The current study examined 24 Japanese university students’ processes of negotiation in conditions of self revision and of peer revision about their English as a foreign language (EFL) writing. Analyzing their negotiation episodes and text changes, I categorized within a common coding scheme the types of negotiation from (a) think-aloud protocols of participants’ self revisions, (b) transcriptions of their discussions during peer revisions, and (c) changes students made to their written texts in both conditions of revising. Other data included stimulated recall interviews with individual students. More episodes of negotiation appeared during peer revisions (682 episodes) than during self revisions (522 episodes), but approximately twice as many text changes occurred during participants’ self revisions (287 text changes) as occurred during their peer revisions (166 text changes). Peer revisions had more metatalk than self revisions. Self revision tended to involve brief solitary searches for word choices or self-corrections of grammar based on individual memory searches or repetitions. Several pedagogical suggestions for second language (L2) learning and writing arise from these results.

Verbal processes of negotiation are important for second language acquisition (SLA) (Pica, 1994). Whereas previous inquiry on SLA has focused primarily on oral discourse, the current study considered negotiation in the context of adult second language (L2) learners’ self revisions and peer revisions of their writing. I considered revision to include “both the mental process and the actual changes” (Fitzgerald, 1987, p. 483) related to students’ modifications of written drafts they had previously composed in classroom settings.

This concept of negotiation arises from two different strands of research and theory: (a) cognitive orientations to research on writing processes, which regard writing and revision as mental and dialectic negotiations between writers’ thoughts and their emerging texts (Bereiter & Scardamalia, 1987; Hayes, Flower, Schriver, Stratman, & Carey, 1987)
and (b) linguistic orientations to research on SLA and L2 teaching, which consider verbal interactions among groups of language learners or between a teacher and a learner as processes of meaning negotiation to solve problems of communication (Pica, 1994) or to deliberate over appropriate language forms (Ellis, Basturkmen, & Loewen, 2001; Lyster, 1998; Lyster & Ranta, 1997). I considered the negotiation of form to occur when students verbally initiate attention to language form, even though their speaking or their written text may not have any actual problem. This definition follows studies such as Swain and Lapkin (1995) and Williams (1999, 2001a, 2001b) which used language-related episodes (LREs) as units of analysis for learners’ attention to form.

OUTPUT AND L2 WRITING

Self-regulation is necessary for revision, which consists of the recurrent checking, monitoring, and evaluating of one’s writing (Bereiter & Scardamalia, 1987; Flower & Hayes, 1981a, 1981b; Hayes, 1996). Self-regulation of composing processes is akin to the verbalization processes postulated in the comprehensible output hypothesis, which Swain and Lapkin (1995) claim involves L2 students’ noticing, testing, and reflecting on the gap between their interlanguage and the target language. Cumming (1990) and Swain and Lapkin have suggested that writers’ engagement in verbal and mental negotiations while they compose or revise texts may facilitate their L2 learning while they compose. Cumming drew his conclusions from examining adult writers’ decision making while they were writing various EFL tasks, which he described as having characteristics of the verbal “process of negotiation” (p. 500). Swain and Lapkin reported that French immersion students, particularly more proficient students, as they edited their writing, noticed linguistic problems in both the drafting and subsequent editing phases of their composing, which led them to modify their L2 output.

PEER REVISION

Much empirical research on L2 peer revision has demonstrated positive effects (De Guerrero & Villamil, 1994; Hedgcock & Lefkowitz, 1992; Lockhart & Ng, 1995; Mendonca & Johnson, 1994; Nelson & Murphy, 1992, 1993; Villamil & de Guerrero, 1998), often attributing students’ success to the qualities and extent of their collaborative interactions (Hedgcock & Lefkowitz, 1992; Lockhart & Ng, 1995; Mendonca & Johnson, 1994). Lockhart and Ng, for example, studied the functions and content of L2 students’ styles of negotiation during peer revision.
However, little research (apart from Villamil & de Guerrero, 1998) has yet explored the relation between negotiation processes during peer revision interactions and the changes that L2 students make to the products of their written drafts.

SELF REVISION

Many L2 writing researchers have acknowledged the importance of L2 writers’ autonomy, although the degree of student autonomy in these studies has varied (Cresswell, 2000; Ferris, 1995, 1999; Lane & Lange, 1993; Truscott, 1996). Some empirical research has demonstrated the value of self revision for the improvement of writing (Fathman & Whalley, 1990; Polio, Fleck, & Leder, 1998). Fathman and Whalley have suggested that rewriting alone can itself improve the content of writing. Polio, Fleck, and Leder found that additional time for self revision facilitated the accuracy of advanced-level L2 students’ writing. However, as Cresswell has pointed out, little research has been conducted on self revision among L2 students. Notably, there is limited research comparing self revision to peer revision without teacher instruction or feedback. The current study explores the features of writing that L2 writers can and cannot improve by themselves as they engage in self revisions and peer revisions. Knowing what L2 writers can and cannot do by themselves or when assisted by others in such contexts can help to inform what and how teacher feedback may assist L2 writers’ development.

PROCESS-ORIENTED RESEARCH WITH VERBAL REPORTS

Two types of verbal protocols have featured in most research investigating SLA-related cognitive processes: concurrent (think-aloud) protocols and retrospective (stimulated recall) protocols to investigate learners’ thinking or language processes (Gass & Mackey, 2000). Veridicality and reactivity are commonly cited as issues of validity in such verbal protocols. However, Ericsson and Simon (1987, 1993) reviewed various studies of concurrent and retrospective reports and concluded that think-aloud reports do not change the sequence of thoughts during task perfor-

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1 Truscott (1996) argued “teachers can help students’ accuracy at least as much by doing nothing as by correcting their grammar, and by doing nothing teachers can avoid the harmful effects” (pp. 360–361). I assume that he implied the value of L2 writers’ self-correction in this argument.

2 Participants in Fathman and Whalley’s (1990) study did not improve grammar in their revisions.
mance in spite of their slowing the rate of the whole procedure. Gass and Mackey reviewed various studies of verbal reports related to L2 learning, and concluded that introspective methodologies, including think-aloud methods or stimulated recall interviews, could access cognitive processes of problem-solving or language learning under careful research designs that respected the limits and qualities of introspective verbal reports. In the current study I used think-aloud protocols to explore processes of self revision. I also used retrospective reports (stimulated recall interviews) to examine participants’ information processing during self revisions and peer revisions. I followed precedents in previous process-oriented studies of L2 writing (Cumming, 1989; Raimes, 2001; Swain & Lapkin, 1995).

Some research has indicated that verbal reports can change participants’ thought processes and thus may have reactivity effects on task performance (Chi, 2000; Ericsson & Simon, 1993; Swain, 2006). As Swain has pointed out, verbalization through concurrent verbal reports and stimulated recalls for language learners may be far more than a means to collect data about language learning. They may shape the processes of studying and learning themselves, a point I will return to at the end of this article, when I discuss potential reactivity effects from participants’ verbal reports as they thought aloud in their self revision task and verbalized the processes of their revisions in stimulated recall interviews.

RESEARCH QUESTIONS

Based on the theories and research I have just reviewed, I formulated two research questions:

1. What are the relations between conditions of self revision and peer revision with regard to the frequency and types of negotiation that adult Japanese students use while revising drafts of their compositions in English?
2. What changes to these students’ written compositions occur during self revision and during peer revision?

METHODS

Participants

Participants were 24 Japanese sophomores enrolled in a compulsory general English course. Their teacher was an American professor who had been teaching English and L2 education at universities in Japan for more than 10 years. Eighteen students were female and six students were male, all from middle-class socioeconomic backgrounds. They were all
registered in the English department at a private university well known in Japan for foreign language education. Students with the same score on the TOEFL ITP test (Test of English as a Foreign Language Institutional Testing Program) had been placed in the same compulsory English class. Participants took the TOEFL ITP in January 2003 before starting the two-semester course in April. The mean of participants’ scores on the TOEFL ITP test was 515.3, and the standard deviation was 22.7.

**Grouping of Students**

My research required two equivalent writing tasks (described later) as contexts to compare students’ self revisions and peer revisions with regard to their processes of negotiation and text changes. After the participants wrote these two essays, they revised their drafts according to two different conditions, self revision and peer revision. I divided the participants into two groups that were as similar as possible in respect to their L2 (English) proficiency, English writing proficiency, gender, age, and length and context of L2 learning. Participants’ English proficiency and English writing proficiency were given priority in this grouping. Two groups were randomly selected by a computer program so that each group’s means of the three adjusted standard deviation scores were similar in respect to (a) scores from the TOEFL ITP test, (b) two raters’ assessments of participants’ drafts written during course work in the previous semester, and (c) the number of words in the drafts.

Participants’ ages ranged from 19 to 21 years old. The means of ages in each group were almost the same \((M = 20.1 \text{ vs. } M = 19.8; SD = 0.5 \text{ vs. } SD = 0.8)\). Group A consisted of 10 female and two male students, whereas Group B comprised eight female and four male students. Students in both groups had studied English for between 6 and 14 years; on average, they had been studying English for approximately 9 years. Most students had taken the TOEFL twice before. In their profile questionnaires, four students in each group answered that they had previous experiences with peer revision. Six students in Group A and nine students in Group B replied that they had other opportunities to write English than in the current study and course.

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3 The adjusted standard deviation score is widely used in educational assessments in Japan. It is a technique for standardization of scores of different tests that makes the mean score of any test become 50 (e.g., to compare scores on different subject tests). For example, to make 90% of the students’ scores belong to the range 20 to 80, the gap between individual student’s scores and the mean is divided by the standard deviation, and then multiplied by 10. The formula is \(((X_i - X_{\text{med}}) \div SD) \times 10 + 50\), where \(X_i\) is the individual student’s score, and \(X_{\text{med}}\) is the median.
Contexts of the Current Study

I observed the class over the fall semester from September to December 2003 and supplemented these observations by interviews with the participating teacher. The class was oriented toward oral communication. Nonetheless, students had opportunities for reading and writing as well. They were assigned to read one or two chapters each week of a course book about language learning written in English, and they were asked to write a log that they handed in to their teacher within 2 days after every class. In their logs, students were required to write a summary or comments on assigned readings, evaluate their class activities, write a comment on a class newsletter which was issued by e-mail every week, and introduce three new useful words or phrases they chose to learn for that week that they could teach to other students. Some of the students’ logs were introduced to the class in the newsletter.

Administration of Writing Task 1 and Its Revision

Participants engaged in the writing tasks and revisions in a language laboratory, where their class was always held, during two of their classes in the middle of the fall semester 2003. The language laboratory and the equipment were familiar to participants. The tasks of writing and revision were carried out as part of the research with the permission of their instructor and administrator of their university.

After I ascertained the presence and seating locations of participants and explained the schedule, all participants wrote an essay for Writing Task 1 (writing about a famous person in history) for 30 minutes. This writing prompt was one of two that the teacher and I selected from a list of topics on ETS’s Web site for the Test of Written English (TWE). We chose these prompts because they seemed to be more or less equivalent in difficulty, interests, knowledge, and familiarity for the student participants.4

Before the participants began to write the essay, I told them that the

4 Two native speakers who had been teaching English, including writing, at several universities in Japan during the 3 previous years holistically assessed participants’ first drafts of Writing Task 1 and Writing Task 2 using Hamp-Lyons’s (1991) scale of linguistic accuracy, a scale of communicative quality adapted from Hamp-Lyons (1991) and Hamp-Lyons and Henning (1991). Tallies of the number of words in participants’ drafts were used as an indicator of their written English fluency. The total number of words in TWE essays has been demonstrated to correlate with L2 writing proficiency in this type of context (Grant & Ginther, 2000). The t-tests did not show statistically significant differences between first drafts of Writing Task 1 and first drafts of Writing Task 2 in terms of linguistic accuracy, communicative quality, or number of words. Consequently, the two prompts for the writing tasks did not seem to differ in difficulty for the present participants.
prompt for Writing Task 1 was selected from the TWE and that two native-speaking English teachers, like their present teacher, would read their essays. Then Group A students took 10 minutes to fill out a profile questionnaire for demographic data. Group A students next listened to the think-aloud instructions that I had audiotaped, and they practiced how to think-aloud while solving a multiplication problem. I had prepared the instructions on tape and the handout (a script of the instructions) based on procedures suggested by Ericsson and Simon (1993). The recorded instructions were spoken in English and in Japanese. To illustrate, I thought aloud in Japanese while solving a multiplication problem. The participants were then given a similar problem to solve. I told students that while thinking aloud, they could use either Japanese (their first language or L1) or English (their L2). Following that, students in Group A engaged in self revision for 15 minutes. The think-alouds which occurred during the self revisions were audiotaped.

Group B students (the peer revision group) listened to the audiotaped instructions for peer revision immediately after they had finished writing their first drafts. The instructions were spoken in English and then in Japanese. The script of the instructions was distributed to students as a handout. Students revised one student’s essay for 15 minutes, and then the other students’ essay for another 15 minutes, following my directions. I asked students to read aloud a partner’s draft before they discussed the essay. Participants’ discussions during these peer revisions were audiotaped. I did not, in my instructions, tell them anything about which language they might use during their peer revisions.

A staff member from the language laboratory helped me operate the audio equipment. Participants wore headphones with microphones when they listened to the instructions for revision and as they revised their drafts. The audio channels of the language laboratory were set so that each student in the self revision group could listen only to his or her own voice, and the peer revision group students could listen to only their own voice and their partner’s voice. Students in the self revision group sat in every other row so that they could have as much personal space as possible.

All participants used black pens that I distributed for the first drafts. In the self revision group, participants used much thicker blue pens than the black pens so that text changes that they made could be distinguishable. In the peer revision group, students who revised their own drafts used blue pens on their own drafts and used green pens on their partner’s drafts.

Within 2 days after participants had revised their drafts, I conducted stimulated recall interviews with students individually in their teacher’s office, showing them their revised drafts and asking them why they had made changes on the first drafts. I also asked participants individually
whether each text change during peer revisions was self-initiated or other-initiated. These interviews were audiotaped.

**Administration of Writing Task 2 and Its Revision**

In the following week, students engaged in Writing Task 2 (writing about a famous entertainer or athlete). Students followed the same procedure as described for Writing Task 1 and its revision. However, each group’s condition of revision was switched. Group A revised with their peer, while Group B performed self revisions after they wrote first drafts of Writing Task 2.

**Data Analysis**

I transcribed the audiotapes of participants’ think-alouds during their self revisions and discussions during their peer revisions. I and another Japanese researcher who was also proficient in English identified and classified negotiation episodes according to the scheme and definitions in Appendix A. Negotiation episodes had three main categories: (a) language-related episodes (LREs)\(^5\); (b) text-related episodes (TREs); and (c) revision/writing task-related episodes (RREs). My categorization of negotiation episodes followed the taxonomies of Swain and Lapkin’s (1995, 1998) units of negotiation (of language form), Lockhart and Ng’s (1995) nonlinguistic negotiations, and analyses of revision changes in previous studies (Faigley & Witte, 1981, 1984; Yagelski, 1995).

**Procedures for Coding Negotiations**

I and the same Japanese researcher first segmented and identified episodes of negotiation independently for four think-aloud protocol transcripts and four transcriptions of peer revisions that I had gathered in pilot studies,\(^6\) and subsequently we discussed a categorization procedure to reach consensus. Following that, we separately segmented and

\(^5\) Swain (1998) defined a *language-related episode* “as any part of a dialogue in which students talk about the language they are producing, question their language use, or other- or self-correct” (p. 70).

\(^6\) I conducted three pilot studies. The first two studies were conducted in an ESL context (Toronto) and the last one was carried out in an EFL context (Japan, i.e., the same context as the present study). Pilot participants (N = 6; 2 males; 4 females) were intentionally selected to correspond to the characteristics of participants in the present study to the extent possible, although participants in the pilot studies were all in their thirties and doctoral students of L2 education.
identified negotiation episodes in all the protocol data from the current study. Our interrater reliability for segmentation and identification of the total data were 0.63 (Kappa). Finally, we discussed all discrepancies in our segmenting and categorizing the episodes and reached 100% agreement on the segmentation and category identification.

Procedures for Coding Text Changes

To answer Research Question 2 (What changes to students’ written compositions occur during self revision and during peer revision?), I used language-related changes (LRCs), which were basically similar to LREs. LRCs had three main categories: word-level text changes, sentence-level text changes, and discourse-level text changes as well as LREs (see Appendix B). In the interview sessions, participants and I identified all text changes made during revisions and gave a number to each text change on their written drafts. Subsequently, the same colleague who had assisted in the classification of negotiations and I categorized text changes as LRCs. Our interrater reliability for identification of type of text changes was 0.84 (Kappa). Following that, we discussed discrepancies and reached 100% agreement in our identifications.

Statistical Analyses

To examine the differences between conditions of revision with regard to negotiations, I calculated two-tailed $t$ tests and Pearson correlations using the ratio of each negotiation category per the total number of negotiations in each condition of revision:

- Between each group’s self revisions and peer revisions (Group A’s self revision vs. Group A’s peer revision; Group B’s self revision vs. Group B’s peer revision)
- Between Group A’s self revisions and Group B’s self revisions
- Between Group A’s peer revisions and Group B’s peer revisions

Similarly, I statistically analyzed text changes to examine the differences between self revisions and peer revisions as I had done for the analysis of negotiations, using the ratio of each type of text changes per the total number of text changes in each condition of revision.

RESULTS

Negotiations: Self Revisions Versus Peer Revisions

More negotiation episodes happened during peer revisions (682 episodes) than during self revisions (522 episodes). Although Group A’s self
revisions were significantly different from their peer revisions with regard to the types of negotiation by the \( t \) test \( (t = 7.4, p < 0.01) \), the effect size was small \( (d = 0.1) \). The \( t \) tests also showed that Group B’s self revisions differed significantly from their peer revisions, and the effect size was small \( (t = 9.2, p < 0.01, d = 0.4) \). Furthermore, correlational analyses suggested that both groups of students talked differently in each condition for revision, though they were highly consistent within the respective conditions for revisions. Each group’s (Group A and Group B) correlations between self revision and peer revision were moderate but not high \( (r = 0.66, r = 0.79, \text{respectively}) \). On the other hand, the correlations (Group A’s self revision vs. Group B’s self revision; Group A’s peer revision vs. Group B’s peer revision) were high \( (r = 0.94, r = 0.93 \text{respectively}) \) and were significantly correlated \( (p < 0.01) \). However, the \( t \) tests showed that the types of negotiation episodes in each condition of revision for Group A were statistically different from those in Group B (Group A’s self revision vs. Group B’s self revision, \( t = 7.1, p < 0.01 \); Group A’s peer revision vs. Group B’s peer revision, \( t = 6.8, p < 0.01 \)), but the effect size was small \( (d = 0.1, 0.2, \text{respectively}) \).

As shown in Tables 1 and 2, during self revisions students paid the most attention to lexical features (vocabulary/word choice) of their compositions (Group A, 26%; Group B, 23%), whereas students discussed the topics, content, and ideas of their texts most frequently during peer revisions (Group A, 27%; Group B, 22%). Another characteristic of peer revisions was that participants talked about their procedures for revisions more often than they did during self revisions (Group A, 19% vs. 7%);

<table>
<thead>
<tr>
<th>Type of negotiation episode</th>
<th>Self revision</th>
<th>Peer revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word-level language-related episodes (LREs)</td>
<td>LRE 1a (Punctuation)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>LRE 1b (Spelling)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>LRE 1c (Capitalization)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>LRE 1d (Word form corrections)</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>LRE 1e (Vocabulary/word choice)</td>
<td>26</td>
</tr>
<tr>
<td>Sentence-level LREs</td>
<td>LRE 2a (Sentence types)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>LRE 2b (Length of sentence)</td>
<td>14</td>
</tr>
<tr>
<td>Discourse-level LREs</td>
<td>LRE 3a (Organization)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>LRE 3b (Paragraphing)</td>
<td>1</td>
</tr>
<tr>
<td>Text-related episodes (TREs)</td>
<td>TRE 1 (Topics, content, and ideas of texts)</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>TRE 2 (Audience of texts)</td>
<td>3</td>
</tr>
<tr>
<td>Revision/writing task-related episodes (RREs)</td>
<td>RRE 1 (Purpose)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>RRE 2 (Procedure)</td>
<td>7</td>
</tr>
<tr>
<td>Total %</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total negotiation episodes</td>
<td>242</td>
<td>380</td>
</tr>
</tbody>
</table>
Group B, 11% vs. 3%). Students discussed the length of sentences more frequently during their self revisions than they did during their peer revisions (Group A, 14% vs. 7%; Group B, 19% vs. 7%).

Qualities of Negotiation

This section presents examples of the most frequent types of negotiation episodes, contrasting the two conditions of revision in regard to text changes. The length of a unit of negotiation during self revisions tended to be shorter than during peer revisions. Likewise, students tended to engage in more metatalk during peer revisions than they did during self revisions. On the other hand, students often repeated L2 words or phrases spontaneously, particularly when they focused on morphology and lexis, during self revisions (see Suzuki, 2004, for further details). For example, Taeko changed her drafts during her self revision for Writing Task 1 (famous person in history) as follows:

I would like to meet Geronimo, one great chief of Apach Indian (first draft)

→I would like to meet Geronimo, one of great chiefs of native American (revised draft)

---

**TABLE 2**

<table>
<thead>
<tr>
<th>Type of negotiation episode</th>
<th>Self revision</th>
<th>Peer revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word-level language-related episodes (LREs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRE 1a (Punctuation)</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>LRE 1b (Spelling)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>LRE 1c (Capitalization)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>LRE 1d (Word form corrections)</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>LRE 1e (Vocabulary/word choice)</td>
<td>23</td>
<td>17</td>
</tr>
<tr>
<td>Sentence-level LREs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRE 2a (Sentence types)</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>LRE 2b (Length of sentence)</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>Discourse-level LREs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRE 3a (Organization)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>LRE 3b (Paraphrasing)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Text-related episodes (TREs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRE 1 (Topics, content, and ideas of texts)</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>TRE 2 (Audience of texts)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Revision/writing task-related episodes (RREs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRE 1 (Purpose)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>RRE 2 (Procedure)</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Total %</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total negotiation episodes</td>
<td>280</td>
<td>302</td>
</tr>
</tbody>
</table>

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**Transcript conventions:** The names of participants are all pseudonyms. Discourse originally spoken in English appears in italics. Discourse originally spoken in Japanese and then translated by me into English appears in block letters. Quotation marks are used for
Participants used both their L1 (Japanese) and L2 (English) in their revisions. Only one student (Ayako) mainly used English in her think-alouds during her self revisions. Other students mostly spoke their L1 in both conditions of revision.

During Taeko’s think-aloud protocol related to this text change (“one great chief”→“one of great chiefs”) she spontaneously repeated words and then continued to read her draft:

one of great chief, chief, chief, chie . . . , chie . . . , chi . . . , chie, chie, chie . . . ,
chie, chief, chief’s plural. chiefs, chiefs, great chiefs, one, one of great chiefs. “I would like to meet Geronimo, one of great chiefs . . .”

The next excerpt illustrates the kinds of metatalk that appeared during peer revisions. Chiyoko explains the reason for pluralizing a noun in the phrase “one of . . .” in line 3 of her peer revision with Yuriko for Writing Task 2. Chiyoko first changed “one of my favorite actor” to “one of my favorite actors” in her draft. Immediately afterward, Chiyoko also changed another instance of the same type of error in her draft, changing “one of the most famous Japanese sports player” to “one of the most famous Japanese sports players.”

1 Chiyoko: Does this become plural? one of
2 Yuriko: Ah, yeah, in the case of “one of”
3 Chiyoko: Because one among some, among them
4 Yuriko: Ha, ha, ha . . . That’s right. I remember it.
5 Chiyoko: s
6 Yuriko: and
7 Chiyoko: Then, here, famous sports players
8 Yuriko: Yeah, you wrote “one of”
9 Chiyoko: Hum, s

In the next two examples, students wondered which tense they should use—the present tense, the past tense, or the present perfect—when they described historical persons in Writing Task 1. During self revision, Yuriko changed the tense of a sentence in her draft from the present tense to the present perfect:

She [Audrey Hepburn] is not only beautiful but also some how cute. (first draft)

→She has been not only beautiful but also some how cute. (revised draft)

written text. I put my annotations in square brackets (e.g., I describe a situation or show the reference of a pronoun in participant’s speech). I used arrows to distinguish students’ written texts of revised drafts from their texts of first drafts when I compared them in the same context. When students talked about a misspelled word in their written drafts, I typed the misspelled word as it was except in cases where students noticed the misspelling in their revision sessions. I also typed grammatical errors in students’ discourse as they originally appeared in their speech or writing.
During Yuriko’s think-aloud protocol related to this text change, she repeated the phrase, “She has been” many times, using metalanguage such as “the past tense” or “the present perfect” to frame her decision to revise this phrase:

Because she is already dead, when I want to say that she is beautiful and pretty, shall I use the past tense? Hum, She was not only beautiful but also some how cute, hum, she has been, the present perfect? She has been, she has been, OK? “now beautiful,” isn’t it? She has been, still now beautiful, so She has been?

In contrast, during their peer revisions Hanako and Mariko discussed verb tenses when they described famous people, supporting each other with their knowledge and deliberating over the choice. Hanako had written a sentence, “He [Chopin] is one of the greatest componists” in her draft of Writing Task 1:

1 Hanako: Something, I, what? What I thought was, when I want to say this, “he” is a great composer, this man has already been dead.
2 Mariko: Yeah, yeah, yeah, yeah.
3 Hanako: In this case, is the present tense OK? Or the past tense?
4 Mariko: The present tense is OK, isn’t it?
5 Hanako: OK? At high school, I felt I learned something in his-to-ry...
6 Mariko: Ah, I have no ideas. I don’t understand such a thing at all.
7 Hanako: “He is one of the”
8 Mariko: “one of the greatest” Hum, I feel “is” is OK.
9 Hanako: Right.
10 Mariko: Hum.

In line 5 of this excerpt, Hanako tried to explain a grammatical point that she had learned at high school; however, she could not. Hanako did not change the verb tense in the sentence. After Mariko and Hanako revised Hanako’s draft of Writing Task 1, they revised Mariko’s draft. In the next excerpt, Hanako began to talk about the tense of a sentence that Mariko had written in her draft, “She [Diana] was a wonderful person”:

1 Hanako: “Second, I respect her. She was a wonderful person.” This is it.
2 Mariko: What?
3 Hanako: I said, just now, He [Chopin] was great or something. Here, “She was”
4 Mariko: I used the past tense.
5 Hanako: Ah, but, this, I feel “She was” is OK. It’s recent.
6 Mariko: Yeah, that’s right. This. That’s right. This person didn’t leave what has come down to the present time.
7 Hanako: That’s right.
8 Mariko: But, for example, Picasso, hum, we feel he still lives.
9 Hanako: That’s right.
10 Mariko: What shall we do?
11 Hanako: This is OK now, now, isn’t it? Ten years has not passed yet since she was killed.
12 Mariko: A very subtle issue.

In line 6 of the excerpt above, Mariko expressed her opinion that Diana did not leave anything concrete for people to remember her in the present time. Then in line 8, she gave an example of Picasso to compare with Diana. Mariko did not change the tense in the sentence. Mariko and Hanako tried collaboratively to retrieve their grammar knowledge to apply it to their revisions.

As these excerpts show, since each dyad revised two drafts during their peer revisions, peer revision took on a quality of dynamism that was not evident during self revisions. For example, Hanako and Mariko reminded each other that they had already discussed the same feature related to verb tenses in their previous exchanges.

Similarly, Kazuko and Taro talked about the usage of *another* and *other* in their peer revision of Kazuko’s draft of Writing Task 2. Taro noticed the error in Kazuko’s draft. Taro clearly explained the different usages of *another* and *other* to Kazuko in lines 7, 9 and 11 below. If Kazuko had revised her draft alone, she might neither have noticed the error nor corrected it. Kazuko changed a sentence in her draft as follows, based on the following exchange:

I know another Japanese players are also playing soccer abroad. (first draft)

→ I know other Japanese players are also playing soccer abroad. (revised draft)

1 Taro: *I know, I know another?*
2 Kazuko: *I know, what? I want to say, “Although other Japanese players”*
3 Taro: Yeah.
4 Kazuko: “are also playing abroad.” Well, “another,” “other” and “another,” they seem to have different meanings.
5 Taro: Yeah, yeah, yeah, yeah.
6 Kazuko: That, “another,” what is it?
7 Taro: Well, perhaps, well, in a case of “another,” it may mean “a Japanese player.” I know one more player. If you know more, it seems to be “players,” “other players.”
8 Kazuko: Yeah, yeah.
9 Taro: “another” is something like one more thing, or one more person.
10 Kazuko: I see.
11 Taro: “another Japanese,” for example, who is he? If you know only one more person, it may become like “I know another Japanese player.” He is also playing soccer abroad.

12 Kazuko: Yeah, yeah, then, if I know many players,
13 Taro: other?
14 Kazuko: other?
15 Taro: Isn’t it? Perhaps.
16 Kazuko: OK. Here, other.
17 Taro: “other Japanese players are also playing soccer abroad,...”

In the interview after her peer revision, Kazuko confirmed that the text change (from another to other) was other-initiated.

The examples discussed so far mainly concern form and vocabulary. However, as reported earlier, participants discussed the topics, content, and ideas of their written texts most frequently during their peer revisions (constituting 24% of all negotiation episodes during peer revisions). In this way, during peer revisions students received more information about the topic of the written text or suggestions from each other to make their writing clearer from their partners’ perspectives. The students also expressed the gap between what they wanted to write and what they actually wrote on their drafts while discussing these matters with their partners.

For example, in the next excerpt, Kana learned about the Showa Emperor, which was the topic of Satoshi’s Writing Task 1:

1 Kana: Ha ha ha.... Well, Regarding the Showa Emperor,
2 Satoshi: Yeah
3 Kana: What? He lived in World War I?
4 Satoshi: No, World War II.
5 Kana: Ah, World War II.
6 Satoshi: Then, the emperor at the end of World War II.
7 Kana: Ah.
8 Satoshi: So he continued to have two ways of thought, prewar and postwar.
9 Kana: Hum.
10 Satoshi: like that
11 Kana: You are great, by the way, do you like history?
12 Satoshi: No, not at all.

In line 8, Satoshi explained the meaning of a sentence in his draft:

He [the Showa Emperor] lived two times before war and after war. (first draft)
→He lived two eras before and after the war. (revised draft)

In a similar manner Tamako explained the gap between her intention (what she wanted to write) and her writing (what she actually wrote) to Yukino during their peer revision of Tamako’s draft for Writing Task 2:
1 Yukino: What do you mean? Here.
2 Tamako: Oh, actually, I wanted to write more in details.
3 Yukino: Ha, ha, ha...
4 Tamako: Well, generally, human beings created by computer graphics (CG) cannot move into many directions.
5 Yukino: Hum.
6 Tamako: But they are freely moving by themselves.
7 Yukino: Hum, ah, ah.
8 Tamako: That is so amazing. I wanted to write we couldn’t distinguish CG people from real human beings because the CG had such virtual reality. But I was not able to write so in details.
9 Yukino: Hum, that’s right.
10 Tamako: Hum, hum, hum, hum.
11 Yukino: How?
12 Tamako: Hum.
13 Yukino: Hum.
14 Tamako: Hum, ha, ha, ha, ha...
15 Yukino: Ha, ha, ha. Difficult, hum.

Yuriko also expressed the gap between what she wanted to write and what she actually wrote in her think-aloud during her self revision. However, she neither delved very far into the gap nor tried to improve her draft in her self revision:

If I had written a little more about my favorite movies [of Audrey Hepburn], it would have been better.

Text Changes in Self Revisions and Peer Revisions

Participants made almost twice as many text changes to their written compositions during self revisions (287 text changes) as they did during peer revisions (166 text changes). The t tests showed statistically significant differences regarding the type of text changes between Group A’s and Group B’s self revisions and peer revisions (Group A, \( t = 5.9, p < 0.01 \); Group B, \( t = 6.0, p < 0.01 \)), but Group A’s effect size was small (\( d = 0.4 \)), and Group B’s effect size was moderate (\( d = 0.6 \)). Correlations between each group’s self revision and peer revision were not high (\( r = .55, n.s., r = .76, p < .05 \), respectively). Group A’s self revisions and peer revisions were not significantly correlated.

The t tests showed significant differences with regard to the types of text changes within the conditions of revision between Group A and Group B (Group A’s self revision vs. Group B’s self revision, \( t = 5.9, p < 0.01 \); Group A’s peer revision vs. Group B’s peer revision, \( t = 5.2, p < 0.01 \)), but the effect size was small (\( d = 0.1 \), respectively). However, the
correlations within the conditions of revision (Group A’s text changes in self revision vs. Group B’s text changes in self revision; Group A’s text changes in peer revision vs. Group B’s text changes in peer revision) were high and significantly related ($r = 0.95, p < .01$, $r = 0.91, p < .01$, respectively) with regard to the proportion of each category of text changes per the total number of text changes in each condition of revision.

Tables 3 and 4 show that in both conditions for revision, morphological and lexical text changes (LRC 1d and LRC 1e) were the most frequent linguistic text changes, although text changes to the length of sentences (LRC 2b) accounted for the most text changes during two groups’ self revisions. Word-level text changes occurred more often during peer revisions than during self revisions. On the contrary, students made more sentence-level (global) text changes during self revisions than during peer revisions. Furthermore, no discourse-level text changes appeared during peer revisions, though a few discourse-level text changes did appear during self revisions.

**DISCUSSION**

**Attention to Topics, Content, and Ideas of Texts During Peer Revisions**

Because students tended to discuss topics, content, and ideas most frequently during peer revisions, but word choice most often during self revisions, it may be that these two conditions for revision could serve different pedagogical purposes. Peer revision could be implemented in

<table>
<thead>
<tr>
<th>Type of text change</th>
<th>Self revision</th>
<th>Peer revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word-level language-related changes (LRCs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRC 1a (Punctuation)</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>LRC 1b (Spelling)</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>LRC 1c (Capitalization)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>LRC 1d (Word form corrections)</td>
<td>15</td>
<td>42</td>
</tr>
<tr>
<td>LRC 1e (Vocabulary/word choice)</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td>Sentence-level LRCs</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>LRC 2a (Sentence types)</td>
<td>37</td>
<td>16</td>
</tr>
<tr>
<td>LRC 2b (Length of sentence)</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Discourse-level LRCs</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>LRC 3a (Organization)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>LRC 3b (Paragraphing)</td>
<td>133</td>
<td>81</td>
</tr>
</tbody>
</table>

**TABLE 3**

Group A’s Percentages of Each Type of Text Change in Self Revision and Peer Revision
L2 writing classes when teachers aim to direct students’ attention toward the content of their writing or to facilitate students’ negotiations of such content. This approach may be especially useful when students are in the same field of academic study, and peer discussion of academic context is crucial to effective writing. Furthermore, the results suggest that the two conditions of revision in L2 writing classes may have an optimal order. Peer revision could be implemented first for improving the content of writing, and then students can later make self revisions for improving the language forms in their texts.

**Importance of Discourse Knowledge in Revision**

Writing requires content, lexical and morphological, syntactic, and discourse knowledge (Bereiter & Scardamalia, 1987; Kellog, 1994). The present intermediate-proficiency L2 writers rarely used their discourse knowledge when they revised their drafts, compared with their content, syntactic, morphological, or lexical knowledge. Writing or revision instruction about the value of discourse knowledge may be necessary for students’ development of L2 writing abilities, particularly if they are to learn to transform their written compositions effectively rather than simply to adjust minor details of their written texts as they revise. Expert writers tend to revise their composition at all levels of discourse, whereas inexperienced writers’ revisions tend to be restricted to surface-level features of texts (Connor & Farmer, 1990; Fitzgerald, 1987; Sengupta, 2000; Whalen & Menard, 1995). L2 writing teachers should give instruction to raise students’ awareness of global-level features of writing for successful self revisions and peer revisions.

**TABLE 4**

<table>
<thead>
<tr>
<th>Type of text change</th>
<th>Self revision</th>
<th>Peer revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word-level changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRC 1a (Punctuation)</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>LRC 1b (Spelling)</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>LRC 1c (Capitalization)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>LRC 1d (Word form corrections)</td>
<td>21</td>
<td>34</td>
</tr>
<tr>
<td>LRC 1e (Vocabulary/word choice)</td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td>Sentence-level changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRC 2a (Sentence types)</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>LRC 2b (Length of sentence)</td>
<td>29</td>
<td>11</td>
</tr>
<tr>
<td>Discourse-level changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRC 3a (Organization)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>LRC 3b (Paragraphing)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total %</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total text changes</td>
<td>154</td>
<td>85</td>
</tr>
</tbody>
</table>
Self Revision and Peer Revision as Mediation in SLA

SLA theory suggests that output, particularly L2 learners’ negotiation of meaning, is important for L2 learning because it can be the first step for grammatical acquisition (Gass & Varonis, 1985; Long, 1983; Pica, 1994; Shehadeh, 2002). There is also theoretical and empirical work to support the value of L2 learners’ negotiation of form (e.g., Lyster 2004; Swain, 2005). Swain (2005) and colleagues have proposed that speech itself (e.g., collaborative dialogue) can be a process of L2 learning (Lapkin, Swain, & Smith, 2002; Swain, Brooks, & Tocalli-Beller, 2002; Swain & Lapkin, 1998, 2001, 2002; Tocalli-Beller & Swain, 2005). The current study shows empirically that attention to both meaning and form frequently occurred in L2 writers’ text revisions, even during self revision (as demonstrated in Cumming, 1990). During self revisions, negotiation of form (LREs) happened 16.5 times per person on average over 15 minutes, whereas during peer revisions the average frequency per 15-minute session was 16.7 times. In contrast, discourse analyses of L2 learners’ oral interactions during communication tasks have indicated that negotiation of meaning, especially nonnative speakers’ (NNSs) modified output, rarely occurs among L2 learners during such communication tasks as information gap or decision-making tasks in spite of its important role in SLA (Garcia Mayo & Pica, 2000; Pica, 1988; Shehadeh, 2002; Van den Branden, 1997). For example, NNS participants in Pica’s (1988) study produced four instances of modified output per hour on average. The average number of episodes of modified output in Van den Branden’s (1997) study was one instance every 5 minutes. In Williams (1999), learner-generated negotiation of form (LREs) occurred three to eight instances per a 45-minute session in learner-centered ESL classrooms, varying across four different proficiency levels. The high frequency of negotiation episodes during text revision in the current study suggests that revision should be used as a language learning task to promote modified output and learners’ attention to form, especially for intermediate-proficiency students like the present participants. Indeed, negotiating text revisions in the context of students’ written composition seems to be a more efficient means of prompting their learning through self-regulation of their language output than does doing so in the context of oral interaction tasks. Swain and Lapkin (2001) suggest that collaborative writing tasks based on either visual or auditory stimulus could facilitate students’ attention to language forms on which L2 students tended not to focus, compared with meaning in other communicative tasks. Likewise, Harklau’s (2002) review of SLA research claimed that writing should play a more important role in SLA studies. The present research gave empirical evidence for her argument.
Limitations of the Study and Implications for Future Research

This was a small-scale exploratory study done in one classroom with a select group of Japanese students performing just one task type within short time durations. I examined only the content of students’ negotiations and did not probe much into their discourse functions (e.g., confirmation checks, clarification requests, or comprehension checks). Further, larger scale research focused on both the content and functions of negotiation is needed to draw robust conclusions. Moreover, I did not look into the effects of many known factors on students’ text revisions: teachers’ instruction and feedback; individual learners’ L2 proficiency, educational and sociocultural backgrounds, gender, age, goals, and motivation; and the length of time and purposes for revisions.

Furthermore, students in the current study mainly used their L1 (Japanese) in their negotiations. Their L1 use in their revisions might have led to participants’ frequent negotiation episodes. However, in Mendonca and Johnson’s (1994) study, advanced-level ESL students with different L1s negotiated more than the current study’s EFL intermediate-level participants during their peer revisions (28 vs. 16.7 times per 15-minute session). L2 writers’ use of languages in their peer revisions and L2 proficiency should be further examined in various contexts (e.g., ESL or EFL) with regard to negotiation so that the results of the current study and Mendonca and Johnson’s can be confirmed.

The current study documented quantitative and qualitative similarities and differences between L2 writers’ self revisions and peer revisions. The analyses showed students’ negotiations during self revisions and peer revisions were qualitatively different. The results of t tests also suggested that L2 writers’ self revisions were significantly different from peer revisions with regard to types of negotiation and text changes, but the effect size was small. So further research is warranted to clarify tendencies for negotiation and text changes in diverse conditions of revision. Nonetheless, the present results may be helpful to guide L2 writing teachers’ decisions when they plan to implement self revision or peer revision in their writing class.

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**APPENDIX A**

**Coding Scheme of Negotiation Episodes**

*LREs (Language-Related Episodes)*

1. Word level
   a. Punctuation (a comma, a period, etc.)
   b. Spelling (including typographical errors)
   c. Capitalization
   d. Word form corrections (e.g., pluralization, subject-verb agreement, verb tense, etc.)
   e. Vocabulary/Word choice (e.g., on the other hand→however; clarified→feasible)

2. Sentence level
   a. Sentence types
   b. Length of sentence

3. Discourse level
   a. Organization (within paragraphs, within an essay)
   b. Paragraphing (changes to whole paragraphs; creating new paragraphs from existing ones)

*TREs (Text-Related Episodes)*

1. Topics, content, and ideas of texts
2. Audience of text

*RREs (Revision/Writing Task-Related Episodes)*

1. Purpose
2. Procedure
APPENDIX B

Coding Scheme of Text Changes

1. Word-level changes
   a. Punctuation (add or delete a comma, a period, etc)
   b. Spelling (including typographical errors) (e.g., thise→these)
   c. Capitalization (e.g., while . . . , —.→While . . . , —.)
   d. Word-form corrections (Pluralization: two piece of chalk→two pieces of chalk; Subject-verb agreement: Everyone have→Everyone has; Verb-tense: I go→I went)
   e. Vocabulary/word choice (e.g., on the other hand→however; effectively→easily)

2. Sentence-level changes
   a. Sentence types (e.g., passive voice→active voice; simple sentence→complex sentence)
   b. Change length of sentence by adding or deleting words

3. Discourse-level changes
   a. Organization (within paragraphs, within an essay)
   b. Paragraphing (changes to whole paragraphs; creating new paragraphs from existing ones)