

# *Kanji* Acquisition among Language Minority Students in Japan: A Comparative Study of Japanese-as-a-Second-Language Students Born in Japan

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Although Japan has an increasing number of children who are learning Japanese as their second language (JSL students), relatively little is understood with regards to their acquisition of the Japanese language. Since acquisition of *kanji* (i.e., Chinese characters used in Japanese) is considered a critical skill for academic success at school in Japan, this study examined the reading and writing of *kanji* among JSL students, focusing on students who were born in Japan but raised in non-Japanese speaking homes. A set of *kanji* reading and writing tests were administered to 27 4<sup>th</sup> grade JSL students, and their performance was compared to that of their Japanese native-speaking (NS) counterparts. While the oral proficiency of the JSL students was found to be equivalent to that of the native speakers, there was a significant difference in *kanji* reading between the JSL and NS students even though no differences were found in *kanji* writing. An error analysis indicated that the JSL students had more missing answers, and more errors associated with meaning in *kanji* reading. Among the various background factors, only the frequency of reading in Japanese outside of school was found to be significantly influential over the students' *kanji* reading. With respect to *kanji* writing, in addition to the frequency of reading in Japanese, the amount of practice of *kanji* writing and the frequency of reading outside of the school in the students' first language (L1) were found to be significantly influential.

## Introduction

As the mobility of people across borders increases, the number of children who receive schooling in a language other than their first language (L2 students) has also rapidly accelerated in many nations. These students' language learning as well as their academic achievement have become a pressing issues among educators and policy makers in these countries. Japan is no exception to this trend. The Ministry of Education, Culture, Sports, Science and Technology in Japan (referred to as MEXT hereafter) has acknowledged that the number of such L2 students in Japan is growing and that they need special educational

assistance (MEXT, 2009). However, we still have very limited understanding of their language abilities and academic subject learning in relation to their various backgrounds. MEXT has started developing a JSL curriculum for language minority students, but the JSL curriculum has not been well received among schools (Tajiri, 2009). The current curriculum may not meet the needs of such students very well.

There is a substantial gap in language use between the oral and written modes in Japanese, and its orthography is complex in that it combines multiple writing systems: *hiragana* and *katakana* (both are syllabaries) as well as *kanji* (logographs) (Sasaki, 2008). *Kanji* are Chinese characters adapted for use in the Japanese language. In written Japanese school texts, as the grade level increases, students encounter an increasing number of *kango*, words which are composed of *kanji* (Kondo & Tanaka, 2008). As such the acquisition of *kanji* is a critical component needed to be able to read and comprehend Japanese texts.

As part of a larger project examining young L2 students' *kanji* reading and writing performance and the difficulties that they might face,<sup>1</sup> the present study focuses on L2 students who were born in Japan but raised in non-Japanese speaking homes. Since we still have very limited information about L2 students' language learning outside of English-speaking countries, our hope is that by examining a case study situated in a non-alphabet-based language environment, this study can help us better understand the challenges that L2 students worldwide might face in their language learning.

### Language Minority Students Who Need Japanese Language Instruction

The existence of ethnic/language minority students in Japanese public schools is nothing new. However, these students, including long-term Korean and Chinese nationals residing in Japan, have long been forced to assimilate into the Japanese-speaking majority culture while receiving almost no special language or academic assistance. The education of ethnic/language minority students has gained public attention only since the late 1980s and early 1990s when various groups of foreign nationals started entering into Japan. These groups included descendents of Japanese emigrants (*Nikkeijin*) and their family members from South America. They were allowed to "officially" work in Japan as a result of a revision of the Immigrant Control Law in 1990, which was driven primarily by a shortage of low-skilled labor in Japan. In the same year, the Japanese government allowed private companies to accept corporate trainees from developing nations in Asia and Africa. Although they were labeled "trainees," in reality, most of them were conveniently employed as cheap labor by small- and medium-sized companies and farms (Kanno, 2008). Other foreign residents included female migrant workers from areas such as South East Asia, returning immigrants from China (e.g., Japanese war orphans and war brides) and their family members, Indo-Chinese refugees, foreign brides, and sojourners (Sakuma, 2006).

As the number of foreign residents increased, the number of children who are learning Japanese as their second language (JSL) has also increased. According to MEXT (2009), 28,575 students identified as *foreign students needing Japanese*

*language instruction* (referred to as *foreign JSL students* hereafter) were enrolled in Japanese public schools in 2008, accounting for 0.2% of the total school-aged student population. While this figure may still seem very small, the number of such students has been increasing rapidly. In 2008, the number of foreign JSL students increased by 12.5% compared with the previous year, while the total student population decreased. The overwhelming majority of such students (94.8%) belong to either elementary or junior high schools (the 1<sup>st</sup> – 9<sup>th</sup> grade levels). Portuguese-speaking students constitute the majority of these students (39.8%), followed by Chinese-speaking students (20.4%) and Spanish-speaking students (13.7%). While certain areas have a high concentration of *foreign JSL students*, approximately 80% of them belong to schools which have fewer than 5 *foreign JSL students* enrolled. According to MEXT, out of 28,575 students identified as *foreign JSL students*, 24,250 of them (83.5% of the JSL student population) received some form of JSL instruction in 2008 (MEXT, 2009).

### The Difficulties of Identifying JSL Students

The above-mentioned figures for foreign JSL students released by MEXT appear to seriously underestimate their actual numbers. First, this figure only applies to language minority students who are already enrolled in Japanese public schools; those who are enrolled in private ethnic schools and those who don't belong to any schools are not included in MEXT's figures for foreign JSL students. In Japan, foreign children are not required to go to school; some may go to ethnic school (e.g., Brazilian schools for Portuguese-speaking students) but it has been speculated that a sizable number of school-age language minority children may not receive any schooling whatsoever (Sakuma, 2006).

Second, the lack of a clear specification for JSL students makes it very difficult for schools to identify such students, and in turn, allows for tremendous variability in setting criteria for JSL students across schools. In 2006, MEXT changed its definition of foreign JSL students. It changed from "those who cannot sufficiently handle daily conversation in Japanese" to "those who lack academic language proficiency in Japanese and have trouble with academic studies, even if they can sufficiently handle daily conversation in Japanese" (MEXT, 2006, p. 1). While including the notion of academic language in its redefinition certainly was a major advancement, no criteria has been specified for "lack of academic proficiency."

There is tremendous variability in terms of language and institutional support (i.e., support to learn content subjects such as math) that JSL students receive across schools. Some students have a "pull-out" JSL or Center School JSL,<sup>2</sup> while others have almost no systematic JSL instruction. Bilingual education for language minority students has rarely been implemented at public schools in Japan (Kanno, 2008). Currently, there is no official certification for JSL teachers at public schools. Those who support JSL students are mostly regular teachers who teach other subjects<sup>3</sup> and/or part-time instructors and volunteers who are recruited from local communities. As a result, the overwhelming majority of them are not specifically trained to teach Japanese as a second language. There is no uniform JSL standard or assessment available to teachers, and assessing JSL

students' Japanese proficiency has been a substantial challenge for untrained teachers and volunteers, not to mention assessing JSL students' "academic language proficiency" as specified by MEXT. The termination of JSL support is determined primarily based on resource availability, not on the students' mastery of Japanese language in order to survive in mainstream classrooms.

An additional complication stems from the fact that the children who need JSL support should not be limited to "foreign students." Japan's citizenship policy is based on *jus sanguinis* [right of blood], meaning that one's nationality is determined by his/her parents' nationality. Thus, one cannot automatically obtain Japanese citizenship if he/she is born in Japan. It appears, however, that there are a growing number of Japanese nationals who may need JSL support, including children who obtained Japanese citizenship due to changes in their parents' nationality and marriage statuses, children who are born into international marriages, and Japanese returnee children from abroad.<sup>4</sup>

### **Japan-born Language Minority Students Who Need JSL and Academic Study Support**

Among such a diverse group of students who may need JSL support, the present paper focuses on those language minority students who were born in Japan but raised in homes where languages other than Japanese are predominantly spoken. Due to Japan's citizenship policy based on *jus sanguinis* as described above, some of these students hold Japanese citizenship while others are foreign nationals.<sup>5</sup> Some may be raised by minority language speaking single parents after they divorced from their Japanese national spouses.

There are a few distinct reasons for focusing on this particular group. First, there is an increasing number of Japan-born language minority students, and it is assumed that a good portion of them need JSL and/or academic support. Although no nationwide statistics are available for this group, some regional reports indicate that this may be indeed the case. For example, a report from a local government in central Japan, Shiga Prefecture, indicated a growing number of newborn babies who had foreign resident registrations. Many of their mothers are teenagers who have limited literacy skills in Portuguese and Japanese (Yamada, 2007). It is highly possible that these mothers may not be able to foster their children's pre-literacy skills in either language, and this in turn may negatively affect their children's subsequent literacy development. Toyohashi City, another local Japanese government, which has many language minority students including those who were born in Japan, conducted a vocabulary test and found that many of these students, especially those who had not gone to Japanese preschools, entered elementary schools without having basic Japanese vocabulary (Miyajima & Tsukuhi, 2007). There is no empirical data indicating the long-term effects of such students' limited vocabulary over their literacy development in Japan. However, research conducted in other countries such as the US has shown that the home literacy environment has substantial influence over children's vocabulary knowledge. Moreover, gaps in vocabulary knowledge among children become larger over time and have a lasting effect on their

reading comprehension (e.g., August, Carlo, & Snow, 2005; Biemiller, 1999; Cunningham & Stanovich, 1997). Therefore, it seems reasonable to surmise that Japan-born language minority students may face similar challenges with respect to vocabulary acquisition and literacy development.

Second, potential linguistic and academic problems among these students may not be easily detected by their teachers. This problem has been seen in the US; teachers often fail to detect such students' problems, partially due to their seemingly native-like oral proficiency in English (Scarcella, 2002). Their seemingly high oral proficiency can mask serious linguistic and academic problems that they may face, and thus these students may not be able to receive adequate assistance. Shockingly, out of 5 million English learners in the U.S., approximately 75% of them at the K-5 grade levels and 57% of them at the 6th-12th grade levels were born in the US (U.S. Census Bureau, 2000). As such the majority of English language learners struggle with acquiring sufficient English proficiency for their academic studies, despite the fact that they were born in the US and have received years of education in the US. While we don't know the relationship between oral proficiency and reading / academic performance among Japan-born language minority students, judging from the data in the US as well as a wide gap between oral and written languages in Japanese as mentioned before, one cannot underestimate the potential challenges that these language minority students in Japan may face. Therefore, it is worth investigating if there are any differences in performance between Japan-born language minority students and NS students, as Japanese teachers often appear to assume that the two types of students have essentially similar language abilities.

### The Challenges of Mastering Reading and Writing in Japanese

While substantial research has been conducted on English reading among English learners, we still have only limited understanding with respect to the reading processes and potential difficulties that children may have in learning reading in other languages (Share, 2008). Indeed, one can speculate that there are a number of potential challenges for JSL children to acquire the Japanese written system.

First, as briefly mentioned above, the Japanese language employs multiple writing systems. Written Japanese includes both *hiragana* and *katakana* (both are syllabaries) as well as *kanji* (logographs or grapheme-words).<sup>6</sup> Thus, children need to understand that *hiragana* and *katakana* correspond to syllables,<sup>7</sup> while *kanji* correspond to morphemes (or words). The ancient Japanese language originally did not have writing symbols and thus borrowed Chinese characters (*kanji*) to describe Japanese language. Later (sometime around the late 8<sup>th</sup> to early 9<sup>th</sup> century), *katakana* and *hiragana* were invented as mnemonic symbols for reading *kanji*. Currently, *kanji* are mainly used for content words, while *hiragana* are used for function words including particles and verb inflections. *Hiragana* are also used to help children learn how to read *kanji*; *hiragana* are often written alongside *kanji* indicating how to read such logographs. *Katakana* are mainly used for non-Chinese foreign loan words (Shibatani, 1990). Both *hiragana* and *katakana*, which each include 46 letters, are relatively quickly acquired by native

Japanese-speaking (NS) children. Most of the NS children can read *hiragana* and *katakana* before they enter elementary schools. *Kanji*, however, take a long time to acquire, even for NS students. MEXT determined a set of 1,945 *kanji* for daily use (*joyo-kanji*) and designated a set of these *joyo-kanji* for each school grade level in its uniform nationwide curriculum. Students are required to be able to read and write 1,006 *kanji*, and to be able to read an additional 939 *kanji* by the 9th grade, which is the end of compulsory education in Japan (Tajima, 2008).

Second, most *kanji* characters adapted in Japanese have multiple readings (i.e., pronunciations). As the example in Figure 1 below illustrates, many *kanji* have dual ways of reading them: a Chinese reading (*on-yomi*) and a Japanese reading (*kun-yomi*). The Japanese language has a large number of loan words from Chinese where modified versions of the original Chinese pronunciation (i.e., modified pronunciation to follow the Japanese phonological system) are used for reading such words (*on-yomi*). *Kanji* have also been used to describe original Japanese words where the Japanese pronunciation was assigned to a given *kanji* (*kun-yomi*). To further complicate matters, many *kanji* have more than one way of reading them in Chinese and/or Japanese. The Japanese language borrowed Chinese words from different parts of China as well as at different times in history. Due to regional and diachronic variations of the original *kanji* pronunciations in China, depending on where and when such loan words were adapted into Japanese, many *kanji* in Japanese have multiple Chinese readings. Similarly, some *kanji* have been assigned to represent multiple original Japanese words, resulting in them having multiple Japanese readings.

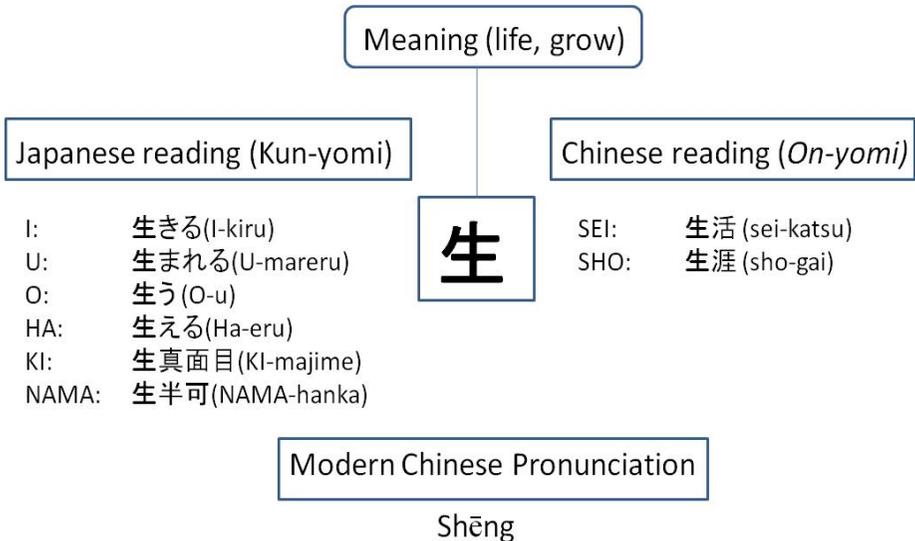


Figure 1 Multiple readings of Japanese kanji: A case of “生”

Third, many *kanji* share the same pronunciation. Due to its relatively simple phonological structure, the Japanese language has a large number of homophones, words which have the same pronunciation but have different meanings, and these are found with particular frequency in the written language.

For example, 信仰(faith), 進行(advance), 振興(promotion), 侵攻(invasion), 親交(friendship), 新興(new), 深更(in the middle of the night), and 新香(pickles) are all pronounced as “shin-kô.” By using *kanji*, the individual meanings of each homophone are easily distinguished. While this is a convenient system for fluent readers, it can be a tremendous challenge for learners to master. In Figure 1, the *kanji* “生” has two Chinese readings: “sei” and “shô.” Among the *kanji* which are designated to be mastered by the 6th grade by MEXT, the following *kanji* all have the same pronunciation “sei”: 世, 正, 声, 成, 青, 制, 性, 星, 省, 政, 清, 盛, 晴, 勢, 聖, 誠, 静, 精, 製, and 整. Similarly, *kanji* which have the pronunciation “shô” include: 小, 少, 松, 招, 承, 昭, 消, 笑, 将, 商, 章, 唱, 勝, 焼, 象, 証, 照, 傷, 障, 賞, and so forth.

The fourth and final challenge for JSL students is that they need to acquire a substantial number of *kango* (words composed of *kanji*) in order to read and understand academic texts, but that many of *kango* are used less frequently or rarely used in daily conversation. With the Meiji Restoration (1867), the Japanese government began a push towards modernization, and the Japanese language began to incorporate a large number of new terms using already-adapted *kanji*. The new terms were developed mainly in order to translate abstract and new scientific concepts from English and other Western languages. Such “Japan-made *kango*,”<sup>8</sup> together with existing *kango*, are heavily used in academic textbooks, but are less frequently used in daily conversation among children. Many commentators have compared the role and status of *kango* in Japanese to those of Latin words in English (Shibatani, 1990). Anecdotally, observers have found that many JSL students often begin struggling with *kanji* at the 3<sup>rd</sup>-4<sup>th</sup> grade level (Ohta, 2000). This coincides with the time when the proportion of *kango* starts rapidly increasing in school textbooks (Kondo & Tanaka, 2008). Among NS students, it has been found that the speed of semantic processing through *kanji* catches up with that through *hiragana* around the 4<sup>th</sup> grade level, and that the *kanji* processing speed is closely related to the amount of practice with *kanji* (Takahashi, 1999). If a student does not have sufficient practice with *kanji* for some reason, we can hypothesize that he/she may have trouble with processing and understanding academic textbooks starting from the 3<sup>rd</sup>-4<sup>th</sup> grade levels.

### **Kanji Acquisition among NS and JSL Students**

While a number of analyses on *kanji* acquisition among NS students at the 1<sup>st</sup>-9<sup>th</sup> grade levels have been conducted since the 1950s, systematic investigations of *kanji* acquisition among young JSL students have rarely been done. One of the most recent large-scale tests of NS students was conducted by the National Institute for Educational Policy Research (NIEPR) in 2006. The NIEPR administered a *kanji* test consisting of 50 *kanji* reading and 50 *kanji* writing items to 19,199 NS students from grades 4 to 9 as part of a language arts achievement test. The NIEPR found that the students at each grade level obtained, on average, 85% accuracy in *kanji* reading and 65% in *kanji* writing. Another recent large-scale study of NS students conducted by the Japanese Association for Educational Technology (2007) tested NS students from the 1<sup>st</sup> to 9<sup>th</sup> grade levels. Notably, the *kanji* writing performance dropped at the middle grade levels in elementary

schools (i.e., at the 3<sup>rd</sup> and 4<sup>th</sup> grade levels). The portion of missing answers also increased around these grade levels, indicating that *kanji* writing became increasingly challenging even for NS students around the middle grade levels at elementary school.

No large scale study has been conducted among JSL students, to the best of the author's knowledge. Yoshikawa (2004) tested 4<sup>th</sup> to 6<sup>th</sup> grade JSL students (30 students in total) and compared their performance with that of NS students. It was found that the JSL students substantially underperformed compared to their NS counterparts in both *kanji* reading and writing. Her 4<sup>th</sup> grade JSL students scored 50% in *kanji* reading while the NS students scored 95%. Moreover, based on the students' self-reports, the JSL students did not seem to access the various learning strategies that the NS students employed for *kanji* learning (Yoshikawa, 2004).

### Research Questions

The present study aimed to examine *kanji* reading and writing among language minority students who were born in Japan but were raised in homes where a language (or languages) other than Japanese are predominantly spoken. More specifically, the study investigated the following questions: (1) Are there any differences in *kanji* reading and writing performance between Japan-born language minority students and Japanese NS students? If so, what are the differences? (2) What background factors are related to the students' *kanji* reading and writing performance?

### Participants

The participants were 27 4<sup>th</sup> grade Japan-born language minority students and 13 of their NS counterparts who were enrolled in the same public elementary school in the Tokyo Metropolitan Area (40 students in total). Fourth graders were chosen because, as discussed earlier, this grade level seems to be the time when students start facing increasing challenges with respect to *kanji* acquisition.

The school site is located in a relatively low socioeconomic area. All of the students who attend the school live in a large public housing complex that was originally designed for low-income families. In order to be qualified to live in the public housing complex, families had to be approved by the local government as low income households. Thus, we can roughly assume that both the language minority students and the NS students in the present study came from similar socio-economic statuses.

While approximately half of the student body consists of language minority students, based on a background survey distributed as part of the present investigation, only those students who met all of the following criteria were chosen for the present analysis: the students had to be (1) born in Japan; (2) have at least one parent who is a foreign national; (3) raised in a home where a language (or languages) other than Japanese is predominantly spoken on a daily

basis; and finally, (4) the students had to attend the school in question since the 1st grade. A variety of languages were spoken at home among the participating students, including: Chinese, Khmer, Portuguese, Spanish, Thai and Vietnamese. The school offers pull-out JSL instruction to JSL students. While some of the participating students may have received pull-out JSL instruction prior to the time of this study,<sup>9</sup> none of the participants were receiving JSL instruction on a regular basis at the time of the investigation. Any systematic assistance to develop and maintain literacy in the students' first language was not available at the school.

The Student Oral Language Observation Matrix (SOLOM)<sup>10</sup> was administered prior to the *kanji* reading and writing analyses in order to see if the Japan-born language minority students in the present study had a high "perceived oral proficiency," as is often reported anecdotally. The SOLOM is an observation-based matrix where teachers evaluate their L2 students' oral proficiency using a 1–5 scale for each of the following domains: oral comprehension, fluency, oral vocabulary, pronunciation, and oral grammar. The English SOLOM was translated into Japanese and a homeroom teacher evaluated each of her participating student's oral proficiencies using the Japanese version of the SOLOM. The result indicated that among the 27 Japan-born language minority students, 23 students were rated as being at the native-like level in all five domains of the SOLOM by their teacher. The average score across all five domains was 4.8 out of 5.0 (SD 0.55). All the NS students obtained full scores (i.e., scores of 5.0) and no significant differences were found in the average scores between the language minority students and the NS students. In other words, their teacher's assessment was that the oral proficiency among the Japan-born language minority students in the present study was indeed equivalently high to that among their NS counterparts.

The 13 NS students were all born in Japan; both of their parents were Japanese nationals, and they were all raised in homes where Japanese was spoken exclusively. They had been in the same school as the participating language minority students and received the same academic instruction since the 1st grade.

### Instruments and Procedures

A set of *kanji* reading and writing tests were administered to both the Japan-born language minority students and the NS students. The test was designed to measure 3<sup>rd</sup> grade-level *kanji* reading and writing abilities, and the test was administered when the participants began their 4<sup>th</sup> grade. Each test was composed of 50 items. Following the same format used in the study by the National Institute for Educational Policy Research (2006), the reading test consisted of 40 *kanji* items designated for instruction at the 3<sup>rd</sup> grade-level by MEXT, and 10 *kanji* items designated for instruction at the 2<sup>nd</sup> grade-level. The writing test was composed of 30 items from *kanji* designated by MEXT for instruction at the 3<sup>rd</sup> grade level, 10 items from *kanji* for the 2<sup>nd</sup> grade level, and the remaining 10 items came from 1<sup>st</sup> grade-designated *kanji*. For each grade designated block, items were randomly chosen from the pools used in the study conducted by the Japanese Association for Educational Technology (2008). The *kanji* items were presented in short sentences. In the reading test, the students

were asked to describe the pronunciation of the *kanji* using *hiragana* (syllabic symbols).

In addition, all of the students were asked to fill out a brief background survey concerning their language backgrounds and their language use at home. The details of these items are described in the results section below. Both the *kanji* test and the survey were administered during regular class hours.

As mentioned previously, the Japan-born language minority students in the present study came from various language backgrounds. Out of 27 participating language minority students, 8 students indicated that at least one of their parents was a Chinese speaker. In analyzing the data collected for this study, while one can speculate that the Chinese heritage students may have grown up in a different literacy environment with respect to *kanji* acquisition from their non-Chinese heritage counterparts, the present study did not conduct a separate analysis of these two groups. This decision was made based on the following reasons: (1) the small number of Chinese heritage students (namely, eight); (2) there was no systematic L1 literacy program available at the school and no information on their L1 literacy skills was available; and (3) there was a lack of detailed information on the extent to which the Chinese heritage students had been exposed to Chinese characters at home.

## Results

### *Kanji* Reading and Writing Performance

First, Table 1 shows the descriptive results for the *kanji* reading and writing test (means and standard deviations are shown in parentheses). A series of one-way ANOVAs were employed in order to examine if there were differences in performance between the two groups. For reading, significant differences were found in the number of accurate answers ( $F(1, 38)=11.30, p<0.005, \eta^2=0.23$ )<sup>11</sup>. On the contrary, no significant differences were found for writing in terms of the number of accurate answers ( $F(1, 38)=12.82, p=0.07$ ).

Second, error analyses were employed in order to see if there were differences in the types of errors that the students made between the two groups. In classifying errors, the above-mentioned studies conducted by the National Institute for Educational Policy Research (2006), the Japanese Associates for Educational Technology (2008), and Yoshikawa (2004) were consulted. A couple of additional error types were added in the present study in order to better capture the data found in this study, including errors due to confusion between Japanese and Chinese<sup>12</sup> and errors stemming from placing two *kanji* in reverse-order (e.g., “京東” instead of “東京”). While such error analyses have limitations in that they are not free from the researchers’ interpretations, as one can see in other similar types of analyses such as miscue analyses in reading, they can provide us with helpful information on the types of difficulties that learners encounter.

Table 1  
Performance on the kanji reading and writing test

		NS students (N=13)	Japan-born language minority students (N=27)
Reading	No. of accurate answers	93.54 (6.06)	79.62 (13.49)
	(No. of inaccurate answers)	4.92 (1.58)	10.92 (1.12)
	(No. of non-responses)	1.54 (2.83)	9.46 (2.00)
Writing	No. of accurate answers	76.46 (15.30)	65.62 (17.65)
	(No. of inaccurate answers)	14.62 (7.85)	17.86 (9.81)
	(No. of non-responses)	8.92 (10.60)	16.44 (17.72)

Note. The full score was 100 for both reading and writing.

The results of the present study are shown in Table 2 (*kanji* reading) and Table 3 (*kanji* writing). The numbers indicate the average frequencies (out of 100) per student. With respect to *kanji* reading, one can see that the language minority students had much greater frequencies of missing answers, as we have seen already in Table 1. In addition, the language minority students appeared to have more meaning-related errors than the NS students. In other words, the former appeared to have more difficulties constructing the meaning of *kanji* in context. With regards to *kanji* writing, there did not seem to be major differences between the two groups. I address the reasons for this in the following section.

Table 2  
Errors in kanji reading

Types of errors	Examples	NS	Language minorities
Phonology-related errors (confusion between similarly sounding readings)	“chō-i” instead of “chū- i” for 注意	1.70	2.52
Form-related errors (confusion between <i>kanji</i> with similar forms)	線(sen) for 緑(ryoku)	0.16	0.14
Meaning-related errors (including incorrect guesses based on the context)	“musume” (daughter) instead of “imouto” (sister) for 妹	1.06	4.22
Applying the wrong readings to <i>kanji</i> with multiple readings	“ishi-abura” instead of “seki-yu” for 石油	1.54	3.04
Unidentifiable errors	“iroiro” for 筆者	0	0.30
Incomplete answers	“kou” instead of “kou- un” for 幸運	0.46	0.22
Non-responses (no answer)		1.54	9.46

Table 3  
*Errors in kanji writing*

Types of errors	Examples	NS	Language minorities
Phonology-related errors (confusion between <i>kanji</i> with similarly / identical sounding readings)	Confusion between 親切(shin-setsu) and 新雪(shin-setsu)	4	4.22
Form-related errors (confusion between <i>kanji</i> with similar forms)	白分 instead of 自分	7.22	7.78
Meaning-related errors (including incorrect guesses based on the context)	作者 (author, artist) instead of 筆者 (writer)	1.08	1.92
Direct influence from Chinese	信 instead of 手紙	0	0.22
Placing <i>kanji</i> in reverse order	京東 instead of 東京	0.16	0.38
Unidentifiable errors	直書 instead of 計画	0	0.44
Incomplete answers	研 instead of 研究	2.16	2.88
Non-responses (no answer)		8.92	16.74

### Factors Related to *Kanji* Reading and Writing

We found in this study a difference in the *kanji* reading between the Japan-born language minority students and the NS students. However, such a difference was not found in *kanji* writing. This naturally brings up the question of what kinds of factors are related to students' abilities to read and write *kanji*.

The survey distributed to the participating students included the following five questions concerning the students' attitudes and behaviors related to *kanji* use: (1) to what extent do you like learning *kanji*?; (2) how important do you think it is to learn *kanji* for living in Japan?; (3) how frequently do you practice *kanji* outside of school?; (4) how frequently do you read books in Japanese outside of school?; and (5) how frequently do you read books in another language other than Japanese (referred to as AL hereafter) outside of school? All of these questions, with the exception of the last one, were included in the survey used for NS students in the National Institute for Educational Policy Research (2006). The last question was added specifically for the language minority students in the present study.

To understand what kinds of behavioral/attitudinal factors are related to students' abilities to read and write *kanji*, the author first calculated Pearson correlation coefficients among the responses to the questions above as well as the results of the *kanji* reading and writing test, as shown in Table 4. All of the students were included in the analyses. Not surprisingly, the students who liked learning *kanji* tended to agree strongly that *kanji* are important for living in Japan, and also they tended to spend more time practicing *kanji* outside of school. Interestingly, the students' *kanji* reading performance showed a positive relationship with the

frequency of their reading in Japanese, but indicated a negative relationship with reading in AL. One should note, however, that the results did not indicate a significant correlation between the frequency of reading in Japanese and reading in AL. The correlation-coefficient among the language minority students only was  $r = -0.14$  ( $p = 0.48$ ); the correlation between the frequency of reading in Japanese and AL was not significant. In other words, the students who read in AL more frequently did not necessarily read more or less frequently in Japanese. With respect to writing *kanji*, in addition to reading in Japanese and in AL, the students who liked learning *kanji* and those who practiced *kanji* more frequently tended to perform better in writing *kanji*.

Table 4

*Correlations between kanji reading and writing and other variables (N=40)*

	Liking <i>kanji</i> learning	<i>Kanji</i> is important	<i>Kanji</i> practice	Reading in Japanese	Reading in AL	<i>Kanji</i> reading
<i>Kanji</i> is important	0.40*					
<i>Kanji</i> practice	0.44**	0.09				
Reading in J	0.05	0.15	-0.04			
Reading in AL	-0.08	0.29	0.19	-0.24		
<i>Kanji</i> reading	-0.09	-0.26	0.10	0.57**	-0.33*	
<i>Kanji</i> writing	0.34*	-0.008	0.35*	0.40*	-0.32*	0.77**

\*\*  $p < 0.01$ ,  $p < 0.05$

Next, based on this correlation analysis, a set of multiple regression analyses were conducted in order to examine if these variables were indeed influential over students' *kanji* reading and writing.<sup>13</sup> Since we found that there was a significant difference between the language minority students and the NS students in *kanji* reading, whether the students were language minorities or NS (this variable is referred to as "nativeness" hereafter) was added as a dummy variable for the analysis of the *kanji* reading. The results are shown in Table 5.

Table 5

*Multiple regression analyses*

	Reading			Writing		
	B	SE B	$\beta$	B	SE B	$\beta$
Nativeness	2.84	2.14	0.22	n/a	n/a	n/a
Liking <i>kanji</i> learning	-1.20	1.17	-0.19	0.90	1.45	0.11
<i>Kanji</i> is important	-1.40	1.29	-0.19	-1.09	1.54	-0.11
<i>Kanji</i> practice	2.03	1.36	0.26	4.07	1.69	0.41*
Reading in Japanese	3.35	1.28	0.41*	3.74	1.45	0.36*
Reading in AL	-1.07	0.83	-0.20	-2.59	1.02	-0.37*

\*  $p < 0.05$

For reading *kanji*, only the frequency of reading books in Japanese outside of school turned out to be significant. With respect to writing *kanji*, in addition to the frequency of reading books in Japanese, the amount of *kanji* practice and reading books in AL outside of the school both influenced the students' *kanji* writing abilities. One should note, however, that the frequency of reading books in Japanese and practicing *kanji* outside of school positively influenced the students' abilities to write *kanji*, while the frequency of reading in AL showed a negative influence.  $R^2$  were 0.708 (adjusted  $R^2 = 0.502$ ) for reading *kanji* and 0.706 (adjusted  $R^2 = 0.499$ ) for writing *kanji*, meaning that both models explained approximately half of the variances.

## Discussion

The present study examined *kanji* reading and writing performance among language minority students who were born in Japan and compared their performance with that of NS students. Both groups had similar socio-economic backgrounds and had studied at the same school since the 1<sup>st</sup> grade. A significant difference between the two groups was found in *kanji* reading but not in *kanji* writing.

With respect to reading *kanji*, the Japan-born language minority students had more missing answers and made more meaning-related errors. The language minority students seemed to have more difficulties with constructing meaning (or guessing meaning) out of context. While the language minority students' oral proficiencies were identified as native-like by their teacher, it is possible that the differences in types of errors found in the present study in *kanji* reading may reflect their smaller vocabulary sizes in Japanese, especially when it comes to the vocabulary used for academic purposes. Unfortunately, the present study did not employ any instruments to directly measure the students' vocabulary sizes. Thus, one can only speculate at this point in time. However, if the Japanese vocabularies of these Japan-born language minority students are indeed somehow limited, this would hinder their reading comprehension and/or lead to an insufficient understanding of academic texts, even if their teachers might not have noticed such a problem because of their "seemingly" native-like oral fluency.

Contrary to what was seen with respect to *kanji* reading, the present study did not find any notable differences in *kanji* writing between the JSL and NS students. No notable differences were found in the types of errors committed in *kanji* writing between the two groups. This result suggests that the underlying factors responsible for the acquisition of *kanji* reading and *kanji* writing may be different. One should note, however, that a limited knowledge of how to read *kanji* would eventually hinder one's Japanese writing abilities on the computer, since in order to write Japanese on a computer, *kanji* information typically needs to be encoded phonologically.

The multiple regression analysis found that the frequency of reading Japanese books outside of school was the only influential variable for reading *kanji* among the variables that we examined. What made a difference in *kanji* reading was not "nativeness" per se (i.e., whether the students were native speakers or not), but rather was the extent to which the students spent time reading books in

Japanese. However, one could argue that the NS students had an advantage in reading *kanji* because they read Japanese books outside of school more than the language minority students. We should keep in mind, however, that this variable (i.e., the amount of reading in Japanese outside of school) was based on the survey of the students, and a detailed analysis of the students' reading activities at home would be necessary to further substantiate the present findings.

With respect to writing *kanji*, the most influential variables included not only the frequency of reading Japanese books, but also the frequency of practicing *kanji* outside of schools and the frequency of books in another language outside of school. The last variable negatively influenced the students' performance in writing *kanji*. In order to acquire the ability to write *kanji*, as well as the ability to read *kanji*, reading Japanese books is important but does not seem to be sufficient. In addition to reading many books in Japanese, one has to physically spend time practicing *kanji* outside of school. There are many *kanji* to acquire, and one cannot learn to write all of the *kanji* in class. Thus, even for a NS student, if he / she does not sufficiently practice *kanji* outside of school, he / she still cannot perform well when it comes to writing *kanji*.

Interestingly, the present study found that the frequency of reading books in another language negatively influenced the students' *kanji* writing performance. It would be highly misleading, however, to jump to the conclusion that teachers should discourage language minority students from reading in their first language (or any other languages) in order to facilitate *kanji* writing acquisition. There is a substantial amount of evidence showing that reading comprehension abilities in a first language facilitate reading comprehension in a second language (refer to Cummins, 2000, for example, for a review of such studies). Moreover, one should remember that the present study found no correlation between the frequencies of book reading in Japanese and the frequencies of book reading in other languages outside of the school. This means that the students who read less in their first language did not read more (or less) in Japanese.

It is important to keep in mind that what we examined in the present study was *kanji* reading and writing, a particular type of vocabulary knowledge of a special language. Therefore, reading books in language(s) other than Japanese would not directly help the learner acquire how to write *kanji*. In order to be able to write *kanji*, students not only need to read Japanese books substantially but also to physically take a sufficient amount of time to practice *kanji*. This latter factor may be less important for acquiring spelling in alphabet languages in general, but it certainly should be emphasized in acquiring logographic writing systems such as Japanese.

## Conclusion

As the mobility of people increases due to globalization and other factors, the education of language minority students is a pressing concern for many nations, including those that have traditionally paid little attention to language minority students. Japan is no exception to this trend. While substantial research has been conducted on children learning English as a second language, research on L2 children who learn other language(s) is still very limited. The present study

focused on the case of children who are learning a non-alphabet language as their L2, namely, Japanese. In particular, this study examined language minority students who were born in Japan. This type of student, namely those born in a host country and who are receiving schooling in their L2, appears to be growing in number across developed nations. While they may need special language and academic assistance, their needs may be masked by their high oral proficiency.

Despite the fact that the language minority students in the present study were born in Japan and had received the same instruction as their NS counterparts, we still could find differences in performance in *kanji* reading between these two groups at the 4<sup>th</sup> grade level. As we have seen already, by the 4<sup>th</sup> grade level, Japanese NS students can process *kanji* efficiently (faster than *hiragana*), and the portion of *kango* in academic texts increases dramatically at the middle-grade level at elementary schools. Moreover, we can surmise that trouble reading *kanji* could eventually lead to difficulties with writing Japanese texts on computers because one needs to type *kanji* phonologically (using syllabaries or Roman alphabets). Therefore, trouble with reading *kanji* at the middle-grade level (such as the 4<sup>th</sup> grade level) may contribute to long-lasting problems with a student's academic studies. As such it is critically important to identify problems among language minority students at an early stage and to provide them with adequate assistance in learning *kanji*.

The study found that the frequency of reading Japanese books outside of school also influenced the students' *kanji* reading scores. Substantial research conducted among English-learning students has indicated that a close relationship exists between the amount of reading in the target language and vocabulary learning (Huckin & Coady, 1999; Nagy, Anderson, & Herman, 1987). As such, the findings noted above may not be too surprising. However, we still have very limited knowledge of how children who are learning non-alphabet language(s) acquire word reading skills as well as word meaning recognition skills incidentally through reading. We need to better understand the basic mechanisms of word acquisition among Japanese-learning young students. We also need to collect detailed information regarding literacy practices (both in their L1 and L2) outside of school among language minority students, including those who were born in Japan in order to help them read better. Given the fact that the Japan-born JSL in the present study came from a lower SES, and that language(s) other than Japanese are primarily used in their homes, it may not be too surprising to learn they had limited access to Japanese prints at home and in their community even though they were born in Japan and have received schooling in Japan. If extensive reading helps the students acquire academic vocabulary in Japanese, various types of extensive reading programs in and outside of schools might be of help for these students.

Interestingly, with respect to the *kanji* writing, no differences in performance were found between the NS and the language minority students. For writing *kanji*, practicing *kanji* writing was found to be important, in addition to reading books in Japanese. Since the number of *kanji* that students are required to master is substantial for young learners in Japan, it must be indispensable to practice writing *kanji* outside of school. In other words, regardless of a given student's native status (whether or not he/she is a NS student), if he/she does not practice *kanji* well enough, he/she cannot perform well in writing *kanji*.

The present study attempted to investigate *kanji* reading and writing acquisition among young L2 learners, and focused on language minority students who were born in Japan. The study covered only one aspect of the challenges that these students may face: namely, *kanji* reading and writing, which represents one particular type of vocabulary knowledge. Much more research needs to be conducted before we can come up with more substantive guidelines for assisting such students. For example, the present study employed a *kanji* test, but being able to read and write *kanji* in a relatively de-contextualized fashion is not the same as being able to use *kanji* knowledge in order to accomplish a social activity. One can also speculate that the *kanji* learning mechanism may be different between children who have some background in Chinese characters (such as young learners with some literacy skills in Chinese) and those who do not have such a background.

There are a number of studies among adult learners of Japanese which indicate that such differences may exist. For example, Chinese speakers with one to two years of learning experience could process *kanji* more accurately and quickly compared to their English-speaking counterparts. The complexity of *kanji* (as measured by the number of strokes to write a given *kanji* character) did not affect the Chinese-speakers' *kanji* processing. On the contrary, the latter group could process *hiragana* and *katanaka* more accurately. That may imply that the Chinese-speakers process *kanji* more logographically, while English-speakers process *kanji* with more emphasis on phonology (Tamaoka, 1997). In another study conducted by Tamaoka (2000), a frequent misreading of *kanji* among Chinese-speakers was found, again implying that they may rely less on phonological processing. With respect to young learners, little is known about the possible differences between Chinese and non-Chinese heritage students. Butler's (in press) analysis suggests that the types of differences found among adults in Tamaoka (2000) above may also exist among young learners. Namely, after controlling for oral proficiency level, Chinese-heritage students had more phonologically-related mistakes in *kanji* reading compared to non-Chinese heritage students, while the latter had more orthographical mistakes (e.g., confusing *kanji* with similar shapes). Unfortunately, for the reasons indicated above, the present study could not conduct a systematic analysis examining the possible differences between Chinese and non-Chinese heritage students.

In order to improve JSL instruction, it is critical to gain information regarding how *kanji* learning mechanisms may differ depending on the young learners' first language background and the degree of first language literacy skills. A thorough investigation of students' literacy practices in their L1 as well as their L2 at home would be indispensable in that regard. Furthermore, it is also important to understand how the students' degree of *kanji* mastery relates to their academic performance in other subjects in Japan, considering the fact that *kango* are frequently used in Japanese academic texts. In sum, we still have very limited knowledge about young L2 learners' language learning in languages other than English, and the long-term effects that it has on their academic studies. More research is needed from a variety of language combinations given the growing number of children who receive schooling through an L2 worldwide.

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### Notes

<sup>1</sup>The original project, which was funded by the Hakuho Foundation to the author in 2008, aimed to examine *kanji* acquisition among JSL students with various backgrounds and to identify factors which influence their *kanji* acquisition.

<sup>2</sup> These refer to schools in which JSL students are gathered (a “Center School”) from neighboring schools and receive JSL instruction for a certain number of hours per week.

<sup>3</sup>MEXT has set aside a special budget to secure extra teachers for schools with a certain number of JSL students (under the *kahai-seido*, the Additional Allocation System). However, it is up to the principals of these schools to decide how to allocate the additional human resources thereby made available to them.

<sup>4</sup>MEXT has indicated that in addition to foreign JSL students, an additional 4,895 children with Japanese citizenship needed JSL instruction in 2008 (MEXT, 2009). However, no information is available regarding how MEXT identified these students nor how many of them actually received JSL instruction.

<sup>5</sup> Some of these students may not obtain any citizenship.

<sup>6</sup> In addition, a Roman alphabet (*romaji*) was also brought to Japan by Portuguese and Spanish missionaries in the late 16<sup>th</sup> to early 17<sup>th</sup> centuries. Currently, *romaji* are also used in written Japanese to represent foreign acronyms, proper names, and so forth.

<sup>7</sup> Strictly speaking, *hiragana* and *katakana* correspond to a unit called “*moraes*.”

<sup>8</sup> Some Japan-made *kango* have been readapted into modern Chinese.

<sup>9</sup> Unfortunately, the detailed history of each participant’s JSL instruction and/or any other assistance provided by the school was not available to the researcher.

<sup>10</sup> The Student Oral Language Observation Matrix is available from <http://www.cal.org/twi/EvalToolkit/appendix/solom.pdf>

<sup>11</sup> According to Kikvidze and Moya-Laraño (2008), “common parametric tests such as ANOVA are quite robust to non-normality, uneven sample size, unequal variance, and their effect combined” (p. 67). In cases that have uneven sample sizes and unequal variances, their simulation also indicated that if the smaller sample shows less variance than the larger sample, a t-test for unequal variance “performed better than ANOVA, with relatively low type I but moderate type II error rates” (p. 71). Since the Levene Test for Homogeneity of Variance indicated that the variances of the two groups in reading were not equal, following Kikvidze and Moya-Laraño, a t-test for unequal variance was employed as well. The test obtained the same result: there was a significant difference in reading between the two groups ( $t(37.93) = -4.28$  ( $p < 0.001$ )).

<sup>12</sup> The types of confusion that can arise for learners between the Japanese and Chinese languages include vocabulary confusion (e.g., confusing the Chinese “信”

with Japanese “手紙”, both of which refer to a “letter”) and character confusion (i.e., using Chinese characters which are not used in Japanese).

<sup>13</sup> Before conducting the multiple regression analyses, scatterplots were drawn of residuals against predicted values in order to assure that the assumptions of normality, homoscedasticity, and linearity were all met. A collinearity diagnostic test (VIP) was also conducted and found that none of the variables showed a VIP value of higher than 10, indicating that there was no serious multicollinearity in the present data set. Based on these diagnostic tests, all of the variables were included in the subsequent analyses described above.

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