

L2 reading–writing correlation in Japanese EFL high school students

Keywords

correlation, L2 reading, L2 writing, Japanese

This study examines the relationship between English reading and writing skills in Japanese high school students, based on reading and writing test scores gathered in 2006. The participants were 68 native Japanese high school students learning English as a Foreign Language (EFL). The correlation between L2 reading and writing test scores is statistically significant ($r = .45$), and the coefficient of determination is .2025 with L2 reading scores explaining approximately one-fifth (20.25%) of the total variance of L2 writing scores. These results imply some effect of L2 readings skills on the quality of L2 composition in Japanese EFL high school students.

本研究は、2006年に実施した英語読解試験と英語作文試験のデータを基に、英語読解力と英語作文力の相関関係を調査したものである。被験者は、英語を外国語として学習している高等学校3年生であった。両試験得点間には有意な相関関係($r = .45$)が認められた。さらに、重回帰分析を行ったところ、読解試験得点が作文試験得点に及ぼしている説明力の割合は20.25%であった。実験結果は、第一外国語として英語を学習している日本人高校生の英語読解力は、英語作文力に対し、ある一定の影響を与えていることを示唆している。

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Considerable research concerning the relationship among both L1 and L2 reading and writing skills has been performed internationally over the past 30 years to identify variables that may explain the diversity of L2 ability. These studies have contributed to the overall growth of the L2 acquisition research; however, less emphasis has been placed on a possible linear association between L2 reading and writing skills. The issue of whether L2 reading skills are linked with L2 writing skills has been unresolved in this early stage of research. Moreover, the population of high school students has not been examined in most previous studies. Therefore, the present study investigates the relationship between L2 reading and writing skills of high school students.

Literature Review

A growing interest in the three kinds of relationships—between L1 and L2 reading skills, between L1 and L2 writing skills, and between L2 proficiency and L2 writing skills—has prompted a number of relevant investigations in the past 30 years. First, L2 reading specialists have studied the relationship between L1 and L2 reading skills. For example, Lee and Schallert (1997), examining 809 Korean students learning English (L2), implied that there was an effect of L1 reading skills on L2 reading skills. A number of investigations relevant to this question have been examined, and most L2 reading researchers have, in general, pointed out that a positive relationship exists between the two language reading skills (e.g., Alderson, 1984; Bossers, 1991; Carrell, 1991;

Clarke, 1979; Hacquebord, 1989; Hayashi, 2004, 2009; Hulstijn & Bossers, 1992; Shokrpour & Gibbons, 2000). On the other hand, there have been no published opinions expressing a negative relationship between L1 and L2 reading.

Second, L2 composition researchers have been discussing a possible relationship between L1 and L2 writing skills; however, their findings are mixed. Statistical analyses that empirically confirm a linear association include studies by Cook (1988), Hirose and Sasaki (1994), Sasaki and Hirose (1996), Kamimura (2001), and Ito (2004). In contrast, Carson, Carrell, Silberstein, Kroll, and Kuehn (1990), Pennington and So (1993), and Abu-Akel (1997) dissent from the finding and reveal data that do not support a positive significant L1–L2 writing correlation. The research findings on which these L2 writing researchers lack consensus have been complicating the discussion of the relationship between L1 and L2 writing.

The last concern is whether L2 proficiency, which refers to the passive proficiency skills of listening, grammar, and reading, not the active proficiency skills of speaking and writing, can be a possible additive factor of L2 writing skills. For instance, Cumming's (1989) study, examining 23 selected adult Francophone students in their late teens and early twenties in a French (L1)/English (L2) bilingual program in Canada, revealed that L2 proficiency was a distinctive factor explaining L2 writing performance. In another empirical study, Sasaki and Hirose (1996), looking at 70 university students learning English as a Foreign Language (EFL) in Japan, found that L2 proficiency could be a potential variable causing gains in L2 writing quality. The results from these two well regarded studies are consistent with the findings of other experiments which have determined that L2 proficiency can account for L2 writing skills (Carson et al., 1990; Hirose & Sasaki, 1994; Ito, 2004; Jones & Tetroe, 1987; Pennington & So, 1993; Raimes, 1985).

As reviewed so far, a wide variety of investigations attempting to clarify the three relationships—between L1 and L2 reading skills, between L1 and L2 writing skills, and between L2 proficiency and L2 writing skills—have contributed to the overall development of L2 acquisition research. However, less attention has been focused on the relationship between

L2 reading and L2 writing skills. Although the study of Carson et al. (1990) reports the weak but significant correlation between L2 reading and L2 writing skills in Japanese participants learning English as a second language (ESL), and the moderate significant correlation between the two skills in Chinese ESL students, the investigations of the relationship are of current value because of scarce additional empirical evidence supporting the relationship between the two skills. Thus, an additional examination through an empirical experiment can significantly clarify the complicated nature of the L2 reading–writing connection. In addition, few previous studies have examined the population of high school students rather than university students. Therefore, the purpose of this study is to examine the possible relationship between the L2 reading and L2 writing skills of high school students. The present study tests the following hypothesis:

The correlation between L2 reading and L2 writing skills of native Japanese high school students learning English as a foreign language is statistically significant.

Method

Participants

A total number of 68 native Japanese EFL high school students participated in this study. All were 12th graders with at least 5.5 years of English education provided in secondary school (three years in middle school and two and a half years in high school) prior to the experiment. Their ages ranged from 17 to 19 with the mean of 17.63. Several studies (Hirose, 1998; Miura, 1995) pointed out that Japanese EFL students in secondary school hardly received any formal academic essay instruction apart from mere sentence-level translation from Japanese to English; the participants in this study also had very little formal instruction in writing academic essays.

Instruments

Two tests served as the data-gathering instruments of the participants' L2 reading and writing skills. One was Test of English for International Communication (TOEIC). This is a widely used English language standardized test in Japan, consisting of two distinctive sections: Listening

(100 multiple choice items, 45 minutes) and Reading (100 multiple choice items, 75 minutes). In this study, the score of the Reading section served to measure the students' reading skills. The other measure was a persuasive writing task in English. The English topic in Figure 1 was drawn from retired Test of Written English (TWE) prompts stored in the *Criterion*. *Criterion*, developed by Educational Testing Service (ETS), is an online writing evaluation service. It instantly reports scores and academic diagnostic feedback.

Change Job or Not (persuasive)

Some people prefer to change jobs or professions during their careers. Others choose to stay in the same job or profession. Discuss the advantages of each choice. Which do you prefer? Use reasons and examples to explain your choice.

転職をするかしないか

自身の職歴の中で転職を好む人もいれば、同一職業にとどまることを選択する人もいます。それぞれの利点について論じてください。あなたはどちらを好みますか。理由や例を挙げ、あなたの考えを説明してください。

Figure 1. Bilingually presented essay prompt

There were two considerations for this study's essay prompt because the students' English writing proficiency was expected to be low. First, a framed prompt was chosen in this study. According to Kroll and Reid (1994), there are the following three main types of writing prompts: framed, bare, and text based. In a framed prompt, a situation or set of circumstances is provided, and a writing task is presented to test; it is similar to a TWE prompt. A bare prompt states the entire writing task in relatively direct and simple terms. In a text-based prompt, which is the most difficult of the three, writers are required to demonstrate writing skills based on interpretation of a relatively long reading passage. A framed prompt was selected as the easiest for EFL Japanese high school students to respond to. Second, the essay prompt was bilingually presented as seen in Figure 1.

Procedure

Two sessions were conducted one week apart as Figure 2 illustrates of the experimental procedural design. The first session of the persuasive English composition test was conducted for 30 minutes in September, 2006, without dictionaries, as per the TWE standardized testing procedure. One week after the composition session, the second session of the L2 reading test was administered.

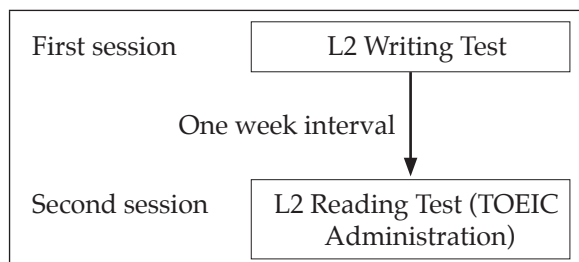


Figure 2. Experimental procedural design

Evaluation of Essays

The *ESL Composition Profile* (see Appendix A), developed by Jacobs, Zinkgraf, Wormuth, Hartfiel, and Hughey (1981), was used to evaluate the L2 essays. The *Profile* contains the five distinctive component scales—Content, Organization, Vocabulary, Language Use, and Mechanics—with a range from 34 (minimum) to 100 (maximum). Each component is weighted according to its estimated significance. Content ranges from 13 points to 30; Organization from 7 to 20; Vocabulary from 7 to 20; Language Use from 5 to 25; and Mechanics from 2 to 5. The total weight for each component is further categorized at four mastery levels: very poor, fair to poor, good to average, and excellent to very good.

Two raters of Japanese EFL college instructors who had had completed the doctoral program of Teachers of English to Speakers of Other Languages (TESOL) were selected as evaluators of the English persuasive writing in this study. The evaluators independently rated the writing data, based on the *ESL Composition Profile*. The score for each essay was the average of the two independent ratings.

Results and Discussions

Table 1 reports rater means and standard deviations, and two measures of inter-rater reliability: the Pearson product-moment correlation and the coefficient alpha (Cronbach's alpha). The former reflects the overall agreement of the paired ratings of the two evaluators' independent scores of each essay; the latter demonstrates the degree of internal consistency of the final scores based on the two ratings per essay. The inter-rater reliabilities measured by the Pearson product-moment correlation and the coefficient alpha were .95 and .97, statistically demonstrating high rating reliability.

To show the participants' compositional proficiency, Table 2 provides the following indices of writing fluency: the average number of words, sentences, words per sentence, words per minute, and sentences per minute. Table 3 shows descriptive statistics for the two primary variables, L2 reading and writing skills scores. The L2 reading skills scores ranged from 50.00 to 215.00 with the mean of 122.72, which was 30.28 points lower than the average score of the Reading section of the 12th graders tested in the 2006–2007 school year in Japan (see *Kokusai Bijinesu Komyunikeishon Kyokai*, 2007). Similarly, the L2 writing skills scores ranged from 34.00 to 75.50 with the mean of 44.71, which was also low across the country. The Pearson product-moment correlation was carried out to facilitate the overall interpretation of scores. Table 4 indicates that at the .01 level, the correlation of .45 is significant between L2 reading and writing skills. The statistical finding based on this analysis is that L2 reading skills are moderately linked with L2 composition quality.

To investigate further the relationship between the two variables, L2 reading and writing skills, the researcher regressed the dependent variable of L2 writing scores against the independent variable of L2 reading scores, (L2 Reading \times L2 Writing), $F(1, 66) = 16.79$, as in Table 5. The coefficient of determination (R^2) is .2025 with L2 reading scores explaining approximately one-fifth (20.25%) of the total variance of L2 composition scores. This provides evidence that L2 reading skills affect L2 writing skills, as would be expected from Pearson correlation shown in Table 4.

However, the statistical fact that the two skills correlate does not necessarily mean that the

one causes the other because the reverse may be also true. Correlation is not causation, as the cautionary statistical phrase goes. Nevertheless, judging from the participants' focus on the development of L2 reading ability in the Course of Study guidelines provided by the Ministry of Education, Culture, Sports, Science, and Technology and their lack of L2 academic essay-writing experience (Hirose, 1998; Miura, 1995), it could be claimed that L2 reading skills contribute strongly to the subsequent improvement of L2 composition quality.

To add definition to the correlation between L2 reading and writing skills, Table 6 provides descriptive statistics for the five component scales—Content, Organization, Vocabulary, Language Use, and Mechanics—in the *ESL Composition Profile*.

Table 1. Essay Rater Means, Standard Deviation, Pearson Product-movement Correlation, and Coefficient Alpha (N = 68)

	Means	SD	Pearson	Coefficient Alpha
Rater 1	44.44	10.67	.95	.97
Rater 2	44.97	11.06		

Table 2. Descriptive Statistics for Quantitative Data of L2 Writing Texts (N = 68)

	Mean	SD	Min	Max
Words	70.88	43.03	4.00	196.00
Sentences	7.07	4.33	1.00	18.00
Words per Sentence	10.29	3.60	4.00	25.67
Words per Minute	2.36	1.43	0.13	6.53
Sentences per Minute	.24	.14	.03	.60

Table 3. Descriptive Statistics for L2 Reading and Writing Skills (N = 68)

Variable	Mean	SD	Min	Max	MPS
L2 Reading Skills	122.72	37.53	50.00	215.00	495.00
L2 Writing Skills	44.71	10.72	34.00	75.50	100.00

Note. MPS = Maximum Possible Score.

Table 4. Correlation between L2 Reading and Writing skills (N = 68)

L2 Reading Skills × L2 Writing Skills	.45**
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**p<.01.

Table 5. Regression Analysis (N = 68)

L2 Reading Skills × L2 Writing Skills (R = .45, R ² = .2025)					
Source	SS	df	Mean Square	F	Sig.
Regression	19137.67	1	19137.67	16.79	.00
Residual	75234.02	66	1139.91		
Total	94371.69	67			

Table 6. Descriptive Statistic for the Five Component Scales (N = 68)

	Mean	SD	Min	Max	MPS
Content	15.55	2.54	13.00	23.50	30
Organization	8.72	2.16	7.00	15.00	20
Vocabulary	8.90	2.03	7.00	14.50	20
Language Use	8.74	3.68	5.00	18.00	25
Mechanics	2.79	0.71	2.00	4.50	5

Note. MPS = Maximum possible score

Table 7. Five Correlations between L2 Reading skills and the Component Scales (N = 68)

	Content	Organization	Vocabulary	Language	Mechanics
L2 Reading	.45**	.45**	.40**	.44**	.39**

**p<.01.

The means of Content and Mechanics exceed half their maximum possible scores: on the other hand, the means of Organization, Vocabulary, and Language Use are less than half their maximum possible scores. The five Pearson product-moment correlations were performed between the independent variable of L2 reading skills and each of the five dependent variables—Content, Organization, Vocabulary, Language Use, and Mechanics. As shown in Table 7, the correlations between L2 reading skills and each of the five component scales ranged from .39 to .45, and all exhibited significant positive correlations at the .01 level. As would be expected from the

regression analysis, a further important finding is that L2 reading skills are associated with all five writing component scales because the five correlations exceed, or approach, .40.

The hypothesis in this study that L2 reading skills correlate with L2 writing skills is confirmed with the aid of correlational and regression analyses. The major finding emerging from this investigation is that the development of L2 reading skills may improve the quality of students' persuasive essays in L2 writing, supporting the early study of Carson et al. (1990). As far as practical concerns, correlation of reading and writing skills found in this study implies ways to enhance teaching. In a class, for example, an L2 writing instructor aware of this research finding could confidently draw students' attention to narrative or logical techniques in their reading for their own essay writing. For another example, lessons alternating writing and reading may optimize both skills.

Conclusion

This exploratory study investigated the relationship between L2 reading skills and persuasive essay quality in EFL Japanese high school students. The preliminary findings in this study support the existing evidence of some effect of L2 reading skills on the quality of L2 composition in Japanese EFL high school students, although any teaching implications based on the findings should be carefully treated.

In order to generalize the findings from this research and to guide curriculum development in L2 reading and writing effectively, further investigations examining other populations with different proficiency levels and educational background are strongly recommended. If the results of future studies comparing L2 reading skills and composition quality of other populations of EFL students with little essay writing experience are similar to those in this study, it could be concluded that L2 reading skills cause the improvement of L2 writing quality.

Acknowledgments

I would like to express deep gratitude to the editors and anonymous reviewers for invaluable advice.

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Appendix A: ESL Composition Profile

		VERY POOR				FAIR TO POOR				GOOD TO AVERAGE				EXCELLENT TO VERY GOOD												
		13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							
CONTENT	30–27	EXCELLENT TO VERY GOOD: knowledgeable • substantive • thorough development of thesis • relevant to assigned topic																								
	26–22	GOOD TO AVERAGE: some knowledge of subject • adequate range • limited development of thesis • mostly relevant to topic, but lacks detail																								
	21–17	FAIR TO POOR: limited knowledge of subject • little substance • inadequate development of topic																								
	16–13	VERY POOR: does not show knowledge of subject • non-substantive • not pertinent • OR not enough to evaluate																								
ORGANIZATION	7	8	9	10	11	12	13	14	15	16	17	18	19	20	EXCELLENT TO VERY GOOD: fluent expression • ideas clearly stated/supported • succinct • well-organized • logical sequencing • cohesive											
	17–14	GOOD TO AVERAGE: somewhat choppy • loosely organized but main ideas stand out • limited support • logical but incomplete sequencing																								
	13–10	FAIR TO POOR: non-fluent • ideas confused or disconnected • lacks logical sequencing and development																								
	9–7	VERY POOR: does not communicate • no organization • OR not enough to evaluate																								
VOCABULARY	7	8	9	10	11	12	13	14	15	16	17	18	19	20	EXCELLENT TO VERY GOOD: sophisticated range • effective word/idiom choice and usage • word form mastery • appropriate register											
	17–14	GOOD TO AVERAGE: adequate range • occasional errors of word/idiom form, choice, usage <i>but meaning not obscured</i>																								
	13–10	FAIR TO POOR: limited range • frequent errors of word/idiom form, choice, usage • <i>meaning confused or obscured</i>																								
	9–7	VERY POOR: essentially translation • little knowledge of English vocabulary, idioms, word form • OR not enough to evaluate																								
LANGUAGE USE	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	EXCELLENT TO VERY GOOD: effective complex constructions • few errors of agreement, tense, number, word order/function, articles, pronouns, prepositions				
	21–18	GOOD TO AVERAGE: effective but simple constructions • minor problems in complex constructions • several errors of agreement, tense, number, word order/function, articles, pronouns, prepositions <i>but meaning seldom obscured</i>																								
	17–11	FAIR TO POOR: major problems in simple/complex constructions • frequent errors of negation, agreement, tense, number, word order/function, articles, pronouns, prepositions and/or fragments, run-ons, deletions • <i>meaning confused or obscured</i>																								
	10–5	VERY POOR: virtually no mastery of sentence construction rules • dominated by errors • does not communicate • OR not enough to evaluate																								
MECHANICS	2	3	4	5	EXCELLENT TO VERY GOOD: demonstrates mastery of conventions • few errors of spelling, punctuation, capitalization, paragraphing																					
	5	GOOD TO AVERAGE: occasional errors of spelling, punctuation, capitalization, paragraphing <i>but meaning not obscured</i>																								
	4	FAIR TO POOR: frequent errors of spelling, punctuation, capitalization, paragraphing • poor handwriting • <i>meaning confused or obscured</i>																								
	3	VERY POOR: no mastery of conventions • dominated by errors of spelling, punctuation, capitalization, paragraphing • handwriting illegible • OR not enough to evaluate																								
TOTAL SCORE (OVERALL SCORE 34–100)		READER				COMMENTS																				

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