



Factors Relating to EFL Writers' Discourse Level Revision Skills¹

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ABSTRACT

This study investigated discourse level revising skills among three groups of Japanese EFL writers and the relationship between these skills and the two factors of English proficiency and writing experience. The three groups of university students ($N = 53$) differed in terms of their educational level and the amount of writing instruction they had received. Group 1, undergraduates with no writing instruction; Group 2, undergraduates with one year of English writing instruction; and Group 3, graduate students, were asked to revise English texts containing coherence problems at three discourse levels: intersentential, paragraph, and essay. The results showed that at the essay level, Group 2 outperformed Group 1, demonstrating revision skill close to that of Group 3, whereas Group 3 outperformed the other two groups overall, particularly at the intersentential level. While English proficiency and writing experience were both significantly related to revision performance, English proficiency was most strongly related to revision at the intersentential level. The results also imply that explicit instruction played an active role in students' essay level revisions and use of correction strategies.

KEYWORDS: discourse level, EFL, Japanese, L2, language proficiency, revision skills, university students, writing experience.

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I. INTRODUCTION

Learning to write in a second language is a complex process, involving students' L1 background and writing expertise, L2 linguistic proficiency, and classroom instruction (Cumming, 1989; Cumming & Riazi, 1996). The most recent view of learning to write as a social act emphasizes the importance of context, arguing that writing is not a product of a single individual, but can be understood as a product of interaction with the context where writing takes place (Grabe and Kaplan, 1996: 94). Whereas this social view provides insight into L2 writing research and pedagogy (e.g., Candlin & Hyland, 1999; Hedgcock & Lefkowitz, 1992; Lockhart & Ng, 1995), the cognitive based approach still remains important because it can contribute to the development of L1 and L2 writing by serving as a tool to investigate the role of processes that underlie such development (Whalen & Ménard, 1995).

The cognitive approach, which views writing as problem solving, has devoted a great deal of attention to revision (Johns, 1990). The writing process model that Flower and Hayes (1981) have developed based on think aloud protocols reflects such a view; "the model is intended to show the range of potential writing problems which a writer could face during the composing process" (Grabe and Kaplan, 1996: 114). Because problem solving has been found to occur very frequently when a writer modifies the text, the *reviewingprocess* which constitutes an important part of the *composingprocess* in the Flower and Hayes' model has been further elaborated into a full revision model (Hayes, Flower, Schriver, Stratman & Carey, 1987).

In the Hayes et al. (1987) model, revision consists of sequenced subprocesses by which writers eventually modify text and/or a plan for the text. First, in task definition, writers must define the task to be performed, for example, in terms of the goal and scope of revision; then in evaluation, they employ the reading process to comprehend, to evaluate, and to define text problems at all possible levels. The outcome of this process is problem presentation, consisting of *derecrtion* and *diagnosis* (see detailed explanation in section II. 3.2), which subsequently leads writers to *strategy selection*, including ignoring the problem, rewriting the text, or revising it. The new model of revision proposed by Hayes (1996) postulates a control structure or revision task schema that selects the necessary components for revision and determines the sequencing in which these components are applied.

Some empirical evidence supports the notion that the acquisition of revision skill is sequential. Bartlett (1982) found that both skilled and less skilled L1 writers detected more problems, such as ambiguous reference, than they corrected, while more skilled writers could detect and correct more problems than their less skilled counterparts. Similarly, L2 students have been found to be sometimes able to "identify pragmatic and textual weakness in their writing without being able to propose appropriate solutions" (Whalen & Ménard, 1995: 404). These studies suggest that the ability to detect problems in a text may be acquired before the ability to correct them.²

I. 1. Factors Affecting Revision Skills

With an increased focus on the role of revision in the development of writing ability, observations and empirical research have shed light on L1 and L2 writers' use of revision. By looking at the amount and kinds of revision performed by different groups of L1 writers, researchers have attempted to investigate the relation between revision and the quality of writing (e.g., Beach, 1976; Bridwell, 1980). Many other studies have focused on L1 and L2 writers' use of revision strategies (e.g., Faigley & Witte, 1981; Gosden, 1996; Kobayashi, 1991; Matsumoto, 1995; Porte, 1996; Raimes, 1994; Zamel, 1983). All these studies have found that less skilled writers attend mainly to surface-level features, whereas skilled writers show more concern for content and larger segments of discourse, revising on both local and global levels.

According to Wallace and Hayes (1991), one difficulty unskilled L1 and L2 writers have in revising is "inappropriate task definition" for revision; that is, a lack of awareness that revision means attending to both local and global concerns, including purpose and overall organization of the writing, as well as concern for audience. A lack of such awareness on the part of unskilled writers may result at least in part from their previous writing experience and instruction. For example, instructors may tend to focus on particular pedagogical activities such as grammar practice drills in class (Devine, Railey & Boshoff, 1993) or put emphasis on word/grammar level correction rather than content in revising (Porte, 1996, 1997).

However, revision task definition appears to be particularly amenable to improvement through instruction. For example, L1 studies have shown dramatic effects of instruction as short as 8 minutes on global vs. local revising strategies (Wallace & Hayes, 1991). A few questions regarding audience concerns had the same kind of positive effects on the quality of L1 students' revisions (Roen & Willey, 1988). Similarly, L2 students given explicit instruction in global, local and general revising strategies were significantly better able to revise their own and other writers' essays (Yin, 1996), changing their view of revision from simple correction of errors to a task necessitating multilevel concerns, including the importance of the reader (Senguputa, 2000). Thus, all these studies suggest that explicit instruction plays a central role in shaping students' task definition for revising a text.

Whereas explicit instruction that includes revision practice has been shown to lead to better quality of writers' essays (Kobayashi, 1991; Senguputa, 2000), the effect of second language proficiency on the revision process has not been explored much yet, despite the fact that this factor has been found to make a significant contribution to the development of L2 writing ability (Cumming, 1989; Pennington & So, 1993; Sasaki, 2000; Sasaki & Hirose, 1996). Yet a few studies on L2 writers' revision suggest that second language proficiency is related to L2 writers' revision performance. Raimes (1994) observed that ESL students of higher English proficiency tended to do more frequent revising and editing than those of lower proficiency, and Aoki (1992) found that EFL students' English grammar test scores significantly related to correction of local errors (e.g., grammatical errors and misspelling), but not to correction of

global errors (e.g., organizational problems). Although it can be assumed that as L2 writers "learn more English and develop more fluency, concern about options sets in" (Rairnes, 1994: 160), it is not yet clear what aspects of L2 writers' revision performance are related to second language proficiency.

Similarly, the amount of L2 writing experience also appears to affect the quality of L2 essays (Hirose & Sasaki, 2000; Sasaki & Hirose, 1996). For example, students with experience of writing paragraph-length or longer texts were found to be better writers than those without such experience (Sasaki & Hirose, 1996). Furthermore, Fathrnan and Whalley's (1990) finding that the act of rewriting with or without teachers' feedback similarly led to better quality of L2 essays lends support to the common notion that writing more leads to writing better. At the same time it implies that there could be a positive relation between L2 writing experience and revision performance. However, given the finding that journal writing experience led to the significant improvement of essay writing mechanics only (Hirose & Sasaki, 2000), it is important to examine more precisely what kind of L2 writing experience is related to revision performance.

1.2. This Study

The main purpose of the study is to examine how L2 writers revise texts, focusing on their detection and correction of discourse level problems in expository prose. More specifically, the study attempted to investigate the relation between university EFL students' revision skills and each of two factors (L2 language proficiency and L2 writing experience), while exploring possible effects of explicit instruction on students' revision performance.

In this study, we were particularly concerned with L2 writers' ability to deal with coherence problems at three discourse levels: intersentential, paragraph, and essay. Coherence here is defined as logical consistency of ideas at any given discourse level, including cohesion marked by grammatical/semantic links (Halliday & Hassan, 1976). Although L2 writers encounter a great number of lexical and syntactic problems in composing processes, coherence appears to be "one of the most important, yet most difficult analytic skills" (Gregg, 1988: 5) for both L1 and L2 student writers to learn (Bartlett, 1982; Gosden, 1996; McCulley, 1985). In fact, L2 writers have been observed to have difficulty creating coherent texts; for example, they frequently make reference ties unclear, miss sentence connections, or shift a topic abruptly in the middle of a text (Wikborg, 1990). Similarly, as has been discussed extensively in the contrastive rhetoric literature, problems with paragraph and essay level coherence in English have been widely observed among L2 writers. Many such problems have been attributed to differences in culturally preferred rhetorical organizational patterns and notions including unity, specific support, and readers' vs. writers' responsibility (e.g., Connor, 1996; Hinds, 1987; Hinkel, 1994; Kobayashi & Rinnert, 1996; Rinnert & Kobayashi, 2001). Thus, the acquisition of English discourse features tends to be problematic for L2 writers from different linguistic backgrounds.

In dealing with these discourse problems in a text, we were particularly interested in finding out how undergraduate students who had received two semesters of writing instruction (Group 2) differed from undergraduates with no writing instruction (Group 1). That is, writing instruction was included as the defining factor distinguishing Group 1 and Group 2. Furthermore, in order to examine how English proficiency and L2 writing experience relate to students' revision performance, graduate students (Group 3), who presumably had higher proficiency and more writing experience than the two undergraduate groups, were asked to participate. Thus, a total of three groups took part in this study (see Participants under Method, below).

In short, the research was operationally designed to investigate the main effects of two variables, group (Group 1, Group 2, Group 3) and discourse level (intersentential, paragraph and essay), on students' revising performance (detection and correction), and further to examine correlations between such revising performance and the two other factors of English proficiency and writing experience. More specifically, the study focused on the following five research questions:

1. How does the revision performance of Group 1 (undergraduates with no writing instruction) differ from that of Group 2 (undergraduates with writing instruction)?
2. How do the three groups differ in their detection and correction of revision problems at all three levels (intersentential, paragraph and discourse)?
3. How do the three groups differ in terms of the kinds of strategies used when revising the texts?
4. Is there any relation between English proficiency and revision performance?
5. Is there any relation between amount of English writing experience and revision performance?

II. METHOD

II.1. Participants

A total of 53 Japanese university students (40 female, 13 male) participated in this study. These students were members of three distinct groups: Group 1 (19 second year students with a mean age of 19.7, ranging from 19 to 21); Group 2 (22 third year students with a mean age of 20.8, ranging from 20 to 22); and Group 3 (12 graduate students with a mean age of 25.3, ranging from 24 to 31).

The first two groups, drawn from the Faculty of International Studies of a public Japanese university, were all enrolled in English writing classes, but differed in the amounts of

instruction they had previously received. The Group 1 students had no prior writing instruction, although they had been taking general English classes since their first year. The Group 2 students had received two semesters of prior writing instruction, one semester in their second year and the other in the first semester of their third year. In these classes, they learned features of English writing conventions (e.g., topic sentence) and wrote and revised 5 to 10 paragraph- or multi-paragraph-length pieces of writing. The process-oriented instructional approach adopted in these classes included the following activities in recursive sequences: pre-writing activities to generate ideas before writing a first draft, teacher or peer review of one or more drafts, and multiple revisions based on the comments of the reviewers. It should be noted that although such an approach is becoming more common at universities in Japan, it cannot be considered representative of the Japanese EFL context as a whole, where much of the writing instruction is still based on traditional grammar-translation methodology (Kamimura, 1993).

Whereas the first two groups of students performed the tasks during their respective writing classes, the graduate students (Group 3) were asked to participate in the study individually. The graduate students were all from a different Japanese public university from that of the undergraduate students; half of the graduates were MA students and the other half were doctoral students. Their areas of specialization varied from American/British literature to linguistics and English teaching pedagogy. Five of the 12 students had overseas study experience with the length of stay ranging from one month to over a year. Unlike the first two groups, the graduate students were not taking any formal writing instruction at the time of this study. Nevertheless, 11 of the 12 had received formal university level writing instruction. For four of them, the instruction included in-class revision of their own writing based on peer and teacher feedback, whereas for the other seven, no such in-class revision took place, and the emphasis was placed on the study of model paragraphs or essays.

II.1.1. English proficiency

An English proficiency test, which consisted of 43 question items: 25 structure and 18 reading comprehension items, had been previously developed, on the basis of item reliability testing, for the purpose of class placement at a national university.' Group 1 and Group 2 students took this test in class, and Group 3 students self-administered it individually at such available places as a library or home. Reference to dictionaries or other books was not allowed. Although 30 minutes were allocated for the administration of the test, time limits were not strictly maintained and most students took less time.

The groups differed significantly in terms of their English proficiency scores. According to a one-way analysis of variance (ANOVA) test ($F=10.91$, $p < .01$) and follow-up Scheffe tests ($p < .01$) on the English proficiency scores, Group 3 (35.67) significantly outscored both Group 1 (28.50) and Group 2 (27.14), whose levels were basically the same.

II.1.2. Writing background

A questionnaire in Japanese was devised to elicit individual information regarding prior writing instruction, writing experience, and revision practice (selected questions are presented in Appendix 1). In particular, in order to quantify students' writing experience, we asked them to report how many times at the university level they had written short (less than 5 pages) and long (5 or more pages) English papers, by indicating one of the following categories: 0, 1-2 times, 3-5 times, 6-8 times, 9-12 times, or over 12 times. Table 1 displays the responses by the three groups.

Number of short essays (less than 5 pages)	0	1-2	3-5	6-8	9-12	>12	Total
Group 1	7	9	1	0	1	1	19
Group 2	0	7	10	0	2	3	22
Group 3	0	0	0	3	1	8	12
Number of long essays (5 pages or more)	0	1-2	3-5	6-8	9-12	>12	Total
Group 1	15	4	0	0	0	0	19
Group 2	17	4	1	0	0	0	22
Group 3	1	2	1	5	1	2	12

Much more writing experience was reported by Group 3, as shown in Table 1. For short English essays, all of Group 3 reported having written 6 or in most cases many more, as compared to almost all of Group 2 reporting 1-5, and most of Group 1 reporting 0-2. For long essays, the majority of Group 3 reported 6 or more, whereas almost all of Groups 1 and 2 reported having written none.

11.2. Revision Task

The texts which students were asked to revise were originally written by Japanese university students and modified by the researchers to contain a specific number of coherence problems. Using such manipulated texts has obvious limitations, in particular that they were not actually produced by the students themselves. Nevertheless, this method was chosen because it enabled us to control specific factors, including topic and types of revision problems, and compare the three groups in terms of their revision performance on an equal basis (see Bartlett, 1982; Hayes et al. 1987; Wallace & Hayes, 1991, for use of similar methods). Nevertheless, we are aware that we need to be cautious in interpreting the results of this study due to the limitations of the method.

The texts (shown in Appendix 2) were both on comparison topics: Comics and novels, and TV and newspapers. The choice of two different topics was made to minimize any serious topic effect on the students' revising performance.⁴ Each text was carefully constructed⁵ to contain 12 discourse coherence problems at three different levels: intersentential (I), paragraph (P), and essay (E). The intersentential level included three cases of *missing information*, one *ambiguous reference*, and one *wrong transition*. The paragraph level consisted of one *missing topic sentence*, one *missing sub-topic sentence*, one *digression*, and one *wrong order of sentences*. The essay level contained one *global incoherence* problem (e.g., discrepancy between introduction and conclusion), one *digression* (changing the topic in the middle of the text), and one *afterthought* (reflecting on a given topic after a conclusion is stated).⁶

The three kinds of intersentential problems, which have often been observed in L1 and L2 students' writing (Bartlett, 1982; Wikborg, 1990), are related to ambiguity or lack of clarity at an intersentential level of text. The coherence problems at the paragraph level are related to features of English paragraph structure, which requires careful sequencing of ideas to support a main topic. Those at the essay level are also related to features of English essay structure, where paragraphs are tightly organized around a thesis. These problems at the three discourse levels tend to interrupt the flow of information in a text, creating difficulty on the part of readers in the smooth processing of the text.

11.3. Procedure

11.3.1. Task administration

The background questionnaire, English proficiency test, and revision task were given to Group 1 and Group 2 students in their respective classes. Students were asked first to read the composition and underline where they thought revision (of words, phrases, or sentences) was required. They were told that most of the grammatical or lexical errors had been corrected, but that some problems concerning sentence structure and coherence remained; they were also requested to consider the relation and unity among sentences. They were next asked to revise the underlined parts to improve the composition, using any of the following methods: 1) addition, 2) deletion, 3) substitution, 4) combining and reordering. Finally, they were instructed to simply explain what the problem was if they could not revise the underlined part.

The suggested time for completion of the revision task was 30 minutes, but the participants were allowed to take as much time as they needed. The actual times varied from 20 to 40 minutes or slightly longer. For the revision task, each of the topics was assigned to half of the students. Group 3 students individually completed the same set of procedures as the other two groups.

11.3.2. Analysis of revision performance

To investigate students' ability to detect and correct specified discourse level problems in the given texts, we quantified data under the two large categories of *detection* and *correction*. One point was given for detection whenever a participant indicated one of the problematic portions of the text, either by drawing an underline, as instructed, or by noting a problem or proposing a change of some kind. Scoring for correction ranged from 1 to 3 points, depending upon how participants approached the text problems. We awarded 1 point for a minimally appropriate correction, 2 points for a correction that was nearly but not fully successful, and 3 points for full and appropriate correction. No points were awarded for comments or changes that were either inaccurate or unrelated to the 12 problem areas.

It should be noted that the way we operationalized this scoring system differed somewhat from earlier studies. In the previously mentioned, widely accepted model of revision (Flower et al., 1986; Hayes et al., 1987), both detection and diagnosis constitute problem representation, which takes place while reading to evaluate the text. In the detection process, revisers recognize that some kinds of problems exist, noticing that "this does not sound right," but they do not articulate what the problems are (Flower et al., 1986: 36). On the other hand, in the diagnosis process, the revisers offer explicit definition of problems by locating them in the text and identifying their sources, as in the following example from our data: "it is not clear here, it can mean *TV* or *newspaper*." Due to this nature of being "procedurally explicit" about how to fix the problems (Flower et al., 1986: 39), such comments appeared closer to correction than to simple detection. Moreover, without access to introspective data, it was difficult in practice to differentiate between diagnosis and actual suggestions for ways to correct the problem (e.g., "He/she should change 'it' to 'TI: '"). Thus, we decided to count both diagnosis and suggestions as part of correction in the present study. However, because they did not constitute actual revision of the text, only partial points were given: 2 points for an accurate diagnosis or suggestion, 1 point for a partially successful one, and 0 points for an inaccurate or irrelevant one.

In addition to the numerical scores, the corrections for each problem were categorized in terms of the type of correction strategy used. These categories included addition, deletion, substitution, and reordering/recombining, identified in previous studies (e.g., Bridwell, 1980; Hall, 1990), as well as two additional categories that emerged from our data: multiple categories (combinations of the preceding four strategies) and metacomments (explaining or suggesting solutions for the problems, which we included under correction in this study, as explained above). Examples of correction strategies for each of the problems in Essay 1 are given in Appendix 3. To give an idea of how the task was actually carried out, a sample revision of Essay 2 is presented in Appendix 4.

The authors, two EFL writing researchers and teachers, served as the raters for the revision task. To establish reliability between the two raters in coding data, an inter-rater reliability test on 20% of the data was carried out. The results indicated that there was

considerably high agreement: 88% for detection and 93% for correction. For the actual scoring, the data were coded separately and scores were given for detection and correction when there was full agreement between us. When there was less than full agreement, discrepancies were resolved through discussion.

III. RESULTS

Descriptive statistics and reliability measures for the main variables investigated in this study are shown in Appendix 5. The reliability estimates were based on the Kuder-Richardson 20 formula for the English proficiency test and on inter-rater agreement correlations (as explained above) for the detection and correction scores. Skewness and kurtosis for the proficiency test and revision measures can be considered relatively normal because their absolute values did not exceed 2.00 (Sasaki, 1996, p. 67).

III.1. Group Differences in Revision Performance

The results of a three-way multifactorial analysis of variance (MANOVA) of the students' total revision scores, with repeated measures on the dependent variables (detection and correction scores), showed significant effects of all three factors: group, level (intersentential, paragraph, essay), and component (detection vs. correction). In terms of overall revision percentage mean scores (detection and correction scores combined), Group 3 (61.8%) significantly outscored Group 2 (44.2%), who in turn significantly outscored Group 1 (24.7%), $F = 26.10, p < .01$. For the three groups combined, mean detection scores (49.1%) were significantly higher than correction scores (33.3%), $F = 155.39, p < .01$, and the interaction between component and group was also significant ($F = 9.90, p < .01$). The factor of level was significant ($F = 6.47, p < .01$), and the interactions between level and group ($F = 5.79, p < .01$) and between level and component ($F = 8.15, p < .01$) were also significant, as explained in more detail below.

First, Figure 1 shows the group mean percentage scores for both detection and correction. As shown in this figure, all three groups performed better on detection than on correction; however, Group 2 displayed a distinctive pattern. Although this group, like Group 3, significantly outscored Group 1 for detection and correction (both at $p < .01$), their detection scores were closer to those of Group 3 (Group 3: 67.2%; Group 2: 55.1%; Group 1: 30.7%), whereas their corrections scores were closer to those of Group 1 (Group 3: 56.5%; Group 2: 33.3%; Group 1: 18.7%).

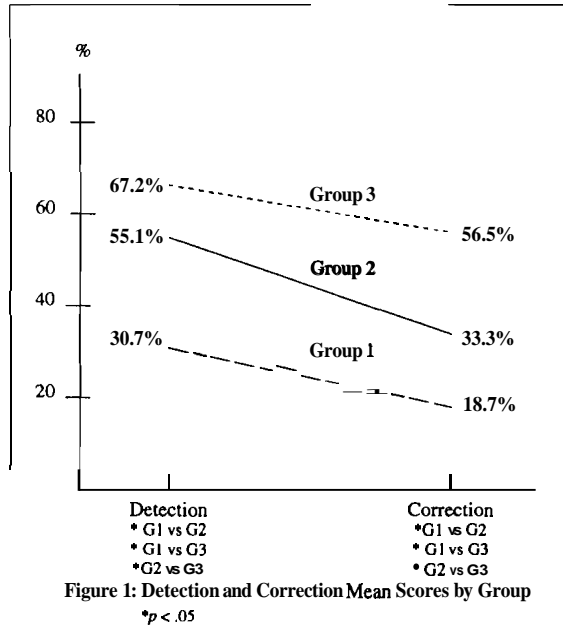


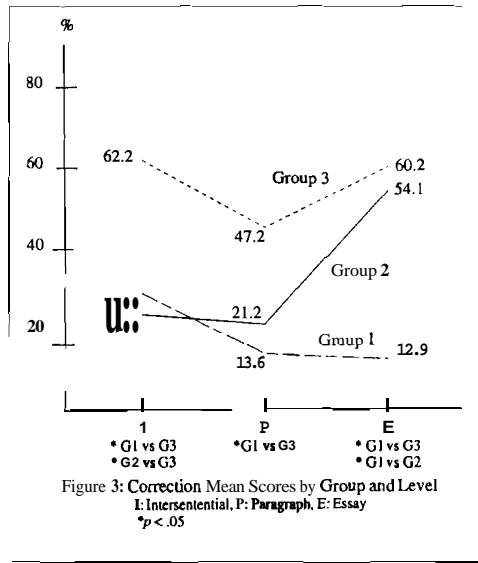
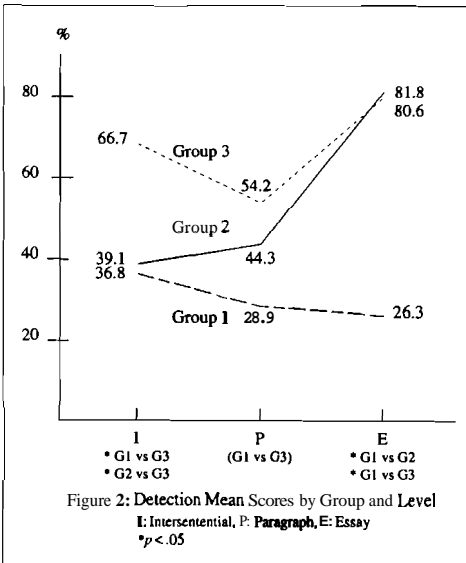
Figure 1: Detection and Correction Mean Scores by Group
*p < .05

Next, Table 2 shows the group mean percentage scores and standard deviations for detection and correction of problems at the intersentential, paragraph and essay levels.

Category	Detection			Correction		
Level	Intersentential	Paragraph	Essay	Intersentential	Paragraph	Essay
Group 1 (n=19)	36.8 (20.3)	28.9 (26.7)	26.3 (30.6)	29.5 (19.4)	13.6 (19.9)	12.9 (17.7)
Group 2 (n=22)	39.1 (25.1)	44.3 (26.1)	81.8 (26.7)	24.5 (22.1)	21.2 (19.0)	54.1 (18.3)
Group 3 (n=12)	66.7 (29.9)	54.2 (39.6)	80.6 (26.4)	62.2 (32.2)	47.2 (34.3)	60.2 (39.2)

Figure 2 presents the same information graphically for detection, and Figure 3 shows that for correction. As shown in these figures, Group 3 markedly outscored the other two groups for both components (detection and correction) at the intersentential level, whereas both Group 3 and Group 2 outperformed Group 1 at the essay level. However, in relation to paragraph level problems, Group 2 showed a different pattern from the other two groups: Groups 1 and 3 both

performed better at the intersentential than at the paragraph levels for detection and correction; in contrast, Group 2 performed slightly better at the paragraph (44.3%) than the intersentential level (39.1%) for detection, and little difference was found between the two levels for correction.



In spite of their similarity in terms of essay level revision skills, Groups 2 and 3 differed in the kinds of correction strategies they employed. The analysis of the types of corrections used when the three groups revised the texts, shown in Tables 3 and 4, reveals such differences. Table 3 shows the frequency of occurrence (in percentages) of each type of correction strategy by group. Table 4 presents the number of times each strategy was used by revision problem and group. According to these tables, Group 2 offered very frequent metacomments across all problems including essay level: explaining or diagnosing the problems, and offering suggestions for improvement. In contrast, Group 3 used a much wider variety of strategies, including multiple options for the same corrections, but relatively few metacomments.

Correction Type	Group 1	Group 2	Group 3
Deletion	22.0%	20.8%	22.1%
Addition	22.0%	9.5%	9.0%
Substitution	19.3%	7.2%	21.4%
Recombining/reordering	14.7%	6.8%	13.8%
Multiple types	5.5%	5.0%	21.4%
Metacomments	16.5%	50.7%	12.4%

Table 4: Frequency of Correction Strategies by Revision Problem

Group 1 (N=19)		REVISION PROBLEM	Deletion	Addition	Substitution	Reorder / Recombine	Multiple Types	Meta- comment	Total number
Essay	(1) Digression	5		1				2	8 (42%)
	(2) Global incoherence							2	2 (11%)
	(3) Afterthought								0 (0%)
Paragraph	(1) Missing topic sentence							2	2 (11%)
	(2) Missing subtopic				4				4 (21%)
	(3) Wrong order	1		2	3				6 (32%)
	(4) Digression	1		1					2 (11%)
Interferential	(1) Missing information		10		1	3	1	1	15 (79%)
	(2) Reference	1		2	2			1	6 (32%)
	(3) Wrong sentence	1		1			1	1	4 (21%)
Group 2 (N=22)		REVISION PROBLEM	Deletion	Addition	Substitution	Reorder / Recombine	Multiple Types	Meta- comment	Total number
Essay	(1) Digression	13				1		7	21 (95%)
	(2) Global incoherence						1	16	17 (77%)
	(3) Afterthought	2				1		10	13 (59%)
Paragraph	(1) Missing topic sentence					1		6	7 (32%)
	(2) Missing subtopic		1		5			1	7 (32%)
	(3) Wrong order					2		3	5 (23%)
	(4) Digression	4		2				2	8 (36%)
Interferential	(1) Missing information		5				5	3	13 (59%)
	(2) Reference			3	1			5	9 (41%)
	(3) Wrong sentence			1				5	6 (27%)
Group 3 (N=12)		REVISION PROBLEM	Deletion	Addition	Substitution	Reorder / Recombine	Multiple Types	Meta- comment	Total number
Essay	(1) Digression	6						1	7 (58%)
	(2) Global incoherence		2	2	1			3	8 (67%)
	(3) Afterthought	3				2	2	2	9 (75%)
Paragraph	(1) Missing topic sentence	1				2			3 (25%)
	(2) Missing subtopic	1	2				1	1	5 (42%)
	(3) Wrong order			2	1	3	2		8 (67%)
	(4) Digression	3		3			2		8 (67%)
Interferential	(1) Missing information		4	1		6			11 (92%)
	(2) Reference	1		5		1	1		8 (67%)
	(3) Wrong sentence			6	1		1		8 (67%)
= 50% or more of corrections for problem					Note: numbers indicate how many participants used each strategy				
= 20% to 50% of corrections for problem									

In sum, all these results suggest that the three groups differed from each other in terms of their ability to detect and correct problems at the three discourse levels and in the types of correction strategies they used. Thus, the first three research questions can be answered as follows:

- (1) Group 2 outperformed Group 1 in terms of essay level revision, but not in terms of intersentential or paragraph level revision.
- (2) Group 3 outperformed Group 1 in terms of all three levels of revision, but outperformed Group 2 only at the intersentential level.
- (3) Group 1 used a limited number of correction strategies, Group 2 tended to offer mainly metacomments, including diagnoses of the problem and suggestions for improvement, and Group 3 employed a wide variety of correction types, including multiple strategies.

111.2. Language Proficiency and Writing Experience

Correlations⁷ among revision scores and the two factors of language proficiency and writing experience are shown in Table 5. Significant positive correlations were found between English proficiency and three of the four revision scores. English proficiency scores correlated most closely with intersentential level revision scores ($r = .64$) and total revision scores ($r = .62$), slightly less so with paragraph revision scores ($r = .56$), but not significantly with essay level scores ($r = .32$), according to Bonferroni adjusted probability values.⁸ As shown in Table 5, significant positive correlations were also found between most of the writing experience and revision scores. The number of long essays correlated significantly positively with intersentential ($r = .63$) and overall ($r = .51$) revision scores (both at $p < .01$) and barely significantly with paragraph ($r = .36$, $p = .05$) revision scores; the number of short essays correlated somewhat significantly with overall ($r = .49$), essay ($r = .44$), paragraph ($r = .42$) and intersentential ($r = .41$) revision scores (all at $p < .05$). Overall, these results indicate a significant relation between discourse level revision and both English language proficiency and the amount of writing experience reported. However, when the overlap (r^2) was calculated for each of the two highest correlations obtained ($r = .64$ for English proficiency and intersentential revision; $r = .63$ for number of long essays and intersentential revision), the strength of the relationship was shown to be 41% and 40%, respectively. That is, although these relationships can be considered fairly strong, it should be kept in mind that 59% and 60% of the variance remains unexplained. In addition, the two variables of English proficiency and writing experience correlated significantly with each other and showed a substantial amount of overlap ($r^2 = .16$ for English proficiency and short essays, and $r^2 = .27$ for English proficiency and long essays). Therefore, caution is warranted in interpreting the relationship between students' revision behavior and each of the

two measures, and further research is needed to assess with more rigorous statistical procedures what factors affect students' revision.

Table 5: Correlations for Three Groups Combined

	English Proficiency Test	Writing Experience		Revision Scores			
		Short Essay	Long Essay	Intersentential level	Paragraph level	Essay level	Total
English Proficiency	1.00						
Writing short essays	0.40*	1.00					
Writing long essays	0.52**	0.53**	1.00				
Intersentential revision	0.64**	0.41*	0.63**	1.00			
Paragraph revision	0.56**	0.42*	0.36*	0.58**	1.00		
Essay revision	0.32	0.44*	0.27	0.45**	0.68**	1.00	
Total revision	0.62**	0.49**	0.51**	0.83**	0.88**	0.82**	1.00

* $p < .05$, ** $p < .01$

With the above cautions in mind, the last two research questions can be answered as follows:

- (4) For all of these students combined, English proficiency level was significantly positively related to all aspects of revision performance except that at the essay level.
- (5) Amount of English writing experience as reported by the students in this study was significantly positively related to revision performance.

IV. DISCUSSION

Although writing instruction was not treated as a primary variable in this study, the findings suggest that writing instruction together with writing practice may help to facilitate the acquisition of L2 revision knowledge and skills. After two semesters of writing instruction, the Group 2 students showed a clear advantage in terms of essay level revision ability over Group 1, the undergraduates with no writing instruction and very little writing experience. In essence, the results indicate that L2 writers can learn to improve essay level coherence problems through instruction combined with the experience of writing and revising in an instructional setting.

Effects of such instruction can be further seen in Group 2's use of strategies in correcting essay level coherence problems. Group 2's frequent use of metacomments (2.6 times per student on average) differentiated them from Group 1 (0.5 times on average) and Group 3 (0.9 times on

average). Unlike Group 1, many of the students in Group 2 appeared to have learned how to diagnose problems in a text and offer suggestions for improvement. However, as opposed to Group 3, who had higher language proficiency, Group 2 may not have developed adequate means to solve essay level problems. In solving global incoherence, for example, whereas 5 out of 12 students in Group 3 offered corrections by employing addition, substitution or reordering, only one student in Group 2 made an actual correction (by using multiple strategies) and the majority (16 students) offered metacomments. However, because Group 2's frequent use of metacomments may have been prompted by frequent classroom practice giving comments on their peers' writing, we cannot infer that all of the 16 were necessarily unable to correct the global incoherence they observed.

The positive relation between amounts of writing experience and revision performance in this study accords well with previous studies (e.g., Hedgcock & Lefkowitz, 1992; Matsumoto, 1995; Riazi, 1997) that found extensive writing and revising with and without feedback led to improved L2 writing ability in a variety of contexts. The L2 writing experience reported by the students in this study, particularly the graduate students, tended to be academically related, including graduation and Masters theses. Such writing experience appears to contribute to the development of revision skills, which constitutes an essential part of writing ability. This tendency is substantiated by the graduate students' responses to another item on the background questionnaire. Asked to evaluate five activities in terms of their contribution to the development of their writing ability (see Appendix 1, question 8), the majority of the graduate students unequivocally agreed on the importance of repeated experience with both writing English papers, presumably related to their area of specialization, and revising them based on readers' feedback. Their responses support the notion that L2 writing experience, when it is related to students' academic needs or disciplines, may greatly facilitate the development of writing ability, including revision skills, as suggested by research on genre (Swales, 1990) and the acquisition of academic literacy (Johns, 1997).

The finding that L2 language proficiency is related to revision performance is not at all surprising in light of the studies that have found such proficiency to contribute to overall and specific aspects of writing performance (e.g., Cumming, 1989; Pennington & So, 1993; Sasaki & Hirose, 1996; Sasaki, 2000). However, the results of this study indicate that L2 proficiency was related to intersentential and paragraph revision performance, but not to that at the essay level. This accords with Aoki's (1992) findings that grammar knowledge was correlated with correction of local errors but not of global problems. These results support the notion that essay level knowledge and concerns that underlie revision skill at this level may be somewhat independent or separable from language proficiency. This may explain why relatively short term instruction can result in raising students' awareness of such issues as audience or global vs. local revising strategies, which subsequently may lead to better quality of students' revision (Roen & Willey, 1988; Sengupta, 2000; Wallace & Hayes, 1991; Yin, 1996).

On the other hand, the ability to detect and correct intersentential level problems such

as *missing information* and *ambiguous references* may develop relatively gradually, in conjunction with more advanced language proficiency. It should be noted that all of the errors in our study were "meaning errors," which involved discourse level text processing and were thus more difficult to correct than surface errors would have been (Lee, 1997, pp. 470-471). Because the correction of such intersentential coherence problems appears to require higher overall English proficiency, particularly reading ability to evaluate the text, it may be less amenable to improvement through direct instruction.

The results of this study suggest that the relation between detection and correction skills still remains to be clarified. On the one hand, this study, like those of Bartlett (1982) and Whalen & Ménard (1995), found that students could detect some problems that they did not know how to correct. In such cases, the acquisition of detection skill can be assumed to have preceded that of correction skill. On the other hand, Lee (1997) found that in many cases students could correct problems they were unable to detect by themselves, as long as the problems were pointed out (detected) by someone else. In those cases the acquisition of correction skill appears to have preceded the acquisition of detection skill. However, these findings may not actually contradict each other if we consider the differing nature of the two skills. According to the Hayes et al. (1987) model, detection depends on the ability to read and evaluate the text to identify the presence of a problem, whereas correction requires the selection of an appropriate strategy, presumably based on accurate diagnosis, once the problem has been detected. Further research is required to determine how these two skills are acquired and how they interact.

Finally, although we need to be cautious in our interpretation because of the nature of the task and the small number of participants, the findings from this cross-sectional study can be interpreted as suggesting a possible progression in the acquisition of both detection and correction skills, from the inexperienced undergraduates (Group 1) to the graduate students (Group 3), with the experienced undergraduates (Group 2) representing an intermediary position between the other two groups. Moreover, as implied earlier, the high proportion of diagnostic metacomments among the Group 2 corrections provided some evidence for the existence of a 3-part developmental sequence of detection - diagnosis - correction (Flower et al., 1986) at least for some students. As pointed out by Bartlett (1982), although diagnosis (naming or defining a problem) is not necessary in order for correction to take place, "it is possible that development of revision skill is accompanied by an increasing ability to articulate and reflect on specific text problems and that in fact development of new revision skills begins with an ability to reflect on a new type of problem" (p. 354). If so, the Group 2 students who had learned through instruction to analyze and consciously articulate the problems to be corrected could be seen as actively engaged in the process of acquiring higher level revision skills.

V. LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

One of the remaining questions concerns the role of "task definition" for the students in this study. For some students, the revision task may not have been well defined (Wallace & Hayes, 1991), as discussed in the Introduction. In particular, some of the graduate students who had received little writing instruction apparently tended to view revision as correcting surface-level errors or problems, and thus received very low scores on their revisions. Similarly, some revision scores may have been lower because of potential conflict over the ownership of the essay being revised. That is, some students may have been hesitant to make corrections because it was not their own writing.

Although revising someone else's writing can be seen as a limitation, it can also be considered a strength of this study. We suggest that peer revision should be further explored in future research because it allows for systematic comparison across individuals and groups and reveals abilities that would not be evident if we look only at how writers revise their own papers. In particular, the most proficient revisers in this study might not have had to do the same kind of revisions of their own papers if they had created more coherent writing in their earlier drafts, and thus they would not have demonstrated the scope of their revision skills.

A more significant limitation of the study was a lack of introspective data from the participants, which could have helped to clarify some of the questions that arose from the analysis of their written responses. Future studies could alleviate this problem by incorporating a post-task interview with each participant shortly after the completion of the task to clarify such questions as precisely which problems were detected and why metacomments were given instead of actual corrections.

Finally, because of the nature of this controlled study and the small number of participants (particularly at the graduate level), the results require further validation. One approach would be a larger, more rigorous cross-sectional study that investigates the effects of writing instruction and experience, L2 proficiency, and other relevant factors (such as metacognitive knowledge) on revision performance. Another possibility would be a longitudinal study to determine whether the results of the cross-sectional study are representative of the actual acquisition of revision skills over time.

NOTES

1. An earlier version of this paper was presented at the AAAL Annual Conference in Seattle in March, 1998. We are very grateful to all the participants in the study, which would not have been possible without their efforts. We wish to thank Chiaki Iwai, the instructor for Group 2, both for his cooperation in collecting the data and for his many helpful suggestions for improvement of the paper. We also very much appreciate the many valuable comments by Miyuki

Sasaki, Rosa Manchón, and the anonymous reviewers, and want to thank Chris Schreiner, Nobuyuki Aoki, and Monika Szirmai for making additional suggestions to improve the clarity and style. Our special gratitude goes to Richard C. Parker for all his work on the tables, figures and appendices.

2. It should be noted, however, that Hayes et al. (1987) found that both expert and novice writers fixed some text problems without explicitly detecting them. They attributed this finding to the fact that the writer's use of a rewriting strategy in correcting problems can eliminate other problems at the same time.

3. The structure items were drawn from the structure section (75 items) of the Comprehension English Language Test for Learners of English (CELT) B-version, and the reading comprehension questions were selected from the reading section of a practice book (Phillips, 1996) for the Test of English as a Foreign Language (TOEFL). The Kuder-Richardson 20 measure of .80 indicates a reasonable level of reliability for this proficiency test in this study.

4. There were no significant differences between the revision scores for the two topics. The mean revision scores (detection and correction combined for all participants) for the two topics were 17.96 (for comics and novels) and 17.11 (for TV vs. newspapers), out of a possible score of 48 points for each.

5. The texts and task instructions were revised several times on the basis of trials with Japanese and native English speaking EFL writing teachers. The final version was piloted with two other teachers, who each successfully identified and corrected all the problems. Replication of the study should be carried out in the future to confirm the reliability of the instrument.

6. This distribution was intended to represent the proportions of errors found at the different discourse levels in empirical studies of Japanese students' writing (e.g., Kobayashi, 1991). Although it would have been preferable in terms of statistical analysis to have the same number of problems at each discourse level, it would have been highly unnatural to include as many essay or paragraph level problems as intersentential level ones. For this reason, in order to avoid biasing the study in favor of intersentential errors, the analysis was conducted in terms of percentages of errors corrected at each level.

7. These were Pearson correlations between revision and proficiency test scores, and Spearman correlations between the revision scores and the categorical writing experience report scores. Although the total number of participants (53) was small, the data appeared to be fairly normally distributed (as shown in Appendix 5) and examination of the scatterplots showed a basically linear configuration, which suggests a meaningful correlation.

8. Bonferroni probabilities were used for all correlations to avoid a Type I error (rejection of a true null hypothesis) that might result from the use of multiple correlations.

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Appendix 1
Background Questionnaire Selected Items (Translated from Japanese)

1. Fill in the requested information.

1) Age: _____

2) Major at a university: _____

(Circle each applicable item.)

2. Gender: Male Female

3. Year: First Second Third Fourth
 Graduate School (Masters Doctorate)

4. Have you ever lived in a foreign country?

Yes No

For those who answered "Yes,"

What country and how long have you lived there?

Country: _____ Period: _____

5. Have you taken an English composition class in a Japanese university or graduate school?

1) Yes No

2) For those who answered "Yes",

How many times have you taken such classes? (count one semester's class as once)

3) What kind of activities did the class include? (Circle all applicable answers)

- a. Analyzing model paragraphs or essays, and then writing English compositions following the models
- b. Translating sentences from Japanese to English
- c. Doing multiple revisions of your own English essays
- d. Writing English essays on various topics without revising them
- e. Doing exercises to learn about the features of English composition (e.g., topic sentences)
- f. Doing exercises to learn appropriate English expressions and difficult grammar points
- g. Others (explain concretely: _____)

4) In the class, what features of English expository essays did you learn about?

(Circle all applicable answers)

- a. Topic sentence and paragraph structure
- b. Thesis statement and essay structure (introduction, body, conclusion)
- c. Differences between Japanese and English written organization
- d. None
- e. Others (explain concretely: _____)

6. Have you taken any English composition classes at a university or graduate school outside of Sapan? [SAME SUB-QUESTIONS AND ITEMS AS IN QUESTION 5]

7. Have you ever written English reports or papers of the following length? (Circle the most appropriate answer for each: 0 = Zero, meaning "no experience")

1) One to four pages

0 1-2 3-5 6-8 9-12 over 12

2) Five to ten pages or more

0 1-2 3-5 6-8 9-12 over 12

8. What was useful to improve your writing ability? Rate the contribution of the following activities from 1 to 5 ("not useful" to "very useful"). (Circle the most appropriate answer for each.)

	not useful			very useful	
a. Writing many English reports or papers	1	2	3	4	5
b. Revising your own English reports or papers based on readers' comments	1	2	3	4	5
c. Using English as a real communication tool	1	2	3	4	5
d. Reading many English essays and studying the structure for yourself	1	2	3	4	5
e. Learning about the features of English writing in a composition class	1	2	3	4	5
f. Other (_____)	1	2	3	4	5

Appendix 2

Essays for Revision Task and Summary of Problems to be Detected and Corrected

Essay 1: Comics and Novels

¹Today, comics are more popular among young people. ²Comics have the largest circulation of all books and magazines, and it is nice to read comics on the train. ³However, some adults consider them as undesirable books because they think comics lower the ability to think in one's own mind. ⁴Is this really true?

⁵Comics have pictures and words, but novels mainly have sentences. ⁶So, generally speaking, novels take a lot of time to read and need the imagination of readers. ⁷In short, the advantage is to be able to understand easily, but the disadvantage is to influence our thinking. ⁸We understand the story easily because of the pictures. ⁹But, if there are no pictures, we have to imagine the circumstances in the novel.

¹⁰As for price, a comic book costs about 390 yen. ¹¹A novel costs from 390 to 25000 yen. ¹²Then, comics often cost less than novels.

¹³As for readers, because of the price, comics are popular among young people. ¹⁴The fashion of comics is changeable. ¹⁵So there are few comics that have been read for a long time. ¹⁶However, novels have been read for centuries. ¹⁷They are popular among adults. ¹⁸Of course, some adults prefer to watch videos every night. ¹⁹They enjoy watching movies at home while eating snacks.

²⁰There are many advantages of comics compared with novels. ²¹So, I think comics are more suitable for the young people even if teachers recommend novels. ²²I think it is good to read them for recreation. ²³I also think it is good to use them for study (for example, Japanese history). ²⁴I remember European history I read in my childhood. ²⁵Comics can help children understand difficult things.

Essay 2: TV and Newspapers

¹These days, we can get a lot of information in various ways about world events, local events, the weather and sports. ²It is nice to hear about these things. ³Especially TV and newspapers are the most common ways. ⁴If we get information which is necessary for our daily lives, are there more similarities than differences?

⁵TV talks to us with the human voice and moving pictures. ⁶Newspapers have words written by a reporter and pictures that do not move. ⁷Therefore, it can give us clearer information. ⁸If an important event happens this afternoon, we cannot know about it in the newspaper before tomorrow morning. ⁹However, we will be able to get the information right away the same night. ¹⁰Recently, computers are becoming a popular new way to get information quickly. ¹¹More and more young and older people are using the internet every day.

¹²Then, newspapers are not less useful than TV. ¹³We can read them any time we need and at any places we like. ¹⁴In short, we can get the information more actively from newspapers than TV. ¹⁵We can choose to read any articles that we want, but we do not have to read any that are not interesting.

¹⁶There are still many differences between TV and newspapers. ¹⁷However, both of them are necessary and useful to our lives. ¹⁸They are the most important information services. ¹⁹We can't say which is better. ²⁰I want to use both well. ²¹But sometimes TV and newspapers don't tell the truth. ²²So I think we have to listen and read carefully. ²³We do not have to believe everything they say.

List of Discourse Level Problems**Sentence Numbers**

		(<i>Essay 1</i>)	(<i>Essay 2</i>)
Intersentential Level:	Missing information	1,7,8	3,4,9
	Ambiguous reference	22	7
	Wrong connector	12	7
Paragraph Level:	Digression	2	2
	Missing sub-topic	before 14	before 8
	Missing topic sentence	before 5	before 5
	Wrong order	7/8-9	14/15
Essay Level:	Global incoherence	4	4
	Digression	18-19	10-11
	Afterthought	22-24	21-23

Appendix 3
Examples of Correction Strategies by Discourse Level and Problem
(Essay 1: Comics and Novels Topic)

PROBLEM (Sentence number)*	STRATEGY	EXAMPLE
<i>Essay Level</i>		
Digression (18-19)	Deletion	Sentences 18 and 19 CROSSED OUT
Global Incoherence (4)	Substitution	"However, there are many reasons I recommend them [rather] than novels." (FOR "Is this really true?")
(4)	Metacomment	<i>Since this essay is comparing comics and novels, it is recommended that the writer should make it clear that the essay will deal with the question "Do comics really lower abilities to think?" through the comparison of the two, comics and novels.**</i>
Afterthought (22-24)	Deletion	Sentences 22 to 24 CROSSED OUT
(22-24)	Recombining/ Reordering	Sentences 21, 22, 23 and 25 MOVED BEFORE Sentence 16.
<i>Paragraph Level</i>		
Missing Topic Sentence (before 5)	Addition	"I think that comics have advantages over novels. First they are easier to understand."
Missing Subtopic (before 14)	Multiple	Sentences 10 through 13 REWRITTEN (with DELETION Strategies and SUBSTITUTION) and COMBINED into one paragraph: "As for price, comics have [an] advantage over novels. Comics often cost less than novels. A comic book costs about 390 yen. A novel costs from 390 to 2500 yen. That is why comics are popular among young people."
Wrong Order (7-9)	Substitution	"In contrast, we can easily understand comics because of the visual aids." (FOR Sentence 7)

(7-9)	Recombining/ Reordering	Sentence 7 MOVED AFTER Sentence 9
Digression		
(2)	Deletion	"and it is nice to read comics on the train" CROSSED OUT
(2)	Metacomment	<i>"and it is nice to read comics on the train"</i> <i>unnecessary</i> **
<i>Intersentential Level</i>		
Missing Information		
(1)	Addition	"than novels" (AFTER "comics are more popular")
(7)	Recombining/ Reordering	Sentences 20 and 21 MOVED BEFORE Sentence 7
(7)	Metacoininent	<i>"comics or novels, which one?"</i> ** (AFTER "the advantage")
Ambiguous Reference		
(22)	Substitution	"comics" (FOR "them")
(22)	Metacomment	<i>which?</i> ** (UNDER "them")
Wrong Connector		
(12)	Deletion	"Then" CROSSED OUT
(12)	Substitution	"However," (FOR "Then,")

*Sentence number in Essay 1 (see Appendix 1).

**Translated from the original Japanese.

Appendix 4

Sample Revision by One Participant (Group 3)
(Essay 2: TV and Newspapers Topic)

TV and Newspapers

I am going to tell the difference between them.

1 These days we can get a lot of information in various ways about world events, local events, the weather and sports. 2 It is nice to hear about these things. *in the ways, of which etc*

3 Especially TV and newspapers are the most common ~~ways~~. *ways* 4 If we get information *which is necessary for our daily lives*, are there more similarities than differences?

5 TV talks to us with the human voice and moving pictures. *Although TV* 6 Newspapers have words written by a reporter and pictures that do not move. *Therefore* 7 It can give us clearer information. *In addition* 8 If an important event happens this afternoon, we cannot know

9 about it in the newspaper before tomorrow morning. *But* 10 However, we will be able to get the information *on TV* right away the same night.

11 Recently, computers are becoming a popular new way to get information quickly. 12 More and more young and older people are using the internet every day.

13 ~~Then~~, newspapers are not less useful than TV. *However* 14 We can read them any time we need and at any places we like. *conveniently* 15 In short, we can get the information more actively from newspapers than TV. *Furthermore* 16 We can choose to read any articles that we want, but we do not have to read any that are not interesting. *Further more*

17 There are ~~still~~ many differences between TV and newspapers. *other* 18 However, both of them are necessary and useful to our lives. 19 They are the most important information services. 20 e can't say which is better. *I want to use both well.*

21 But sometimes TV and newspapers don't tell the truth. 22 So I think we have to listen and read carefully. 23 We do not have to believe everything they say.

* 削除

* 削除

* 削除

* (Japanese for 'delete')

Appendix 5

Descriptive Statistics and Reliability for Main Variables							
Variable	N	Total possible	Mean	SD	Kurtosis	Skewness	Reliability estimate
English Proficiency test	49	43	29.55	6.09	-0.30	-0.04	.80
Detection score	53	12	5.72	2.86	-0.36	0.27	.88
Correction score	53	36	11.81	8.50	0.56	1.03	.93