reading difficult are
21. the sounds of the individual words.
22. pronunciation of the words.
23. understanding word meanings
24. the grammatical structures.
25. the alphabet.
26. relating the text to what I already know about the topic.
27. getting the overall meaning of the text.
28. the organization of the text.

E) Effective
   The best reader I know in English is a good reader because of his/her ability to
29. understand word meanings.
30. sound out words.
31. understand the overall meaning of a text.
32. use a dictionary.
33. guess at word meanings.
34. integrate the information in the text with what he/she already knows.
35. focus on the details of the content.
36. grasp the organization of the text.

[For the items (except No.23 & No.29), see Carrell (1989)]