

The Correlation Between Knowledge of L1 *Kanji* Characters and L2 Language Proficiency

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This study explores the potential of first language (L1) knowledge of Japanese *kanji* characters to be a predictor of English as a foreign language (EFL) competency among Japanese university students studying EFL. More specifically, it posits that learners who are more proficient at EFL have a proportionately higher level of *kanji* knowledge than students who are not as competent at EFL. For this study, 49 Japanese university students were divided into two levels (high or low), based on their TOEIC scores, and were tested on their *kanji* knowledge. Data analysis was performed to determine the Pearson's correlation coefficients (Pearson's *r*). Results show very weak correlations among females, but moderate correlations among males, suggesting that proficiency at reading L1 *kanji* characters among males in their youth could possibly be seen as a predictor of EFL learning success or a portent of better performance on EFL competency tests.

INTRODUCTION

The ability to read and write is, for those of us who have grown up in a developed country, something we have probably never thought about. From the time we are very young, we are taught to interpret certain lines as letters and, in turn, these letters form words. It is an integral part of many languages. When learning a new language, however, is it really necessary to re-acquire *all* of our literacy skills? Unlike vocabulary or grammar, the ability to read would seem like something that could be transferred over to another language in the same way that knowledge of a certain musical instrument would certainly give you a good starting point when picking up another one. According to Yamashita (2002, p. 92), "It is natural for L2 learners, particularly adults, to bring their L1 resources into L2 processing. Therefore, there must be a complex interaction between cognitive factors (L1 reading ability) and linguistic factors (L2 proficiency)." Accordingly, this paper looks at the linguistic interdependence hypothesis and investigates whether there is any correlation between Japanese EFL learners' ability to read *kanji* characters and their proficiency in EFL to determine if the ability to read L1 *kanji* characters can be a predictor of second or foreign language (SFL) proficiency.

BACKGROUND

The linguistic interdependence hypothesis (LIH; Cummins, 1979) states that "reading performance in a second language is largely shared with reading ability in a first language" (Bernhardt & Kamil, 1995, p. 17). That is, L1 reading

proficiency, which includes knowledge of its vocabulary and grammar, contributes to SFL performance. This means that EFL students who are deficient at reading in their L1 will have greater difficulty at reading comprehension tasks in the SFL than their peers who are strong at such tasks in the L1. The ramifications of this are significant. For one, it means that student performance on tests that certify SFL proficiency could be impeded and possibly even limited when L1 reading abilities are low. It could also call into question the importance that is often placed on pre-schoolers to learn an SFL as early as possible. In other words, rather than promoting bilingual education from kindergarten or grade one, schools would need to prioritize L1 instruction to the effect that competency in L1 reading reaches a minimum level before students begin SFL studies. Also, it seems to suggest that once a threshold level is attained, SFL learners would need to be simultaneously educated in their L1 while they studied an SFL.

In the literature, this hypothesis is not without controversy. At about the same time that the linguistic interdependence hypothesis was proposed, Clark (1979) proposed the linguistic threshold hypothesis (LTH), claiming that L2 reading proficiency is the direct result of L2 linguistic knowledge, not L1 reading skills. That is, “in order to read a language, one has to ‘know’ the language” (Bernhardt & Kamil, 1995, p. 17). Research into both hypotheses has revealed mixed results (for a detailed discussion of findings to date, see Yamashita & Shiotsu, 2015), but the consensus is that SFL reading proficiency can be aided or impeded by L1 reading abilities and SFL proficiency; the proviso being that SFL proficiency holds greater influence than L1 reading proficiency (Jeon & Yamashita, 2014). Further to this, it has been suggested that learners with higher SFL proficiency levels display stronger correlations to L1 reading proficiency (Yamashita & Shiotsu, 2015). Moreover, when the L1 and L2 were both Indo-European languages, the L1 influences L2 reading more than other language groups, especially when the L1 and L2 are alphabetic (Jeon & Yamashita, 2014).

Based on these findings, the question arises of whether reading components of SFL programs seeking to promote SFL proficiency through such resources as graded readers are possibly being hampered by poor L1 reading abilities, and, therefore, should necessitate that extensive reading in *both* the L1 and L2 be made a part of language programs. This would enhance L2 proficiency and performance on language certification tests like TOEIC® (Test of English for International Communication) and TOEFL® (Test of English as a Foreign Language). Of course, there are a number of factors other than reading proficiency that affect test scores, such as vocabulary knowledge, listening ability, grammatical knowledge, and writing ability, with the consensus being that the vocabulary knowledge is the greatest predictor of success on these tests (i.e., Chujo & Oghigian, 2009), which indirectly adds weight to the linguistic interdependence hypothesis. However, what is unclear from the literature is the effect that L1 vocabulary knowledge apart from

other reading subskills, such as L1 grammatical competency and cognitive and metacognitive skills, has on SFL proficiency. Therefore, it is the purpose of this study to look at the competency level of L1 *kanji* characters in Japanese EFL learners to determine whether this knowledge alone is an accurate predictor of SFL competency.

Research question

The following research question guided this study.

1. Do Japanese EFL students at a private university in Japan who have a greater knowledge of L1 *kanji* characters than their peers also have a proportionately higher level of EFL proficiency?

METHOD

This section describes in detail the participants, instrument, and procedure used in this research to investigate the above research question.

Participants

As the prerequisite for this study was to compare L1 *kanji* knowledge with EFL proficiency, only students with official certifications such as TOEIC® or TOEFL® were sought for this study. In total, 49 Japanese university students were chosen for this study, 22 (45%) of whom were male and 27 (55%) were female.

Instrument

The participants of this study were given a test in Japanese (see, Appendix A) that contained 20 *kanji* characters. These were rare or difficult-to-read *kanji* from the Japan Kanji Aptitude Test (*Kanjikentei*), second-grade, which is used to test literacy in Japanese. Questions about participants' sex, year of university, and scores and dates of their certifications are also included.

Procedure

Data for this study were gathered in two ways, through an online survey tool, Survey Monkey, and a paper-based test that was given to students from two elective EFL classes. Out of the 49 students, ten students took the test online. The ten participants who took the test online were friends of one of the authors and are from the same university as the other participants. The participants that received the paper-based test were from classes that were formed on the basis of proficiency levels. One class was comprised of students who had TOEIC® scores between 580-612, while the other had a range of between 355-480. Forty-nine students answered the tests, but because some of participants did not fill in their specific TOEIC® scores, their scores were based on a class average.

RESULTS

The results of the analyses can be found in Figure 1 and Table 1. Figure 1 utilizes a scatter plot to show the correlations between the two variables: TOEIC®

proficiency scores and the results of the *kanji* knowledge test. The plot lines for both the low and high group are vertical, which reveals little to no correlation. To prove our hypothesis true, we would have expected to see the *kanji* test scores for the lower proficiency class grouped closely together somewhere below a similar looking grouping for the higher proficiency class.

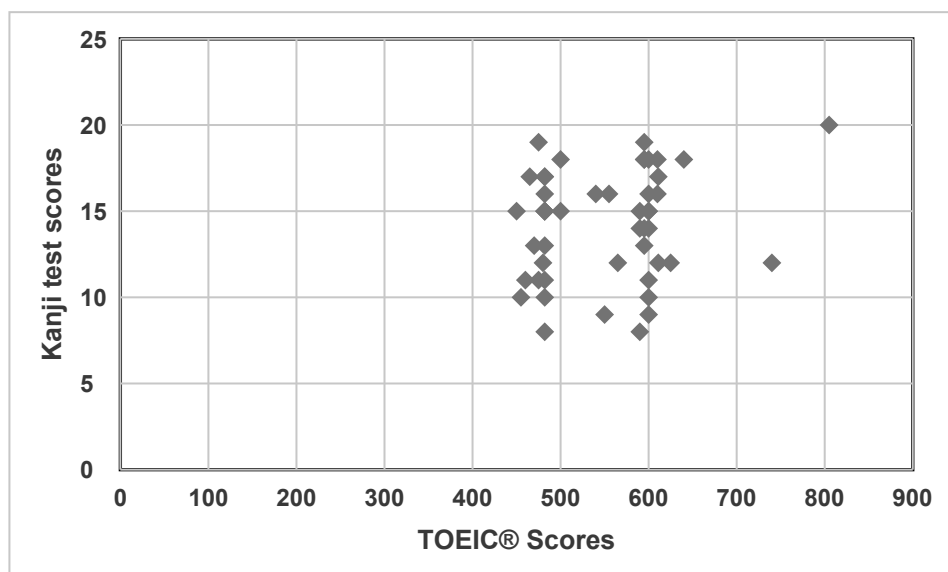


Figure 1. Scatter plot that shows the correlations between participants' (N = 49) *kanji* test scores and TOEIC® scores.

Table 1 shows the results of the Pearson's correlation coefficient analysis. The results reveal a statistic similar to what we discovered from the scatter plot, an r value of 0.18, which demonstrates a weak correlation between L1 *kanji* knowledge and EFL proficiency. Interestingly, when we examined the males and females separately, we found that the males showed much higher correlations ($r = 0.42$) than the females ($r = 0.03$), which seems to give support for our premise that L1 *kanji* knowledge does influence proficiency levels.

TABLE 1
Correlations based on Pearson's r

Participants	N	Pearson's correlation
All	49	$r = 0.18$
Females	27	$r = 0.03$
Males	22	$r = 0.42$

Note. weak correlation = below 0.33; moderate correlation = 0.34 to 0.66; and strong correlation = 0.67 to 0.99 (Barnes & Lewin, 2005).

DISCUSSION

On the whole, the results of the Pearson's correlation coefficient analysis indicate that EFL proficiency is the direct result of L2 linguistic knowledge, not L1 reading skills, and thereby adds support to the linguistic threshold hypothesis. But the results from the males alone reveal something different. This sample subset seems to lend some support for the linguistic interdependence hypothesis and possibly suggests that L1 reading skills, or at least L1 *kanji* knowledge is a possible predictor of L2 reading performance and/or test performance. Unfortunately, in the discussions of findings to date (i.e., Yamashita & Shiotsu, 2015), there have been no subset analyses that have looked at males and females separately, which is intriguing in light of findings from cognitive research. Based on findings about the difference in brain activation between males and females, i.e., that females score higher than males on tasks that involve phonological and semantic information, while males outperform females on visual-spatial working memory tasks (Halpern, 1997), it seems that further research on larger samplings that compare males and females is necessary so that more accurate claims about the validity of the LTH or LIH can be made.

LIMITATIONS

One of the possible reasons for the low correlations in this study is that the *kanji* knowledge tested was too limited. In a future study, it would be advisable to test participants on a more comprehensive list of *kanji* characters. Also, it may be unfair to claim that L1 vocabulary knowledge alone is an adequate way to gauge one's L1 reading ability. This too merits further study. Moreover, there seems to be a big difference between English and Japanese grammar structure. Both languages are in a completely different language family. The linguistic gap may be so big that reading ability does not smoothly transfer over from one language to another. Lastly, considering that females are said to be more apt at language learning than males (on average), the reason for this unusual outcome might be that the small sample size is not representative of males and females in general. In short, the apparent difference in ability could just be coincidental and would even out, or even reverse, with a larger sample size; again, this too bears future consideration.

CONCLUSION

This study examined the importance of L1 *kanji* knowledge in SFL proficiency to help better understand how interdependent the L1 and L2 are. Unfortunately, this study seems to have raised a lot more questions than it solved. The question framing this paper "Do Japanese EFL students at a private university in Japan who have a greater knowledge of L1 *kanji* characters than their peers also have a proportionately higher level of EFL proficiency?" was answered rather ambiguously. It did reveal that Japanese males seem to benefit from greater L1

kanji reading ability, while the females did not. This is very curious and suggests that there is possibly a very complex cognitive process that is linked to sex differences in the brain. Unfortunately, the scope of this study did not allow us to examine this. Subsequently, future research efforts will be needed to determine if *kanji* character knowledge (L1 vocabulary knowledge) contributes to SFL competency and higher proficiency test scores, thereby necessitating a different approach to SFL pedagogy among Japanese learners than has been employed to date.

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APPENDIX A: Kanji Reading Ability Test

漢字の読みの能力とEFLの能力の関係性を調べるテストです。
お答え頂いたデータは論文以外では一切使用しませんので、
ご協力お願いいたします。

□男 □女 ____年生

- 1 あなたの英語関連の資格のスコアを教えてください。(TOEICやTOEFL等)
取得日 ____年 ____月

- 2 漢字の読みに関する問題を20問出題します。5分以内で回答してください。
わからなければ飛ばして次の問いに進んでください。

- | | |
|---------------|---------------|
| (1) 更迭 _____ | (2) 土壤 _____ |
| (3) 疲弊 _____ | (4) 補佐 _____ |
| (5) 勅旨 _____ | (6) 提携 _____ |
| (7) 玄人 _____ | (8) 惰眠 _____ |
| (9) 病巣 _____ | (10) 建立 _____ |
| (11) 督促 _____ | (12) 座禅 _____ |
| (13) 陷落 _____ | (14) 布施 _____ |
| (15) 密偵 _____ | (16) 下僕 _____ |
| (17) 襖 _____ | (18) 勿れ _____ |
| (19) 瀘す _____ | (20) 凌駕 _____ |

テストは以上です。ご協力ありがとうございました。