

# Relationships of L1 and L2 Reading and Writing Skills

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## I. Introduction

Influenced by the first language (L1) research on reading-writing relationships, recent English language education has highlighted the connection between the two literacy skills. The assumption underlying this approach is that cognitive knowledge is shared by domains of reading and writing (Fitzgerald & Shanahan, 2000). The shared cognitive domains were also hypothesized to function as a basic competence from which literacy skills in distinct languages stem according to the interdependence hypothesis advocated by Cummins (1994). This transferability of the skills across languages has been reported in first and second language (L2) reading research, and Clarke (1980) introduced the short circuit hypothesis in his study on L2 reading. The author argued that the transfer of reading skills from L1 to L2 can be restricted by limited L2 language proficiency which has not reached the threshold level, the point when the transfer begins to occur. Regarding this intervention of L2 language proficiency, Alderson (1984) questioned whether poor L2 reading skills were attributed to poor L1 reading skills or limited L2 language proficiency. Carrell (1991) examined this issue, and found both L1 reading skills and language proficiency were critical elements to predict L2 reading skills. Other studies yielded similar results to Carrell (1991), and concluded that L2 language proficiency was the stronger predictor of L2 reading skills.

Meanwhile, L2 writing research on the transferability of the skills across languages has remained inconclusive. Nevertheless, according to Grabe (2001), the transferability of L2 writing skills could also be determined by the L2 threshold level. The scholar pointed out that this notion of the L2 threshold level was versatile in L2 writing as well. Moreover, theoretically, the transferability of writing skills could be supported by Flower and Hayes's (1981) cognitive process theory of writing when combined with the aforementioned interdependence hypothesis. Flower and Hayes (1981) described a process of writing in terms of cognitive functions, and because writing is a cognitive process, this skill could be shared across languages if Cummins's (1994) theory was valid. In fact, Edelsky (1982) provided empirical evidence of this shared domain although the study involved the participants before or middle of puberty whose cognitive functions were under development. Including these research subjects, Carson et al. (1990) considered the relationships in four directions: L1 reading, L2 reading, L1 writing, and L2 writing

skills. The participants of the research were Japanese and Chinese learners of English, and the researchers observed a weak or no correlations between L1 and L2 writing skills although the results varied according to the language groups. In this research, the authors failed to consider an integral aspect of Japanese learners: past experience of formal writing instruction in L1. Japanese students are not often taught how to write academic texts even in Japanese, including the tertiary level (Okabe, 2004). This lack of training in L1 writing indicates the lack of “cognitive/academic proficiency” (Cummins, 2005, p. 4) which is shared across languages in the interdependence hypothesis. Therefore, assumingly, Japanese students have rarely acquired L1 academic writing skills to transfer to another language. Furthermore, Carson et al. (1990) did not investigate the participants’ L1 and L2 reading habits and experiences of writing instruction, which could possibly affect the formation of L2 writing skills as Krashen (1984) argued that writing skills are influenced by both reading for pleasure and instruction. Therefore, in order to further understand the L1 and L2 reading and writing relationships, Japanese learners of English were surveyed in this study in consideration of the theory advocated by Krashen (1984) to expand the study conducted by Carson et al. (1990).

## **II. Purpose of the Research**

The purpose of this study was to investigate “the relationships between literacy skills across languages” (Carson et al., 1999, p. 248) and the relationships of reading and writing skills across modalities in each language, using L1 and L2 reading and writing assessments. A further subsidiary aim was to study how English learners’ proficiency of L1 reading and writing skills affect the proficiency of those of L2, using the same subjects. In addition, another complementary objective was to evaluate the influence of L2 language proficiency, language input from L1 and L2 reading, and L1 and L2 writing instruction, upon L2 writing skills compared to the relationships with L1 writing skills, administering a questionnaire and interviewing selected subjects.

## **III. Research Questions**

This study consisted of two sets of research questions. The first four questions duplicate the past literature in order to verify the results of the studies in the Japanese context. The last question further analyzed the factors which influence L2 writing skills.

1. What is the relationship between reading skills in first and second language?
2. What is the relationship between writing skills in first and second language?
3. What is the relationship between reading and writing skills in the first language?
4. What is the relationship between reading and writing skills in the second language?
5. How might L2 language proficiency, time spent reading for pleasure and reading academic texts in L1 and L2, experiences in L1 and L2 composition instruction, L2 reading skills, and L1 writing skills, affect L2 writing skills?

## **IV. Significance of the Study**

The present study is unique on the point that time spent reading for pleasure and reading academic texts as well as experiences of formal L1 and L2 writing instruction were examined in addition to reading and writing assessments. The results of this research could be helpful to English teachers and language learners since this research indicated the possibilities that teaching and learning materials might be expanded. Information of the significance of first language literacy skills and volume of inputs from readings upon the development of L2 writing could provide implications concerning types of teaching materials. In the field of writing research, the relationship between L1 and L2 writing skills has remained unclear; thus, the current research might deepen the understanding of L2 writing skills through considering the variables specific to Japanese learners of English.

## **V. Review of Literature**

### **1. Introduction**

Eisterhold (1997) argued that adult learners differed from younger language learners in that adult learners have already developed literacy skills in L1. Thus, when literacy of adult L2 learners is considered, four aspects of skills are involved: L1 reading skills, L1 writing skills, L2 reading skills, and L2 writing skills. The relationships of these elements are controlled by one faculty, cognitive function. Therefore, this research focused on the cognitive perspective, though both cognitive and sociocultural approaches have been investigated extensively in L2 research (Kobayashi and Rinnert, 2008). Referring to cognitive-based theories, the current paper will review four types of literature: on the relationship between L1 and L2 reading skills; L1 and L2 writing skills; L1 reading and writing skills; and L2 reading and writing skills.

### **2. Cognitive Functions**

Multiple domains in cognitive functions are assumed to be shared by the domains of reading and writing. Fitzgerald and Shanahan (2000) introduced four types of knowledge overlapping in the shared domain: (a) metaknowledge: knowing how and why reading and writing are used, being aware of audience, and monitoring for comprehending and produced language; (b) domain knowledge about substance and content: knowledge of vocabulary and varied meaning of vocabulary according to the context; (c) knowledge about universal text attributes: graphophonics (i.e. sound-letter connection), syntax, and text genre; and (d) procedural knowledge and skill to negotiate reading and writing: how to retrieve knowledge from memory and the capacity of active thinking such as anticipating and questioning. In addition to these shared domains across modalities, Cummins (1994) considered the relationships of reading and writing skills across languages in his interdependence hypothesis. In this theory, the author argued that there is “cognitive/academic proficiency” (p. 4) which was open to be learned or acquired languages

regardless of differences of languages. Nevertheless, the transferable elements vary, depending on the similarity of the languages. Several transferable elements were introduced in the article, and the following two could be shared across dissimilar languages: (a) conceptual elements: understanding concepts; and (b) metacognitive and metalinguistic strategies: strategies used to facilitate language learning.

Although this conceptual element is limited to Fitzgerald and Shanahan's (2000) domain knowledge about substances and content, Cummins (1994) maintained that the instruction of reading and writing in one language nurtures not only linguistic skills in the language but also the fundamental cognitive/academic proficiency which was literacy-related skills. Viewed in this light, once a learner has acquired the literacy-related knowledge in one language, which is procedural knowledge and skill to negotiate reading and writing (Fitzgerald and Shanahan, 2000), this knowledge should be available to the learner no matter what language the learner uses, although whether the learner is able to utilize the knowledge depends on language proficiency (Cummins, 1985 as cited in Roller, 1988).

### **3. Reading**

Concerning metacognitive awareness of learners on reading in different languages, Carrell (1989) examined its relationships with proficiency of reading skills. Comparing students with higher and lower L2 language and reading proficiency, level of strategy use for L1 and L2 reading was investigated. Questionnaires were administered and the categorization of the questions was the following: (a) confidence: abilities to predict content, discriminating main and subordinate points, questioning the author, utilizing background schemata, and assessing the reader's own understanding of the text; (b) repair: strategies for addressing reading difficulties (i.e. continuing reading for further explanation, rereading problematic area, rereading the part prior to the problem area, and using a dictionary, and quitting); (c) effective: strategies for enhancing efficiency of reading (i.e. pronouncing word parts to self, comprehending individual words, pronouncing individual words, understanding text holistically, concentrating on syntax, drawing on schemata related to the topic, using a dictionary, concentrating on the specific information in the text, concentrating on the text organization); (d) difficulties: impediments of reading process (i.e. words' sounds, pronunciation of each word, identification of words, syntax, the alphabet, connection of background knowledge and the topic, holistic understanding of the text, and a text organization); and (e) perception of a proficient reader: students' observation of behaviors a proficient reader utilizes (i.e. identifying individual words, pronouncing words, comprehending the text holistically, utilizing a dictionary, estimating the meaning of words, concentrating of the specific information in the text, and comprehending the text organization). Also, the researcher differentiated local and global reading strategies. As a result, while proficient readers utilized the global reading strategies, poor readers depended on the local reading

strategies. In addition, the author found that the higher L2 language proficiency was, the higher the level of the strategies students employed.

Moreover, Clarke (1980) probed the transferability of reading skills in relation to L2 language proficiency. He presented the short circuit hypothesis which indicated that there might be an influence of L2 proficiency level on the transferability of reading skills from L1 to L2. According to this hypothesis, in order for L1 reading skills to have an influence on L2 reading skills, the reader needs to reach a certain level of L2 proficiency: threshold level. In his influential study, L1 and L2 reading skills of native-Spanish students learning English were observed. In L1, proficient readers could understand the text semantically while poor readers relied on syntactic information. However, in L2, the difference between the effective and poor L1 readers decreased. Their limited L2 language proficiency short-circuited the transfer of their L1 reading behaviors to L2 reading behaviors.

Represented by Clarke (1980), some scholars argued that limited L2 proficiency was the cause of poor L2 reading skills while others argued that poor L1 reading skills were the cause of poor L2 reading skills. Considering this situation, Alderson (1984) questioned whether ineffective L2 reading skills were the problems of language or reading skills. His extensive review of literature on the relationships of L1 and L2 reading skills confirmed Clarke's (1980) theory. Further, two studies reexamined this question of whether L2 reading is a "reading problem or language problem" (Alderson, 1984). Carrell (1991) surveyed the effects of L1 reading skills and L2 language proficiency level on L2 reading skills. The participants of the study were Spanish speakers from intermediate to beyond advanced level, and English speakers from beginner to advanced level. The investigator found that both L2 language proficiency level and L1 reading skills were the significant predictive factors, and concluded that neither factor could be neglected to estimate L2 reading skills. In a similar study conducted by Bernhardt and Kamil (1995), 186 English speakers learning Spanish from beginner to advanced level were involved. Their study yielded the same result that both L1 reading skills and L2 language proficiency were the predictors of L2 reading skills, but they also found that L2 language proficiency was the stronger predictor of L2 reading skills. This finding is indicative of the existence of the threshold level. Lee and Schallert (1997) also reported the similar result on the relationships among L1 and L2 reading skills and L2 language proficiency when they surveyed Korean secondary school students. The investigators identified the threshold level by changing the grouping of the students.

Although Lee and Schallert (1997) were able to locate the threshold level, this level cannot be determined clearly because the threshold level fluctuates according to the complexity of the task and text and to individual differences. Clarke (1980) noted that "the threshold level is liable to vary from task to task and from reader to reader" (p. 714). This influence of task complexity was exemplified in the study by Taillerfer (1996), who attempted to deepen the insight of the short circuit hypothesis by adding the complexity of the reading task as another variable.

He incorporated scanning as an easier cognitive task and reading comprehension as a higher order cognitive task. The participants were 53 French college students learning English at the higher and lower L2 language proficiency levels. The outcome was that both L2 language proficiency and L1 reading skills were influential in L2 reading skills, and L2 language proficiency was a significantly stronger predictor than L1 reading skills as other research had showed. On the other hand, L2 scanning relied solely on L1 scanning ability. Therefore, the more difficult the task was, the more likely the L2 language proficiency limited the transfer. Moreover, Fecteau (1999) examined different types of reading tasks, namely inferential and literal comprehension, as variables instead of complexity of tasks. He studied whether the degree of inferring the underlying intention of the author and understanding literally would differ when reading in L1 and L2. Although the data were limited, the results revealed that L2 language proficiency did not predict the L2 reading skills. Also, no clear differences were found between literal and inferential comprehension of the texts.

In addition, the threshold level cannot be determined by achievement tests or the level of language class the subjects are enrolled in. This was indicated in the study conducted by Pichette, Segalowitz, and Connors (2003), who carried out a longitudinal survey on 52 Bosnians learning French at the high intermediate to advanced levels. Two tests were administered over a one-year span. In the first session, neither L1 reading skills or L2 language proficiency were significant predictors for the higher achievement in the L2 reading task while L2 language proficiency was the stronger predictor for the lower achievement in the L2 reading task. However, in the second session, L1 reading skills were found to be the significant predictor of higher L2 reading score.

#### **4. Writing**

Unlike various studies on L2 reading skills which support the short circuit hypothesis, the outcomes of writing research have not demonstrated clear trends. However, according to Grabe (2001), some studies suggested that the threshold level argued in the short circuit hypothesis was applicable to L2 writing skills.

Moreover, writing is assumed to follow similar steps in cognition even across languages. Though the effect of language difference was not addressed in their study, the interdependence hypothesis lends support to the interlingual transfer of cognitive process of writing described by Flower and Hayes (1981). In the cognitive process theory of writing hypothesis advocated by Flower and Hayes (1981), composing proceeds through the interaction of the task environment, writer's long-term memory, and writing process. The task environment includes assignments and the text under development. Considering this theory, the conditions of task environment and long-term memory seem to be universal across languages. According to Flower and Hayes (1981), a writer goes through multiple cognitive processes at the same time as composing: planning, translating, and reviewing. These processes occur recursively, and any process can interrupt each

other as the writer composes. What guides this complex writing process is, according to the theorists, a network of goals including local goals such as a decision of the next move and global plan of the prose. Planning can be further categorized into generating ideas, organizing, and goal-setting, so the writer accesses long-term memory, organizes ideas, and decides subsequent actions. Then translating is the process of transforming abstract ideas into a written form, and Flower and Hayes (1981) noted that the writer might lose sight of a holistic view of the prose if the writer was too distracted by mechanical issues. Reviewing consists of evaluating and revising. At this stage, the writer monitors her progresses in writing.

Although his perspective is oriented to writing behaviors rather than cognitive process, Krashen (1984) maintained that the level of engagement in the composing processes differentiated poor and effective writers. The three writing processes pointed out by Krashen (1984) were planning, rescanning, and revising. In planning, an experienced writer spends more time on planning compared to a poor writer. Rescanning is a characteristic of a proficient writer, and this process is to review the composition lest the writer deviates from the main objective and plan. Furthermore, the scope of revising is different for proficient and poor writers: effective writers first revise the prose in terms of overall message while poor writers confound editing with revising.

Although the process of translating in the hypothesis of Flower and Hayes (1981) was not included in Krashen's (1984) comparison between effective and poor writers, he referred to this translating process in the discussion of reading-writing relationships. Adopting the terminology of Chomsky, Krashen (1984) distinguished writing *competence* and writing *performance*. The competence consists of a body of knowledge on language, or "code of written language" (p. 21), and an intuitive sense of reader-based prose. A massive amount of inputs from voluntary pleasure reading develops this writing competence according to the theorist. Writing performance, on the other hand, is a set of proficient writing behaviors to transform the abstract knowledge into a written form, and performance is developed by the intervention of instruction. Effective writers have acquired both competence and performance. Meanwhile, Krashen (1984) argued that poor writers could be categorized into two types: *blocked* and *remedial writers*. Blocked writers are those who possess competence, but cannot exert full competence due to the lack of performance; whereas, remedial writers are those who lack both competence and performance.

Flower and Hayes's (1981) theory was empirically supported by several studies. Victori (1999) compared L2 proficient writers and poor writers' metacognitive knowledge on L2 writing based on writing assessments and interviews. Codification of the responses consisted of person knowledge, task knowledge, and strategy knowledge. Person knowledge is the awareness of self and others as a writer. Task knowledge is the awareness of the functions and requirements in academic writing. Strategy knowledge is the awareness of the strategies useful for certain writing tasks and the strategies the students employ. The researcher found that majority of metacognitive

knowledge used was distinct between effective and poor writers. The proficient writers were more aware of their writing problems, and their knowledge of the requirements of writing tasks was broader and more accurate. Also, the finding on the strategy use was that the stronger writers were more rigorous and exertive throughout the writing processes. The effective writers reported that they would plan before writing, revise the content even after completing the essay, and utilize dictionaries. In addition, the revising processes of the weaker and proficient writers fit into the theory of Krashen (1984): the weaker writers focused on language use and mechanics while the more successful writers focused on the organization and coherence of their compositions.

Hall (1990) concentrated on this revising process in L1 and L2 in his study. Although the respondents were native speakers of various languages, the investigator reported that the revising processes were very much alike across languages. The subjects were all advanced level students, and the researcher concluded that the proficient L2 writers were able to use one system to revise the texts. Also, he indicated that this uniform capacity might have been developed in L1 and transferred to L2 writing, supporting the interdependence hypothesis (Cummins, 1994). On the other hand, although Thorson (2000) also studied the revising processes in L1, English, and L2, German, her case studies revealed that different strategies were employed in each language. The observed transfer of L1 writing strategies to L2 was limited. Nevertheless, Uzawa (1996) found that both L1 and L2 writing were strikingly similar. The researcher applied a Think-aloud protocol, verbalizing thoughts while writing, and compared the writings in L1, Japanese, and L2, English, in addition to a translation task from L1 to L2. The scores of the writing assessments in both languages were comparable, and they were corresponding in terms of the writing processes, attention pattern, and sophistication of language use. The author mentioned that her participants used the what-next approach when writing in both languages.

Additionally, transferable L1 writing skills were detailed by Edelsky (1982), who carried out qualitative research on elementary school aged Spanish speakers learning English. She concluded that any aspect of writing could be transferred from L1 to L2 writing depending on the context. In particular, a function of written texts and organizers were common between languages. Similarly, Kobayashi and Rinnert (2008) found their participants were able to transfer writing skills from L1 to L2. However, they also identified that L2 writing skills could not be applied to L1 writing. Japanese college freshmen participated in the research, and they were divided into groups which received composition instruction in L1 and L2, L1 only, L2 only, and no composition instruction. The scores in writing in both languages of the first two groups, who received both L1 and L2 instruction and L1 instruction only, were higher than the third group, L2 only, regardless of past formal composition instruction in L2.

## **5. Reading and Writing**

Writing instruction was regarded as the critical factor to develop writing skills by



Krashen (1984) as mentioned earlier. His argument over writing skills also included the influences of inputs from extensive reading for pleasure. Following this theory, a number of studies on reading and writing relationships in L1 have been conducted. Stotsky (1984) reviewed these studies, and she concluded that research results could be generalized to have confirmed Krashen's claim: there were interrelationships between achievement levels of reading and writing.

However, the studies on the reading-writing relationship in L2 did not necessarily gain the same results as those of L1. The exploratory research by Flahive and Bailey (1993) distributed a questionnaire to investigate reading time both in L1 and L2. Although L1 reading and writing skills were not assessed, grammar and writing style in L2 were incorporated as variables. Their results did not support Krashen's hypothesis in that the effective L2 readers in their study were not automatically proficient in L2 writing or vice versa. The variable which correlated strongly with L2 writing skills was grammar, which suggests the intervention of limited L2 language proficiency. Furthermore, L2 language proficiency was also found to be an influential factor in the survey administered by Carrell and Conner (1991). The researchers investigated the effects of the following variables on L2 reading and writing skills: discourse types, text genre, educational level, and L2 language proficiency level. The researcher reported that the participants with higher L2 language proficiency performed significantly better than the participants with lower L2 language proficiency when undertaking persuasive texts which was a more difficult text genre than the other. However, when the students sit the assessments with descriptive texts, the easier genre, there was no significant difference in performance between the higher and lower L2 language proficiency groups.

While Carrell and Conner (1991) focused on L2 reading and writing skills, Carson et al. (1990) incorporated L1 reading and writing skills in their research. Considering the persistent influence of L2 language proficiency, Carson et al. (1990) questioned whether or not L2 language proficiency affects the transfer across languages and modalities. The variables incorporated in this research were the duration of residency in the U.S., L2 language proficiency, L1 and L2 educational level, and L1 and L2 reading and writing assessments. The researchers compared two language groups, Japanese and Chinese, and the participants were different in terms of demographic backgrounds and L2 language proficiency. The result showed that the outcomes were inconsistent between the two groups. Also, the authors could not identify whether discreteness of the results between the two groups was due to cultural differences, L2 educational level, or L2 language proficiency level. Nonetheless, there were four results in common between the two groups: reading skills were more easily transferable across languages; writing skills in L1 and L2 were not strongly correlated; L1 writing skills were not the predictor of L2 writing skills while L1 reading skills were the predictor of L2 reading skills; and L1 reading and writing skills were positively correlated.

## **6. Reading Assessments**

These two studies conducted by Carrell and Conner (1991) and Carson et al. (1990) adopted different techniques to assess reading abilities of their participants. Carson et al. (1990) used a cloze test to assess reading skills of their participants. However, Bernhardt (1983) argued that a cloze test still suffers from the deficiency that examinees focus on connections of words, referring to grammatical rules. Carrell and Conner (1991) employed a multiple-choice style test and an immediate recall protocol. In this technique, participants read a short passage silently, and after returning the reading passage to the examiner, they write down everything they can recall from the text in L1 (Bernhardt, 1983). Several disadvantages of the recall protocol were also pointed out. Alderson (2000) indicated that Meyer's (1975 as cited in Alderson, 2000) scoring system is time consuming. This system analyzes the text and stratifies the clauses in terms of their rhetorical functions carrying ideas of different levels of importance (Connor and Kaplan, 1986). However, the methodology suggested by Bernhardt (1991, as reported by Heinz, 2004) requires only 10 minutes scoring each response. In this approach, the text is divided into idea units by segmenting the sentences into meaningful noun, verb, and prepositional phrases. Then these idea units are awarded different scores based on the importance of the idea (Bernhardt, 1983). Furthermore, although Alderson (2000) noted that the recall protocol could be a test of memorization, he also suggested that assigning recall tasks right after reading without a long interval could reduce this problem. Lastly, the problem of producing recall in L2 was pointed out (Maarof, 1998, as cited in Heinz, 2004); however, allowing the participants to write in L1 can address this issue of L2 learners' limited ability to demonstrate their comprehension of the prose (Bernhardt, 1983).

## **7. Writing Assessments**

In addition, the criteria for L2 writing evaluation used by Carson et al. (1990) were questioned. The scaling rubric was developed by Carson et al. (1990) for their research based on the rubric used in the TOEFL test. Sasaki and Hirose (1999) argued that the rating criterion to assess the Japanese prose used in the Japanese educational setting is different from that of the English counterpart. In consideration of this issue, the researchers administered a questionnaire survey to identify the evaluation criteria for the Japanese expository composition. In conformity to the results of the survey, a rating scale was devised, and the following six criteria were incorporated: (a) clarity of the theme: the degree of clarity of presentation of the main theme and of adequacy of supporting points; (b) appeal to the readers: the degree of concreteness and persuasiveness of rationale and of eliciting agreement from the readers; (c) expression: the degree of coherence among ideas and cohesiveness in connecting sentences; (d) organization: the degree of clarity in logic for the sequence of paragraphs; (e) knowledge of language forms: the degree of accuracy in usage of punctuation, letters, and grammar; and (f) social awareness: the degree of

effort to express self- and social awareness and relationships between self and society.

Furthermore, Sasaki and Hirose (1999) maintained that their scale and the ESL Composition Profile (Jacobs et al. 1981) were comparable due to the fact that both are analytic scales. These two scales share the majority of the criteria and the following are included in Jacobs et al. (1981): (a) content: the degree of development of thesis and relevancy to the topic; (b) organization: the degree of clarity of presentation of ideas and of logicity and cohesiveness in sequencing paragraphs; (c) vocabulary: the degree of sophistication, range, and appropriateness of word use; (d) language use: the degree of complexity of grammatical structures used, and of accuracy in grammar; and (e) mechanics: The degree of accuracy in spelling, punctuation, and paragraph structure. The compatibility of these scales was analyzed, and a high consistency was observed, though there were some divergences in scores. Nevertheless, Sasaki and Hirose (1999) indicated that these differences occurred because their scale was more effective in specifying the traits that are valued in Japanese composition instruction.

## **8. The Current Study**

Incorporating these rating schemes, the current study explored the relationships of L1 and L2 reading and writing skills, following the scope of Carson et al. (1990). The preceding literature showed that the degree of transferability across languages differs depending on the skills. Also, the existence of the shared knowledge across modalities was confirmed by the results which suggested the relatively strong correlation between L1 reading and writing. Furthermore, that both of these shared domains in L2 can be severely disturbed by L2 language proficiency levels was also validated. Among the reviewed articles, the common obstacle of research was to maintain the comparability of the reading and writing assessments when L2 was involved. Also, there were some variables which were absent in some L2 reading and writing literature: time spent reading for pleasure and experience of formal writing instruction in L1 and L2. As mentioned earlier, Krashen (1984) argued that language inputs from reading and composition instruction are necessary to develop writing skills. Therefore, these perspectives should be considered across languages when examining the factors which influence L2 writing skills. Furthermore, time spent reading L1 and L2 academic texts were included because inputs through academic reading were assumed to generate different effects on writing output.

Concerning both reading and writing research, L2 reading research mostly resulted in similar conclusions. Generally, most reviewed authors agreed that L2 reading skills could be predicted by both L1 reading and L2 language proficiency. They also accepted that the threshold level existed, but the threshold level changed according to the contexts. On the other hand, in the field of writing, although authors agreed that writing processes in L1 and L2 were similar, the transferability of L1 writing skills yielded different conclusions. Also, although processes of writing might be comparable across languages, equivalent levels of writing achievement in L1

cannot be expected to L2 writing automatically. Furthermore, the interrelationships between L2 reading and writing skills were ambiguous compared to L1 research. Therefore, with the exception of the relationships of L1 and L2 reading skills and of L1 reading and writing skills, the transferability still remains unclear.

## **VI. Method**

A mixed-method, cross-sectional design (Creswell, 2009) was employed to investigate how L1 and L2 reading and writing skills were interrelated and to understand whether and how the selected variables would affect L2 writing skills.

### **1. Data Collection**

(1) Participants. A total of 83 Japanese university students participated in the survey; a convenience, single stage sampling was employed (Creswell, 2009). The population of this study was undergraduate students attending Soka University in Tokyo, and the intended participants were native Japanese students who enrolled in English programs. In consideration of logistical factors, the data were collected from four types of classes for comparative analysis: (a) English Program Elementary (EPE) as an elementary level group (TOEIC 240-380); (b) English for Academic Purposes (EAP) Intermediate as an intermediate level group (TOEIC 385-450); (c) Professional English (PE) Upper Intermediate; and (d) PE Advanced as an advanced level group (TOEIC 455-580). A range of L2 language proficiency levels was included because the students cannot be assumed to pass the threshold level only on the basis of scores of standardized tests.

The target number of the participants was 75, and the post hoc analysis was conducted through G\*Power (Faul, Lang, & Buchner, 2007). Minimum of 70 students participated in each assessment, and with 70 students, a power level of .83 was expected at a  $p < .03$  significance level in one-tailed test. During the data collection, (a) 72 students completed the English writing assessment (the number is the sum of the elementary level group [ $n = 14$ ], intermediate [ $n = 30$ ], and advanced [ $n = 28$ ]), (b) 74 completed the Japanese writing assessment (the elementary level group [ $n = 15$ ], intermediate [ $n = 31$ ], and advanced [ $n = 28$ ]), (c) 70 completed the English reading assessment (the elementary level group [ $n = 17$ ], intermediate [ $n = 25$ ], and advanced [ $n = 28$ ]), and (d) 74 completed the Japanese reading assessment (the elementary level group [ $n = 21$ ], intermediate [ $n = 25$ ], and advanced [ $n = 28$ ]).

In addition, semi-structured interviews were carried out. In accordance with criterion sampling (Creswell, 2009), respondents were drawn. The interviewees were decided based on the class they attended: one intermediate level student and five advanced level students participated in the interview.

(2) Materials. Materials include reading passages for a recall protocol (see Appendix 1 for L1 and Appendix 2 for L2), writing prompts (see Appendix 3 for L1 and Appendix 4 for L2), a

questionnaire, and interview questions. For the evaluation of L1 and L2 writing skills, writing prompts were selected from the Test of Written English in the TOEFL test, which is accepted by educational institutions internationally. Prompts which require students to write in a comparison/ contrast rhetorical pattern were chosen for the ease of analysis as Carson et al. (1990) pointed out. Different prompts were adopted for each language, and one of the prompts was translated into Japanese. For the reading assessment instrument, a recall protocol was selected after the consideration of several models. A cloze test was one of the options, and this test had been employed in other investigations; however, the problems of formulating tests which correspond across different languages and the lack of objective criteria to evaluate the material in L2 have been reported (Carson et al., 1990; and Pichette, Segalowitz, and Conners, 2003). The L2 reading text was selected from the TOEFL preparation textbook (Phillips, 2007) with the criteria of genre, length, and difficulty. The genre of this prose was expository and the number of words was 204 which fit into the appropriate word count, 200, suggested by Bernhardt and James (1987). The difficulty of the text was determined according to the level of the TOEFL textbook from which the reading was found; this textbook is intended for intermediate level students. A mid-level text was chosen so that the elementary level students would not be discouraged from participating in the assessments due to the difficulty of the passage. The L1 reading text was extracted from National Geographic Japan (Dell'Amore, 2010). The same criteria used for L2 reading assessment was applied to the L1 reading assessment. This prose is also an expository text, but the length of the L1 text is slightly longer than that of the L2's: the English version of this article includes 245 words. Because the subjects are native Japanese speakers, the L1 text was more demanding in terms of sophistication of the language and the numbers of ideas included.

(3) Interviews. In order to learn about participants' metacognitive knowledge on L1 and L2 reading, the questions were adapted from Carrell (1989). In total, 10 questions were asked. For the inquiry into metacognitive knowledge on L1 and L2 writing, the interview questions devised by Victori (1999) were employed. Due to the time constrain, the questions were reduced from 25 to eight. The questions were determined according to following reasons: the relatedness to the current study, cultural context of the research site, and the redundancy of the questions. In addition, three original questions were added in order to enquire into the students' past L1 and L2 writing experiences and their perception of factors contributing to the development of L2 writing skills.

## **2. Procedure**

(1) Scoring schemes. The aforementioned scales were adopted for evaluation of the L1 and L2 writing assessments. For the L2 writing assessment, the ESL Composition Profile (Jacobs et al, 1981) was employed, and for the L1 writing assessment, an analytic scale developed by Sasaki and Hirose (1999) was chosen. The total score of the L1 writing assessment was converted

from 60 to 100 for the ease of analysis. According to Sasaki and Hirose (1999), these two scoring scales correspond to each other since both are analytic scales, and the relatively high (0.76) correlation between the scales was indicated in their research. Therefore, these scales were employed so that both L1 and L2 writing samples would be scored in accordance with the value of each educational system. In the Western educational system, a thesis statement is required; whereas, manifestation of a position, for or against, is sufficient in the Japanese counterparts.

The scoring schemes for the L1 and L2 reading assessments were designed for the study. In reference to Bernhardt (1983) and Bernhardt and James (1987), the L1 and L2 texts were segmented into idea units by the researcher. Each idea unit was assigned a point value, from one to five, depending on the importance of the idea. The list of idea units for both the L1 and L2 texts were created, and the lists were verified by a native Japanese professor who specializes in Applied Linguistics in the International Language Education (ILE) Graduate Program. The total score was 95 points, and converted to 100 for statistical analysis purposes.

(2) Norming sessions and scoring. In order to establish a common understanding of the evaluation criteria for the L1 and L2 reading and writing assessments among raters, norming sessions were conducted for each assessment under the supervision of a native Japanese and English-speaking professors of Applied Linguistics in the ILE Graduate Program. The raters for the L1 reading and writing assessments were graduate students in the program of Teaching Japanese as a Foreign Language, and the raters for those of L2 were also master students who majored in Teaching English as a Second Language and the same native-English speaking professor in the ILE Graduate Program.

## **VII. Results**

### **1. L1 and L2 Reading and Writing Assessments**

With a 100 point scale, the mean score for the L1 reading assessment was 37.1 (14.2), and the mean for L2 reading was 60.4 (17.0). This result is shown in Table 1. The mean score for the L1 writing assessment was 61.4 (14.4), and the mean for the L2 writing assessment was 63.4 (9.6). Among the L1 and L2 reading and writing assessments, a significantly lower mean score was observed in the L1 reading assessment. The response gained in interviews might suggest the possible cause. Some interviewees reported that they could more easily remember the content of the L2 text exactly as was presented; whereas, when reading the L1 text, they reported that they tended to mentally summarize the text; as a result, their recall missed details of the text.

Table 1

Means and Standard Deviations for L1 and Reading and Writing Assessments (100 points possible)

Task	All Levels	
	M	SD
Reading		
L1 (n = 75)	37.1	14.2
L2 (n = 70)	60.4	17
Writing		
L1 (n = 74)	61.4	14.4
L2 (n = 72)	63.4	9.6

Subsequently, the Pearson's correlation was calculated to analyze the relationships of the L1 and L2 reading and writing assessments. As can be observed in Table 2, the correlations were weak to moderate as Carson et al. (1990) found in their research. The L1 and L2 reading scores showed a weak correlation ( $r = .258$ ,  $p < .05$ ), and the L1 and L2 writing scores also indicated a weak correlation ( $r = .325$ ,  $p < .01$ ). Carson et al. (1990) reported the opposite result to the current research. This might be due to the rating scales for the L1 writing assessments used in this study. As Sasaki and Hirose (1999) pointed out, their analytic scale might have allowed the raters to evaluate the L1 writing assessment more accurately as the researchers reflected the criteria valued in the Japanese educational system in their scale. These two results of the correlational analysis seem to indicate that students who are more proficient in L1 reading and writing skills are also more proficient in L2 reading and writing skills.

Table 2

Correlations for L1 and L2 Reading and Writing Assessments

Variables	All Levels
L1 reading - L2 reading	$r = .258^*$
L1 writing - L2 writing	$r = .325^{**}$
L1 reading - L1 writing	$r = .080$
L2 reading - L2 writing	$r = .463^{**}$

\*  $p < .05$ \*\*  $p < .01$ 

Moreover, no correlation was found between the L1 reading and writing assessments ( $r = .080$ ,  $p = .26$ ) although the result of the L2 reading and writing assessments showed a moderate correlation ( $r = .463$ ,  $p < .01$ ). Possible interpretation is that the students were more alert during the L2 reading assessment because they were reading in L2, and had been informed that they would be asked to recall the text in L1 afterwards. On the other hand, during the L1 reading assessment, they might be less alert and assumed that they comprehended the text because they

read and recalled in L1. Nevertheless, in general, the reading-writing relationship in L2 showed the strongest correlation among the other relationships, which suggests that the more proficient L2 readers are the better L2 writers.

Furthermore, independent-samples *t* tests were conducted to see if the intermediate and the advanced level groups differed on the L1 and L2 reading and writing assessments. The result is indicated in Table 3. The test scores of the elementary level students were excluded due to the small number of the students. No significant difference was observed in the L1 reading assessment for the intermediate level students ( $M = 34.18$ ,  $SD = 12.63$ ) and the advanced level students ( $M = 41.74$ ,  $SD = 16.79$ ),  $t(49.64) = -1.86$ ,  $p = .068$  (two-tailed) with moderate magnitude of the difference in means (eta squared = .06). L2 language proficiency level seems to moderately influence L1 reading skills. Although the connection between these two variables is unclear, higher L2 language proficiency might be indicative of higher aptitude in language-related skills, which might support the existence of the underlying academic proficiency argued in the interdependence hypothesis (Cummins, 1994). Moreover, a significant difference was found in the L2 reading assessment for the intermediate level students ( $M = 58.50$ ,  $SD = 15.18$ ) and the advanced level students ( $M = 69.81$ ,  $SD = 12.81$ ),  $t(51) = -2.91$ ,  $p = .05$  (two-tailed) with the large effect size for the difference (eta squared = .15). Therefore, L2 language proficiency levels seem to be critical for L2 reading skills, and this result corresponds with the past studies which reported that L2 language proficiency was the strong predictor for L2 reading skills.

Table 3

Independent-Samples <i>t</i> -Tests of Performance of Different L2 Language Proficiency Groups						
Assessment	Level	M	SD	<i>d</i>	<i>t</i>	Effect size <sup>a</sup>
L1 Reading				49.63	-1.86	0.06
	Intermediate (N = 25)	34.18	12.63			
	Advanced (N = 28)	41.74	16.79			
L2 Reading				51	-2.91**	0.15
	Intermediate (N = 25)	58.5	15.18			
	Advanced (N = 28)	69.81	12.81			
L1 Writing				56.97	-1.86	0.06
	Intermediate (N = 25)	61.96	12.9			
	Advanced (N = 28)	67.96	11.91			
L2 Writing				49.3	-0.17	0.17
	Intermediate (N = 25)	66.07	9.08			
	Advanced (N = 28)	66.41	5.71			

\*\* $p = .005$ .

<sup>a</sup>Eta squared

Predictably, the L1 writing assessment of the intermediate level students ( $M = 61.96$ ,  $SD = 12.90$ ) was not significantly lower than that of the advanced level students ( $M = 67.96$ ,  $SD =$



11.91),  $t(56.97) = -1.86$ ,  $p = .70$  (two-tailed), and the magnitude of the difference in means was moderate ( $\eta^2 = .06$ ). Consequently, L2 language proficiency seems to be moderately important for L1 writing skills as well, and the same interpretation of L2 reading skills could be applied to L1 writing skills: the higher L2 language proficiency, the higher the aptitudes for literacy-related skills. Finally, there was no significant difference in scores of the L2 writing assessment between the intermediate level students ( $M = 66.07$ ,  $SD = 9.08$ ) and the advanced level students ( $M = 66.41$ ,  $SD = 5.71$ ),  $t(49.30) = -.17$ ,  $p = .89$  (two-tailed), but the effect size was large ( $\eta^2 = .17$ ). Thus, L2 language proficiency seems to be a crucial factor to succeed in L2 writing. In general, the cause of the result which showed no significant differences between the intermediate and advanced level students in the L1 reading and writing skills could be due to the fact that they are both native Japanese speakers. In addition, the reason for the result that no significant difference was found in the L2 writing assessment between the levels could be because of little experience of L2 writing of both groups as they reported in the questionnaire.

## **2. Questionnaire**

The results of the questionnaire suggested that average time for L2 pleasure reading was almost none, and the majority of the students had never received L2 writing instruction. However, many students received L1 writing instruction, which was contrary to the expectation that Japanese students rarely learn writing at school. The averaged time for L2 pleasure reading and L1 and L2 academic reading was the highest among the advanced level students, and this result could be related to the significant differences in L2 reading skills between the intermediate and advanced level students found in the  $t$  test.

## **3. Interviews**

Five advanced level students, and one intermediate level student were interviewed in order to gain further insights into their metacognitive knowledge on L1 and L2 reading and writing. The questions were adopted from Carrell (1989) for reading and Victori (1999) for writing; the same questions were asked for L1 and L2 reading so that their reading strategies could be compared between the languages. The categorization of the questions also followed the same studies to analyze the responses.

Overall, the students were more confident in L1 reading. The number of strategies in which the students were not confident increased considerably for L2 reading. For problem-solving strategies, most of the students reported that they would infer the meaning when reading an L1 text, but they changed their strategies for L2 reading. The students tended to focus on linguistic aspect of the text including grammar and vocabularies when they read L2 texts. The cause of these differences of strategies employed for L1 and L2 reading could be the heavy emphasis of test preparation in Japanese high schools in which Japanese and English reading are taught to

prepare students for the types of tests specific to each subject.

Following Carrell (1989), the reported reading strategies were classified into local strategies and global strategies. Almost all the students named the global strategies for L1 reading, but only two students maintained the same strategies across languages. In terms of the obstacles for reading, the responses for both L1 and L2 reading centered around local problems such as vocabularies and syntax. Furthermore, the perceptions of a proficient L1 reader were relatively homogeneous among the students as only two types of descriptions appeared: those who read extensively and those who can identify the text organization. On the other hand, the perception of a proficient L2 reader varied. The common response was that the amount of vocabulary knowledge would determine the proficiency of L2 reading skills while innate qualities such as intelligence rather than abilities of a reader accounted for the rest of responses.

For writing, the aforementioned questions adapted from Victori (1999) were asked. Most of the students' ideas of a proficient writer were shared across languages, but the difficulties in writing were incompatible between L1 and L2 writing. Although there was no trend in the responses on L1 writing difficulties, the problem of L2 writing was exclusively on translating mentally generated ideas into written form due to the lack of language to express. Moreover, the majority reported that they would bear the reader in mind when they composed in L1 but not in L2. However, most of the students' conceptualization of the text organization was shared by two languages. Contrasting responses were observed across languages for the question on the reason to stop composing. For L1 writing, the students tended to pause in order to decide what to write next, but for L2 writing, they paused to find expressions which allow them to communicate their messages. Moreover, when revising, the majority reported that they focused on the overall message in L1, but focused on language use in L2.

In addition, the responses regarding the questions on L1 and L2 writing tasks assigned in high schools and at university were miscellaneous. The most frequent L1 writing assignment in high schools was book reports; whereas, the English counterpart was to translate short sentences from L1 to L2. At university level, the students noted that citation of outside sources was obligatory for academic reports. However, none of the students had written any extensive essays in English courses at university. A notable observation was that most students did not obtain any feedback on their writing assignments from their instructors in high schools nor at university. Nevertheless, students who received comments from their L1 or L2 instructors chose writing instruction as the most influential variable for L2 writing skills.

## **VIII. Discussion**

The results of the assessments indicated that both reading and writing skills could be transferred across languages while no relationship was found between L1 reading and writing skills. This result contradicts with past studies which suggested that more successful L1 readers

were also effective L1 writers. This lack of relationship might have been caused by the difficulty of the L1 reading assessment adopted in this study because the average score of the L1 reading assessment was significantly lower than the other assessments. However, this result could also be caused by the combination of the type of the reading assessment adopted for this study and different approaches students employ for L1 and L2 reading tasks. From the interview data, the tendency to focus on gist for L1 reading and on language for L2 reading was observed. Consequently, the students gained lower score on the L1 reading assessment because they might focus on overall message of the text while they gained higher score on the L2 reading assessment because of their inclination to focus on details of the text in L2. In recall protocol, it appears that the ability to provide details results in higher scores.

The more likely cause of no correlation between L1 reading and writing skills seems to lie in the distinct characteristics of the elementary level group. The elementary level group consisted of juniors and seniors while the other two groups consisted of freshmen. By supposition, the freshmen who were able to obtain higher score in the TOEIC test were academically successful in their high schools where memorization and grammar-translation were prevalent. Likewise, students who enrolled in an elementary level English course in their junior and senior years might have been less successful in their high school English courses, and intensive memorization of grammar and vocabulary might not have been compatible to those students. Accordingly, the elementary level group may have been disadvantaged by the recall protocol methodology. Nevertheless, juniors and seniors are assumed to have experienced writing tasks in Japanese as assignments at university; the L1 writing assessment might not have been as problematic as the reading assessment to the elementary level group.

On the other hand, there was a positive correlation between L2 reading and writing skills. L2 language knowledge seems to contribute to this outcome because extensive linguistic knowledge would help students comprehend L2 texts and express their thoughts in writing. Students who gained higher scores on the achievement test could be assumed to have developed a wider range of knowledge in English grammar and vocabulary. In fact, although only L2 reading skills showed a significant difference between the intermediate and advanced level groups in *t* test, L2 language proficiency indicated strong influences on both L2 reading and writing skills.

Furthermore, unlike the results reported by Carson et al. (1990), writing skills were found to be more easily transferable than reading skills in the current study. This could be due to the emphasis on test preparation in Japanese high schools. Japanese and English reading are taught as subjects at school, and the skill to infer the intention of the author is often required in Japanese reading tests; whereas, the skill to recognize answers from the text (Hughes, 1989) and linguistic knowledge are often required in English reading test. Thus, strategies which suit each type of test might have been developed distinctively; accordingly, they were more difficult to be transferred. On the other hand, for writing, little experience in L2 writing was reported in the

questionnaire and the interviews, and because of this limited expertise, the students might have implemented the knowledge and skills acquired in L1 writing to L2 writing, which in turn, yielded the result that the transfer of writing skills were easier than that of reading. Additionally, the results of the questionnaire indicated that more than half the students in each L2 proficiency level group reported that they had received L1 composition instruction, which is contrary to the assumption that the Japanese students have rarely been taught writing in L1. Therefore, although it had been expected that Japanese students had not obtained training in L1 writing skills which they could transfer to L2 writing skills, the participants of the current study had experienced L1 writing instruction, and the results actually showed that L1 and L2 writing skills were interrelated.

Similarly, the interviews showed that more metacognitive knowledge on writing was shared across languages compared to that of reading. Specifically, the metacognitive knowledge on text organization in task knowledge (Victori, 1999) and the perception of a proficient piece of writing in person knowledge (Victori, 1999) was shared between L1 and L2 writing. The reported text organization consisted of an introduction, body, and conclusion. Some interviewees reported that the distinctive characteristic of the text organization of Japanese writing was to present the thesis statement in conclusion. Also, the primary importance for an effective piece of writing in both L1 and L2 was clarity of a theme though not necessarily a thesis statement as in a sense of English writing.

However, although transfer of writing skills seemed to be easier than that of reading, the contrastive focus on global strategies for L1 and local strategies for L2 was also observed in metacognitive knowledge on writing. Due to the limited experience in English writing and language knowledge, strategy knowledge (Victori, 1999) on L1 and L2 writing yielded a stark contrast. For strategy knowledge, three questions were asked on outlining, causes to stop writing, and revising process. The responses on outlining was the same for L1 and L2 writing, which were to mentally plan; however, the students reported that they would stop writing in order to reflect on content in L1 while they would stop writing to examine language use for L2 writing, and the concerns on content and language were the same for the process of revising. Therefore, the metacognitive knowledge on writing seemed to follow the same trend as that of reading.

For the last research question on the factors contributing to the improvement of L2 writing skills, the threshold level seemed to be the most influential factor. In particular, the difficulties of translating ideas into words in L2 were reported by all the students in the interviews. In order for a writer to express ideas in a written form, substantial linguistic knowledge and skills to transform abstract concepts into language are necessary according to Krashen (1984). Therefore, in addition to extensive L2 linguistic knowledge, the present research suggests that the threshold level in the field of writing might include Krashen's (1984) competence and performance, which are a body of knowledge in reader-based expressions and

skills to convert abstract concepts into a written form. Although the inputs from reading had been expected to influence the achievement level of L2 writing skills, because there was no significant difference in time for pleasure and academic reading in L2 between the intermediate and advanced level groups, the relationship remains uncertain. Nevertheless, the data suggested that the students might not have acquired either competence or performance (Krashen, 1984) because the students reported almost no time for L2 pleasure reading, and the majority of the students reported that they had not received any L2 writing instruction. On the other hand, since a larger number of the students had received L1 writing instruction and read Japanese texts for pleasure, the students might have acquired competence and performance in Japanese though these assumptions also remain a matter of speculation.

Lastly, although this observation is only based on interviews, the perception of a proficient L2 reader is worth noting. The responses on this question concentrated on the innate qualities rather than abilities. This conceptualization might be because of the exam-oriented and teacher-centered instruction in Japan; the perceptions of students on what they can do in English could be dominated by test results assigned by teachers. Furthermore, since preparing for tests is often demanding for many students, they could possibly believe that students who could succeed in exams are intelligent or those who could persist in their study were born to be diligent. As a result, they might conclude that those who were not born with these qualities are hopeless because they are not aware of the fact that there are strategies they could learn to be effective learners, and that language learning is not only about memorization but also about skills training.

## **IX. Implications**

Despite the fact that this research was the replication of the investigation conducted by Carson et al. (1990) in terms of the framework, the nature of this study was exploratory because the instruments were newly devised or adapted from other studies. Therefore, any implications derived from the preliminary findings require judicious judgment. Nevertheless, the implications could be generalized to similar contexts to the research site of this study.

In this survey, the correlation of L2 reading and writing skills was moderate; this correlation was stronger than any other relationships. Therefore, as the current L2 language instruction integrates reading and writing, intralingual transfer should be actively encouraged. On the other hand, both the correlation between L1 and L2 writing skills and that of L1 and L2 reading skills were weak. Carson et al. (1990) observed the significant correlation of reading skills across languages. Also, the researchers found no correlation for the higher L2 proficiency group and a weak correlation for lower L2 proficiency group in L1 and L2 writing skills. Thus, the authors suggested that L1 reading skills should be exploited in L2 instruction while L1 writing skills may be utilized in L2 writing instructions but limited to lower L2 proficiency level groups. They noted that “at lower proficiency levels, interlingual transfer may be more important,

whereas at higher proficiency levels, intralingual input may be the more significant source for developing L2 literacy skills” (p. 261). In reference to this presumption, the aforementioned results of this study might indicate that students at lower L2 proficiency level might be helped through promotion of interlingual transfer in addition to usual integration of literacy skills.

Based on the short circuit hypothesis, less effective L2 learners are unable to transfer their L1 literacy skills because of the limited L2 language proficiency. Therefore, what the instructors should consider might be to induce interlingual transfer and provide opportunities for less proficient L2 learners to be aware that their L1 literacy skills are applicable to L2. If activities include awareness-raising in which the cognitive load is reduced in terms of language so that students might be able to spare their cognition to understand the target skills, students may find the similarities or applicability of their L1 literacy skills. For example, both the results of the reading assessments and interviews suggested that the students were inclined to be occupied with bottom-up information when reading L2 texts although top-down information is the main concern in L1 reading. In such cases, existing effective L1 reading strategies should be highlighted. Furthermore, as observed in the interviews, L1 writing process reported by the students were similar to the writing behaviors described by Flower and Hayes (1981). These effective writing behaviors are the writing skills L2 writing teachers attempt to develop in students, and the students seemed to have acquired some of these skills in L1, which need to be elicited to be transferred to L2 writing.

In addition, these implications might provide different suggestions for native and non-native L2 instructors. For non-native English speaking instructors, L1 could be a further advantage for instruction because Japanese could be the additional sources of teaching materials such as allowing students to write summaries in L1 and finding L1 texts usable for comparative purposes. For native English speaking instructors, if they were not familiar with the educational background of Japanese students and its influence, this research could inform them of the following points. Students might have acquired effective reading and writing strategies in L1, and that they might employ different strategies for two languages. The instructors could judge which strategies they need to train fundamentally or induce transfer.

For future research, the limitations of the present study should be considered. The context of the research site might have complicated the investigation; the study was conducted in EFL environment where only small number of students aim at studying abroad. Accordingly, the questionnaire did not yield notable results as most of the participants were inexperienced in L2 writing, and the amount of L2 reading was limited. Therefore, for future research, target population should be more carefully determined. Moreover, the awareness-raising should be implemented in classroom practice, and the effects of elicitation of transfer should be examined. The research should investigate how the induction of intralingual transfer would be helpful for the students at lower L2 proficiency level to improve their L2 literacy skills.

## Appendix 1: Sample L1 Recall Protocol

### チームの能力を左右する社会的感受性

グループで仕事をする場合、切れ者が1人いても成績にさほど影響がないということが、“集団的知性（さまざまな仕事を集団でうまくこなす能力）”を計測する初の研究で明らかになったという。視覚パズルや希少な資源を巡る交渉など頭を使う作業をグループで行う場合、個人の頭の良さは作業の成否にほとんど影響がなく、むしろ“社会的感受性”の高い人があるグループの方が成功率が高いことが、最近行われた一連の実験でわかった。ここでいう社会的感受性とは、相手の顔色を見て感情を判断できる能力を指す。集団的知性の専門家である研究を率いたウーリー氏は、グループ内に女性が多いほど成功率が上がる理由もこの実験結果は示していると話す。女性は社会的感受性のテストで常に高得点を挙げるといふ。特に優れたグループでは、より多くの人交代で発言して議論に参加した。「特に西洋文化では個人の知性や実績を非常に重視するが、世界が平準化し相互交流が活発になるにつれて、個人が独りで何ができるかよりも、集団で何ができるかを考えることが重要になる」。集団の成否が予測できれば、実生活の様々な場面で有用な指針となるかもしれない。特にビジネスや軍事など、コンセンサスに基づいて意思決定を行うことの多い分野では有効だとウーリー氏は指摘する。例えばベンチャービジネスの立ち上げなど、結果が不十分だとコストが高つくような高リスクの状況では、集団的知性のレベルを知ることは重要だといふ。

## Appendix 2: Sample L2 Recall Protocol

### A New Idea

Something new that the Chinese were using was money crafted from paper. Why had the Chinese come to use paper money? One possible explanation is related to the supply of metal. Metal is needed to make coins, and the Chinese did not have a big enough supply of metal to make coins for all of the people in China. The Chinese had already invented paper, and they had already invented a method of printing paper. When the Chinese needed something to make into money and they did not have enough metal, they used paper to make money. And how do you think the Chinese government got the Chinese people to accept printed paper as money? The Chinese government issued an order saying that the paper money it created was to be used by everyone in China. At first, people were worried that paper money would not have any value, and they did not want to use the paper money. However, the government of China was a very strong government, and people had to follow the order to use paper money. After a while, people saw that they could use paper money to buy anything, and they began to accept paper money.

### **Appendix 3: Sample L1 Writing Prompt**

海外へ移り住む際、移住先の国の習慣に従う人もいれば、自国の習慣を守り続ける人もいます。これらの二つの選択肢を比べると、あなたにとってどちらのほうがより好ましいですか。具体的な詳しい説明を添えてあなたの答えを裏付けて下さい。

(When people move to another country, some of them decide to follow the customs of the new country. Others prefer to keep their own customs. Compare these two choices. Which one do you prefer? Support your answer with specific details. )

### **Appendix 4: Sample L2 Writing Prompt**

Some students like classes where teachers lecture (do all of the talking) in class. Other students prefer classes where the students do some of the talking. Which type of class do you prefer? Give specific reasons and details to support your choice.

[教師が講義をする（授業時間内ずっと教師が一人で話し続ける）授業が好きな生徒もいれば、生徒も意見を述べることのできる授業を好む生徒もいます。あなたはどちらのタイプの授業が好きですか。具体的な理由と詳しい説明を挙げてあなたの意見を述べて下さい。]



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