

OVERLAP IN FUNCTIONAL AND ORTHOGRAPHIC WRITTEN ERRORS BY L2 LEARNERS OF JAPANESE

Katherine I. Martin, Southern Illinois University Carbondale

Noriyasu Li, University of Pittsburgh

1. Introduction

Research into the acquisition of literacy skills began in earnest in the 1950s and 1960s, but focused primarily on first language (L1) literacy in native English-speakers (e.g., Alexander & Fox, 2004; Allington & McGill-Franzen, 2000). Attention to second language (L2) literacy began only later, and has grown substantially over the past 20 years (e.g., Grabe, 2009; Koda & Zehler, 2008). This domain frequently involves learners of English as a second or foreign language, resulting in a disproportionate emphasis on English in second language acquisition and literacy research (e.g., Ortega, 2009; Share, 2008). This is despite evidence of the variability in literacy acquisition across languages (Katz & Frost, 1992; McBride-Chang et al., 2005; Ziegler & Goswami, 2005; see Chikamatsu, 1996, and Navas, 2004, for studies involving Japanese).

Despite the emphasis on English in L2 acquisition and literacy research, interest in other languages is growing. This includes Japanese as a second or foreign language (JSL/JFL), driven in part by the growing population of JSL/JFL speakers in and out of Japan (Mori & Mori, 2011). Research has addressed a number of areas in JSL/JFL, including grammatical development (e.g., M. Ishida, 2004; Li & Shirai, 2015; Ozeki & Shirai, 2007; White, Hirakawa, & Kawasaki, 1996), affective factors such as motivation and teacher and student attitudes (e.g., Dewey, 2004; Kondo-Brown, 2006; Mori, 1999, 2002; Mori, Sato, & Shimizu, 2007), the development and instruction of pragmatic abilities (e.g., K. Ishida, 2006; Kizu, Pizziconi, & Iwasaki, 2013; Taguchi, 2009), vocabulary learning (e.g., Adachi, 2003; Adachi, 2005; Hansen, Umeda, & McKinney, 2002; Mori, 2003; Yoshizawa, 2005), and (word-level) reading and writing (e.g., Chikamatsu, 1996, 2006; Kondo-Brown, 2006; Matsumoto, 2013; Tamaoka, Kiyama, & Chu, 2012); see Mori and Mori (2011) for an excellent review of these issues.

Much of the work on grammatical development in JSL/JFL has examined morphology and syntax, in particular looking at developmental sequences and whether JSL/JFL learners follow ‘universal’ sequences and markedness hierarchies. Though JSL/JFL learners show many similar developmental patterns as L1 Japanese-speaking children (e.g., Igarashi, Wudthayagorn, Donato, & Tucker, 2002; Mori & Mori, 2011), and follow the predictions made by some frameworks (e.g., Processability Theory, see Biase & Kawaguchi, 2002; Kawaguchi, 2000; Pienemann, 1998), there are also exceptions (e.g., the noun phrase accessibility hierarchy, see Keenan & Comrie, 1977, 1979; Ozeki, 2005; Ozeki & Shirai, 2007; Sawazaki, 2009). Research has also demonstrated the influence of both L1 structure and language instruction on JSL/JFL grammatical development: even advanced L1 English learners of JSL/JFL tend to accept ungrammatical structures that are grammatical in English (Inagaki, 2001), though exposure and instruction, particularly for marked aspects of Japanese grammar (e.g., oblique relative clauses, *josūshi*) can facilitate acquisition (Hansen & Chen, 2001; Yabuki-Soh, 2007).

A major emphasis in vocabulary learning has been on learners' acquisition of kanji characters and their ability to understand new kanji. This is unsurprising given the complexity of kanji and their importance for Japanese literacy (Mori & Mori, 2011). This work shows that L2 learners are able to take advantage of phonetic and semantic radicals, the meanings of component characters within compound kanji, and context clues to understand and learn unfamiliar kanji (e.g., Adachi, 2003; Kondo-Brown, 2006; Mori, 2002, 2003). Learners' language experiences also impact vocabulary learning. Chikamatsu (1996, 2006) found that L1 English learners relied mainly on phonological information for Japanese word recognition, but that L1 Chinese learners relied more on visual-orthographic information. Proficiency also matters: Chikamatsu (2006) found that more advanced L1 English learners relied relatively less on phonological information than their less-advanced counterparts, and Hansen, Umeda, and McKinney (2002) found that learners with higher proficiency were more successful at learning new vocabulary.

Given the complexity of written Japanese forms and the use of multiple scripts for specific types of vocabulary (e.g., Mori & Mori, 2011), surprisingly little work has looked at the development of *productive* vocabulary knowledge or JSL/JFL written accuracy. One set of studies, conducted by Hatta and colleagues (Hatta & Kawakami, 1997; Hatta, Kawakami, & Tamaoka, 1998; Hatta, Kawakami, & Tamaoka, 2002), explored the most common types of errors made by grade 7 L1 Japanese schoolchildren and university-level L1 Japanese students, as well as university-level learners of JFL in the United States and Australia. They found that L1 Japanese schoolchildren tended to make more orthographically-related errors, such as 委節 **isetu* instead of 季節 *kisetu* (lit. season), and L1 Japanese university students tended to make more phonologically-related errors, such as 社回 **syakai* instead of 社会 *syakai* (lit. society). On the other hand, foreign language learners made many mistakes that involved substituting kanji characters for non-existent kanji approximations, with errors such as misusing, misplacing, adding, or deleting a stroke or segment. These studies are important providing evidence that the L1 writing system may play a role in the types of errors learners make in L2 Japanese.

There is increasing recognition in L2 literacy research that the characteristics of a learner's L1 writing system have a substantial impact on their L2 literacy processes. Although much of this work has examined English as a second language, a handful of studies have specifically targeted learners of Japanese. Chikamatsu (1996) examined L2 (kanji) word recognition and found that L1 English learners relied strongly on phonological information, but L1 Chinese learners relied much more on visual-orthographic information. Follow-up work by Chikamatsu (2006) demonstrated that this L1 English phonological strategy can be quite persistent, decreasing only slightly over two years of university-level study. Another study by Tamaoka (1997) examined L1 English and L1 Chinese speakers' processing of L2 Japanese kana and kanji. He found that the two groups were equally successful with kana, but that the L1 Chinese speakers were faster and more accurate with kanji than the L1 English speakers, who were also more strongly influenced by the visual complexity of kanji characters. More recently, Matsumoto (2013) used lexical decision to replicate the finding that L1 Chinese speakers are more accurate at processing L2 kanji than L1 English speakers, who struggle with visual complexity and visual similarity when processing characters.

In spite of this ongoing work, there has been relatively little discussion of how varying aspects of language (e.g., grammatical accuracy, written form accuracy, pragmatic

competence) develop concurrently. This is true not only for JSL/JFL, but in general: pragmatics is often examined separately from other aspects of language development (Geyer, 2007a), despite the multifunctionality of relevant linguistic elements (e.g., past tense morphology indicating either past tense or a distancing/softening function, see Roger W Andersen & Shirai, 1996), and calls to integrate the two (Bardovi-Harlig, 1999)). However, there are a small number of studies that provide insight into the overlapping and non-linear development of these multiple linguistic abilities (Ahrenholz, 2000; Eisenstein & Bodman, 1986; Koike, 1989; Salsbury & Bardovi-Harlig, 2000, 2001; Walters, 1980), including some focused specifically on JSL/JFL (Geyer, 2007a, 2007b). Our own previous research on orthographic development in JSL/JFL learners (Li & Martin, In Press) has also shown overlap in grammatical, functional, and orthographic errors in written L2 Japanese. For example, frequent errors included writing *ii desuka* (lit. is it good) instead of *doo desuka* (lit. how does that sound), *siri masu* (lit. to know) instead of *sit tei masu* (the imperfective form of *siri masu*), and combining *masu* (the polite suffix for verbs) and *desu* (the polite suffix for nouns) after infinitive verb forms (e.g., *siri masen desu* instead of *siri masen*). These examples demonstrate that an analysis simultaneously considering multiple linguistic factors (both orthographic and functional) is necessary to provide a more comprehensive understanding of L2 writing development.

2. The Current Study

The goal of the current study was to examine the concurrent, overlapping development of grammatical, orthographic, and pragmatic abilities in JSL/JFL learners. The data were drawn from the written productions of first- and second-year university-level learners of Japanese; this expands on previous work, which has largely relied on oral language.

The data were collected from students enrolled in a program using the Jordan Method (Jordan & Noda, 1987), which introduces grammar in heavily contextualized situations. This is consistent with recent Japanese pedagogical trends, emphasizing that language should be introduced within appropriate contexts that link “the dimensions of form, meaning, and use” (Yamashita & Ishihara, 2016, p. 188; see also Kasper & Rose, 2002). Specifically, the grammatical structures targeted in this study were the conjugations for the infinitive and imperfective forms and interrogative phrases such as *daizyoobu desuka* (lit. are you alright?), *doo desuka* (lit. how about it?, or what do you think?) *ikaga desuka* (lit. polite form of *doo desuka*), *ii desuka* (lit. is this ok?), and *yorosii desuka* (lit. polite form of *ii desuka*?). Specifics on how these structures were presented are in Appendix A; a brief overview of the relevant features of the program’s curriculum are given below.

2.1 Targeted Curriculum

In the first semester, katakana was introduced before hiragana; kanji was introduced in the second semester. All katakana was covered in the first semester and all but the following hiragana was covered by the end of the first semester: む, わ, む, ひ, び, び, へ, へ, へ, る, ぬ.¹ Kanji were introduced based on the content of the chapters. Single

¹ Errors with these hiragana were not analyzed in the first-year first semester data, but were in the second semester data, if they occurred.

words (e.g., 所), compound words (e.g., 毎日), and single words with okurigana (e.g., 食べる) were all introduced. A list of all kanji tested is in Appendix B.

In terms of grammatical structures, Lesson 1 introduced *ii desuka*, followed by Lesson 2 introducing *doo desuka* and *daizyoobu desuka*. These were introduced in simple yes and no question/answer formats. In Lesson 4, *ikaga desuka* was introduced in more complex conversation structures (e.g., A: *pen-wa ikaga desuka?* B: *ee, kono pen-o san bon kudasai*). Lessons 5 and 6 introduced *yorosii desuka* and *daizyoobu desuka*, respectively. Thus, all five interrogatives were introduced in the first semester.

The imperfective forms were introduced in Lesson 10. Only the progressive and resultative meanings were introduced; the perfective and habitual meanings were introduced later. *Japanese: The Spoken Language*, the textbook used in this program, introduces both progressive and resultative meanings at the same time (other textbooks, such as *Nakama*, introduce the resultative first, followed by the progressive).

3. Method

Data were collected from 151 first-year (85 L1 English and 66 L1 Chinese) and 36 second-year (27 L1 English and 9 L1 Chinese) JFL students at a large urban university in the United States. Data collection lasted two consecutive academic years; the data were thus both longitudinal and cross-sectional: one complete cohort of students was followed across their first two years of JFL study, and data were also collected from one additional cohort of first-year (elementary) students and one additional cohort of second-year (intermediate) students.

3.1 Materials

The data consisted of students' written assessments. For first-semester elementary students, these were one homework assignment, three in-class quizzes, and the first-semester final exam, all of which used katakana only. For second-semester elementary students, these were three in-class quizzes; the first two required students to write the correct kanji from a given hiragana word, and the last two included free-writing sections in which students could use any combination of hiragana, katakana, or kanji.² For intermediate students, there were eight kanji quizzes, similar to those collected from the elementary students. There were four quizzes collected in each semester, approximately one month apart. A detailed breakdown of what written assessments were collected, at what time points, and from how many students at each level, is given in Appendix C.

3.2 Procedure

For the katakana quizzes, the instructor read the words to students, who had to write the katakana and its English equivalent. For the kanji quizzes, the students had to write the kanji for underlined words that were written in hiragana. For the free-writing, students were presented with a specific prompt in English. They either had to write an appropriate response (in Japanese) or translate the prompt to Japanese, depending on the

² Due to changes in the elementary-level instructors, some of these products were available only for the first year of data collection, and others were available only for the second year of data collection.

task. The assessment targeted students' ability to communicate in context using written language. An example prompt from the second elementary level quiz is given in (1).

1. Write this reply in Japanese:
 “I don't know [any] good hotel but I know a nice Japanese style inn in front of the station. [The name of] the inn is called Takayama Ryokan. Let's talk later. I will call you around 8:00 this evening.”

3.3 Coding Scheme

The coding scheme was adapted from Hatta and colleagues (Hatta & Kawakami, 1997; Hatta et al., 1998; Hatta et al., 2002) and was an expanded version of the one used by Li and Martin (In Press). A number of error codes were used to reflect different properties of student productions, such as structural characteristics (e.g., incorrect radials, missing or extra kanji characters), phonologically-related errors (e.g., incorrect insertion or deletion of a long vowel), or grammatically-related errors (e.g., incorrect or missing particles, incorrect verb conjugations). Similar but separate coding scheme were developed for kana and kanji productions; details are given in Tables 1 and 2. Pragmatic errors in written productions, particularly those involving interrogative phrases, were also noted.

Table 1. *Kana error coding scheme.*

| Code | Description | Example |
|------|---------------------|----------------|
| F | Form | ン→ソ |
| O | Onset | カ→キ |
| V | Vowel | カ→サ |
| I | Insertion of long V | ハム→ハーム |
| D | Deletion of long V | オーストラリア→オストラリア |
| M | Missing diacritic | ガ→カ |
| X | Extra diacritic | カ→ガ |
| K | Missing kana | エジプト→エプト |
| XK | Extra kana | かけます→かけいます |
| N | Nasal error | ハム→ハン |

4. Results

4.1 Perfect Scores

The first analysis examined the proportion of each L1 group (Chinese vs. English) that obtained a perfect score on each written assessment. At the elementary level, a greater proportion of the L1 Chinese speakers than the L1 English speakers received perfect scores for all four assessments from the first year of data collection (65% vs. 20% for Homework 1, all kana; 11% vs. 8% for Quiz 1, all kana; 83% vs. 41% for Quiz 4, all kanji; 71% vs. 34% for Quiz 5, all kanji). This pattern was reversed for the second year of data collection, despite comparable data sources: a greater proportion of the L1 English

speakers received perfect scores than the L1 Chinese speakers (55% vs. 42% for Quiz 1 and 34% vs. 30% for Quiz 3, both all kana).

Table 2. *Kanji error coding scheme.*

| Code | Description | Example |
|------|------------------------------|-----------------------------------|
| P | Phonological | 社会→社回 |
| O | Orthographic | 季節→委節 |
| S | Semantic | 潜伏→潜存 |
| L | Missing stroke | 待→侍 |
| MS | Missing segment | 侍→イ |
| MR | Missing radical | 待→寺 |
| RE | Radical error | (radical is a non-real character) |
| SE | Segmental error | 間→関 |
| K | Real kanji but radical error | 頼→願 |
| KK | Hiragana instead of kanji | 時間→じ間 |
| X | Extra kanji | 植木→植木口 |
| CON | Conjugation error | 知っている→知る |
| MO | Missing okurigana | 食べる→食 |
| MOO | Missing one okurigana | 食べる→食る |
| RC | Compound order error | 毎日→日毎 |
| C | Chinese transfer | 毎→每 |
| MK | Missing kanji (completely) | 毎日→毎 |

At the intermediate level, a greater proportion of the L1 Chinese speakers than the L1 English speakers received perfect scores for all eight quizzes: 63% vs. 37% for Quiz 1, 75% vs. 30% for Quiz 2, 50% vs. 16% for Quiz 3, 43% vs. 12% for Quiz 4, 80% vs. 42% for Quiz 5, 100% vs. 39% for Quiz 6, 86% vs. 11% for Quiz 7, and 100% vs. 20% for Quiz 8. The L1 Chinese speakers therefore showed strong evidence of a performance advantage, particularly in producing accurate kanji forms.

4.2 Elementary-Level Orthographic and Grammatical Errors

In their first semester of Japanese, the most common kana errors made by elementary-level learners involved problems with form accuracy, onsets, vowels (both vowel quality and long vowels), diacritics, nasals, and either missing or providing extra kana graphemes. A breakdown of the error rates, in terms of average number of errors per student (by assessment and L1), is given in Table 3.

Problems with the written form were pervasive across all assessments, and L1 English speakers had many more form errors than L1 Chinese speakers on most assessments. Difficulty with onsets was another consistent error. In the data collected during Year 1 of the study, L1 English speakers had greater difficulty with onsets than L1 Chinese speakers, but this pattern was not clearly present in the data collected during Year 2. In

general, then, there is substantial individual variability in the challenge posed by onsets, and no particular advantage for one L1 group over another.

Table 3. Average kana errors per elementary student on constrained tasks.

| Code | Homework 1 (Year 1, Sem 1) | | Quiz 1 (Year 1, Sem 1) | | Quiz 1 (Year 2, Sem 1) | | Quiz 3 (Year 2, Sem 1) | | Final (Year 2, Sem 1) | | Quiz 5 Free Write (Year 1, Sem 2) | | Quiz 6 Free Write (Year 1, Sem 2) | |
|------|----------------------------------|------|------------------------------|------|------------------------------|-----|------------------------------|-----|-----------------------------|------|---|-----|---|-----|
| | Ch | En | Ch | En | Ch | En | Ch | En | Ch | En | Ch | En | Ch | En |
| F | .06 | 1.74 | .21 | 1.38 | .11 | .15 | .30 | .28 | .26 | .62 | .07 | .03 | .07 | .10 |
| O | .35 | .60 | .32 | .54 | .26 | .24 | .54 | .37 | .44 | .59 | .21 | .07 | .29 | .28 |
| V | 0 | .06 | 0 | .15 | .11 | .09 | .05 | .07 | .03 | .08 | .21 | .03 | .07 | .07 |
| I | .24 | .97 | .74 | .65 | .03 | 0 | .11 | 0 | .03 | .05 | 0 | 0 | 0 | 0 |
| D | .24 | .80 | 1.00 | 1.08 | .66 | .26 | .30 | .09 | .08 | 1.05 | .07 | 0 | 0 | 0 |
| M | .12 | .17 | .05 | 0 | 0 | 0 | 0 | .02 | .44 | .27 | .14 | .03 | .36 | .10 |
| X | .12 | 0 | .11 | .08 | 0 | 0 | 0 | 0 | .14 | .05 | .07 | .03 | .43 | .10 |
| K | .12 | .14 | 0 | 0 | .08 | .20 | .59 | .52 | .53 | .78 | 1.00 | .34 | 0 | .17 |
| XK | 0 | .03 | 0 | 0 | .11 | .04 | .14 | .09 | .09 | .30 | 0 | .03 | .71 | .28 |
| N | .12 | .29 | .26 | .46 | .29 | .07 | .08 | .15 | 0 | 0 | 0 | 0 | 0 | 0 |

Note. Ch = L1 Chinese; En = L1 English. ‘Year’ refers to year of data collection; ‘Sem’ refers to semester of study for the students (1 = fall, 2 = spring).

Learners also produced a number of errors involving vowels. Difficulties with writing the correct vowel (quality) occurred at a low but consistent rate across assessments. Learners also made errors that involved inserting a long vowel (where a short vowel should have been present); this error occurred more frequently in the data from the first year of the study. Even more pervasive were errors that involved *deleting* a long vowel (e.g., オ__ストラリア instead of オーストラリア) – aside from difficulties with onsets, this was the most frequent error type in the elementary students’ first semester data. The L1 group with the higher vowel error rates varied by assessment, with no clear pattern.

Other notable errors included missing diacritics, most frequently on the です suffix (often written as てす), writing アレルキー instead of アレルギー, or writing extra diacritics, such as タクジー instead of タクシー; this latter difficulty was somewhat more common in the L1 Chinese speakers than the L1 English speakers. Similar mistakes, with missing or extra kana graphemes, were also present in many of the written assessments. Finally, learners also struggled with the correct nasal form, and often interchanged ン with a kana that either belonged to *ma-gyo* (マミムメモ) or *na-gyo* (ナニヌネノ). Such examples included writing ハムバーガー instead of ハンバーガー, or ケンニ instead of ケニ. This was a consistent problem throughout the data, with a slight tendency to be more problematic for the L1 English than the L1 Chinese speakers.

In the second semester, the kana error types most prevalent in the first semester appeared less frequently, despite the fact that these data were taken from free productions

rather than constrained single-word tasks (the biggest exception being an increase in the number of errors that involved missing a kana grapheme; see Table 3). The L2 learners thus showed a definite trend toward improvement in written accuracy. However, there were a number of new error types in these data, which appeared due to the nature of the free-writing task. Specifically, students produced errors involving particles (either missing a particle or using the wrong particle; e.g., アレルギーをありません instead of アレルギーはありません, or いい旅館が知っています instead of いい旅館を知っています), or used hiragana to write something that should have been written in katakana, or vice versa (e.g., 電話をカキます instead of 電話をかけます). Though both L1 groups showed these errors, L1 Chinese speakers seemed to have somewhat more difficulty with particles than the L1 English speakers; see Table 4 for details.

Table 4. Average kana errors per elementary student on free writing tasks.

| Code | Quiz 5 Free Write (Year 1, Sem 2) | | Quiz 6 Free Write (Year 1, Sem 2) | |
|------|--------------------------------------|---------|--------------------------------------|---------|
| | Chinese | English | Chinese | English |
| P | .71 | .38 | .21 | 0 |
| WP | .64 | .07 | 1.14 | 1.03 |
| HK | 0 | .21 | .43 | .03 |
| KH | .21 | .17 | 0 | .03 |

Note. ‘Year’ refers to year of data collection; ‘Sem’ refers to semester of study for the students (1 = fall, 2 = spring).

There were a handful of other errors made in the free writing data that are worth noting. First, learners made errors involving okurigana, for example missing okurigana (e.g., 行__ without the infinitive suffix き) or using incorrect okurigana (e.g., 知りません without り). There were also some errors that were strictly grammatical, such as problems with verb conjugations that were spelled correctly but were ungrammatical (e.g., 知ります (infinitive form of 知る) instead of 知っています (imperfective form of 知る), or 話します (infinitive form of 話す) instead of 話しましょう (volitional form of 話す)).³ Learners also had difficulty using pragmatic phrases appropriately; this is described in more detail below.

Elementary-level productions with kanji characters were only written during the second semester. Table 5 gives a detailed breakdown of the error rates, by assessment and L1. In general, the L1 English speakers showed much higher error rates than the L1 Chinese speakers. For example, the L1 English speakers produced errors involving missing strokes, segments, or radicals on nearly every assessment, though there was only one such error by any L1 Chinese speaker on any of the four assessments. Similarly, L1 English speakers produced at least one incorrect radical on each assessment, but only one

³ Note that with these specific errors that the kanji were written correctly, but the kana portion (okurigana or conjugation) was not; thus, these are categorized as “kana errors”.

such error was documented by a single L1 Chinese speaker. L1 English speakers also more frequently used kana graphemes to write words that are typically written with kanji.

Considering the phonological, orthographic, and semantic error types originally defined by Hatta and colleagues (Hatta & Kawakami, 1997; Hatta et al., 1998; Hatta et al., 2002), in this study the elementary L1 English speakers produced more phonologically- and orthographically-related kanji errors than the L1 Chinese speakers, though both groups produced semantically-related errors.

Table 5. Average kanji errors per elementary student.

| Code | Quiz 4 (Year 1, Sem 2) | | Quiz 5 (Year 1, Sem 2) | | Quiz 5 – Free Write (Year 1, Sem 2) | | Quiz 6 – Free Write (Year 1, Sem 2) | |
|------|---------------------------|---------|---------------------------|---------|--|---------|--|---------|
| | Chinese | English | Chinese | English | Chinese | English | Chinese | English |
| P | 0 | .03 | .07 | .10 | .14 | .17 | 0 | .07 |
| O | 0 | .08 | 0 | .24 | 0 | .10 | 0 | .03 |
| S | 0 | 0 | .07 | 0 | .21 | .21 | 0 | .14 |
| L | 0 | .10 | 0 | .10 | .07 | .60 | 0 | .21 |
| MS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .10 |
| MR | 0 | 0 | 0 | .03 | 0 | .07 | 0 | .28 |
| RE | 0 | .07 | 0 | .14 | .07 | .03 | 0 | .28 |
| SE | 0 | 0 | 0 | 0 | 0 | .38 | 0 | .17 |
| KK | -- | -- | -- | -- | .21 | .59 | .57 | .79 |
| X | 0 | 0 | 0 | 0 | .29 | .03 | 0 | .03 |
| CON | -- | -- | -- | -- | .07 | 0 | .50 | .31 |
| C | .08 | .03 | .07 | .07 | .21 | 0 | .36 | .03 |
| MK | -- | -- | -- | -- | .43 | .38 | .07 | .72 |

Note. Cells with -- indicate an error type only applicable to the free-writing tasks.

Despite the prevalence of errors in the L1 English speaker writing, the L1 Chinese speakers did produce some error types more often than the L1 English speakers. Specifically, L1 Chinese speakers showed evidence of L1 orthographic influence in some productions, for example writing 館 instead of 館, or 毎 instead of 毎, and also produced extra kanji in other cases (e.g., 今週土曜日 instead of この土曜日 for “this Saturday”). Interestingly, the L1 Chinese speakers also tended to produce more conjugation errors than the L1 English speakers; this may also result from L1 influence, due to the fact that Chinese has essentially no inflectional morphology parallel to that in Japanese.

4.3 Intermediate-Level Orthographic and Grammatical Errors

In their third semester of Japanese, students’ overall error rates decreased noticeably (see Table 6). Similar to the second-semester kanji data from the elementary learners, the L1 English speakers at the intermediate level again showed noticeably higher error rates overall than the L1 Chinese speakers. The L1 Chinese speakers made only four types of errors: replacing a kanji character with a different, orthographically-related or

phonologically-related kanji (e.g., 上木 instead of 植木, or 休小 instead of 安子), or missing required okurigana (e.g., 話(し), 過(ぎて), or 食(べた)).

The L1 English speakers made a much wider variety of errors, including many that had also been particularly problematic for elementary-level learners. These included replacing kanji with a different, orthographically- or phonologically-related kanji (similar to the L1 Chinese speakers, but at a greater rate), replacing kanji with a different, semantically-related kanji (an error not made by the L1 Chinese speakers at this level), missing okurigana, and missing, extra, or incorrect strokes, segments, radicals, or whole kanji characters. Similar to the findings of Hatta and colleagues (Hatta & Kawakami, 1997; Hatta et al., 1998; Hatta et al., 2002), many of these errors resulted in non-real kanji approximations, rather than incorrect but real kanji characters.

One type of error that appeared in this portion of the data, which was not previously seen, were problems with the order of radicals in compound kanji; e.g., the *tama-hen* (王 radical) to the right of 里 instead of its correct left position in 理, or in another case, the *ki-hen* (木 radical in the right) on the right side of the kanji block instead of the correct left position in 様. This type of error was produced exclusively by L1 English speakers. It is possible that the lack of this type of error in the L1 Chinese speakers' writings may be due to L1 influence: learners' existing familiarity with characters in their L1 may support their accurate use in the L2. Further research is needed to verify this possibility.

4.4 Pragmatic Errors

Selecting the correct pragmatic phrase was a pervasive issue at the elementary level, especially in the first semester of language study.⁴ In two of the three assessments, the L2 learners' task was to produce the correct interrogative phrase for the context given. The first semester final exam required the learners to produce *daizyoobu desuka* and a second semester quiz (Quiz 5) required learners to produce *doo desuka*.

In the assessment that required *daizyoobu desuka*, the L2 learners correctly produced this interrogative phrase only 28.0% of the time. Among the errors produced, the three most frequent errors were *ii desuka* (16.9%), *ikaga desuka* (16.9%), or *ii desyooka* (11.8%). Even when the L2 learners did produce *daizyoobu desuka*, 20.5% of those involved orthographic errors (e.g., だいじゃうぶですか, だいじょ一ぶですか, だいちょうぶですか, and だいじょうふですか). In turn, the L2 learners from Quiz 5 in the second semester performed substantially better. In the assessment that required *doo desuka*, the L2 learners correctly produced this interrogative phrase 88.6% of the time. Among the 11.4% of responses with errors, all were *ii desuka* instead of *doo desuka*. Thus in both tasks, when the L2 learners were making errors with interrogatives, they were selecting *ii desuka* over other types of interrogatives. This was especially evident in the errors made with *daizyoobu desuka*, perhaps because *ii desuka* and *daizyoobu desuka* can be used interchangeably in certain contexts (this is further discussed in the Section 5). Nevertheless, the data also show that even in one more semester of study, L2 learners demonstrate that their understanding of using the correct interrogative phrase improves as proficiency advances.

⁴ There is no analysis of pragmatic errors at the intermediate level because free-writing production data were only available from the elementary level.

Another pragmatic error that appeared in the data was over-application of the polite form suffix *desu*. In the first semester data (final exam), the L2 learners used *desu* in places that required of *masu* 61.3% of the time (e.g., ミラーさんはアレルギーです instead of ミラーさんはアレルギーがあります). Errors with *desu* substantially decreased in the second semester. In Quiz 6⁵ the L2 learners made errors with *desu* only 16.3% of the time; however, this time, errors did not involve using *desu* instead of *masu*, but the L2 learners combined the *masu* and *desu* suffixes as a compound suffix (e.g., ホテルは知りませんです or 駅前にありますです). This is grammatically incorrect, but again, the data show that as proficiency advances, even across one semester, the L2 learners demonstrate a better understanding of how to accurately produce the polite form suffix *desu*.

4.5 Summary of Results

The results document a variety of common errors made by JFL learners across the orthographic, grammatical, and pragmatic aspects of written L2 Japanese. In terms of perfect scores, in general L1 Chinese speakers tended to outperform L1 English speakers. This was particularly true for writings that were kanji-focused, such as the kanji quizzes at the intermediate level. Although both L1 groups produced a range of error types, particularly by the second year of language study the L1 Chinese speakers were highly accurate and made many fewer, and a more constrained variety, of errors. The L1 Chinese speakers tended to make more errors that showed potential L1 influence, such as writing Chinese forms of kanji or producing extra kanji, and showed greater difficulty with verb conjugations and particle usage. On the other hand, the L1 English speakers showed greater difficulty with written form accuracy, and seemed to be particularly challenged by the fine details of kanji characters: common mistakes included missing or incorrect radicals, strokes, segments, or even whole characters. The results are thus consistent with previous research demonstrating the influence of kanji complexity on L1 English speakers' L2 Japanese skills, and the advantage that L1 Chinese speakers' familiarity with characters can provide (e.g., Chikamatsu, 1996, 2006; Matsumoto, 2013). Pragmatic errors were also prevalent, particularly those involving the selection of appropriate interrogative forms. Further discussion of these patterns is given below.

5. Discussion

The goal of the current study was to document the development of JFL learners' orthographic, grammatical, and pragmatic skills in their L2 writing. Although these aspects of language development are often examined separately, a small number of studies have demonstrated the value of considering them together (e.g., Geyer, 2007a; Geyer, 2007b). For example, previous work by Li & Martin (In Press) with written L2 Japanese revealed that errors often cannot be exclusively classified as orthographic, grammatical, or vocabulary-related, and that such errors frequently overlap with functional and pragmatic aspects of language. Based on the results detailed above, we

⁵ The prompt for the free writing assessment in Quiz 5 did not require the production of *desu* as the context of the prompt was a conversation between friends.

discuss below three types of errors that frequently overlapped in the present data: verb conjugations (the infinitive, imperfective, or volitional forms); combining different politeness markers in the same clause; and selecting the correct interrogative form.

Data on students' ability to conjugate the imperfective form came from L2 learners translating prompt (1) above to Japanese. An example of a correct translation to this sentence would be: いいホテルは知りませんが、駅前にあるいい旅館は知っています。 However, among the total errors made with 知っています (the L2 learners made errors with this conjugation 43.2% of the time),⁶ 57.9% of them involved incorrectly writing 知ります instead of 知っています in the second clause (the infinitive form of 知る instead of the imperfective form).

There are two straightforward explanations. First, using the infinitive is a direct translation of 'know,' the actual word used in the prompt (as opposed to 'knowing,' which would directly translate to the imperfective form, 知っている). It is thus possible that learners were directly translating from English to Japanese and hence used the infinitive form in both clauses.

Another explanation is based in the complexity of the imperfective form and the one-to-one principle in language acquisition. The Japanese imperfective form, *-teiru*, is one of the most difficult for L2 learners to acquire because it has four basic meanings: progressive, resultative, perfective, and habitual (see Kudo, 1995; Nishi & Shirai, 2016; Teramura, 1984; for reviews of the acquisition of the imperfective form see Li & Shirai, 2015; Nishi & Shirai, 2016; Shirai & Kurono, 1998; Sugaya & Shirai, 2007).⁷ Although L2 learners in this study had only been exposed to the progressive and resultative meanings, "learners generally prefer to assign one meaning to one form" (Sugaya & Shirai, 2007, p. 28; see also Andersen, 1984). Thus, learners are initially inclined to assign either the progressive or resultative meaning to *-teiru*. In this case, they likely associate the progressive meaning with *-teiru* more often than the resultative meaning because when sentences have the same meaning and corresponding forms, such as *tabeteiru* and 'eating', learners do not have difficulty in acquiring the progressive meaning (see Nishi & Shirai, 2007). It is only when the forms differ that learners have difficulty (see Nishi, 2008 for a large-scale study of this issue with English, Chinese, and Korean learners of Japanese). Thus, L2 learners write an incorrect conjugation, in this case the infinitive, for forms requiring a resultative meaning.

The volitional form, denoting desires and suggestions, also presented difficulty. These data came from L2 learners translating the prompt "Let's talk later". The correct translation would either be 後で話しましょう or 後で話そう. However, 20.1% of the L2 learners incorrectly wrote either 話す (plain present) or 話します (infinitive) and wrote 後で話す or 後で話します. It is not clear why some of the learners produced the present form instead of the volitional form. The prompt itself uses the English volitional form 'let's', thus the L2 learners could not have directly translated the English text to the infinitive. Further, given that the Jordan Method places heavy emphasis on teaching phrases for specific situations, it is unlikely that the L2 learners were unfamiliar with the correct volitional form for this phrase. However, given the limited sample of prompts for

⁶ Other errors with this conjugation were 知てます, 知てるんです, and 知でいます.

⁷ Advanced-level learners have also been reported to have difficulty with applying the correct meaning with the imperfective form (Nishi, 2008).

the volitional in the current data, further assessment is needed to determine whether L2 learners have an understanding of how to use it appropriately.

In the free writing data, examples of students combining the *desu* and *masu* suffixes were prevalent. Examples include: いいホテルは知りませんですけど instead of いいホテルは知りませんが, or アレルギーは知りませんです instead of アレルギーは知りません. This is grammatically incorrect, and it is unclear why some learners combined both suffixes, given that this would have been taught as incorrect. On the other hand, such errors provide an excellent illustration of how orthographic and functional errors overlap. In the analyses presented above, the underlined kana were coded as ‘extra kana’, but were also coded as a singular grammatical error. This demonstrates that certain errors cannot be marked as solely a spelling mistake or as a grammatical mistake, and that multiple linguistic components play a role in the written errors that L2 learners make.

Finally, selecting the correct interrogative form presented immense difficulty for learners. These issues appeared in prompts for which L2 learners needed to use *doo desuka* to seek confirmation of a suggestion, and another that required the use of *daizyoobu desuka*. The errors with *doo desuka* often involved the L2 learners producing *ii desuka* instead. This may be because there are situations in which the two interrogatives are interchangeable, such as in (2):

2. a. *Kyoo-no miiteingu ohuisu-de doo-desu.ka?*
Today-GEN meeting office-LOC how-polite.Q
“How is it to have today’s meeting in the office?”
- b. *Kyoo-no miiteingu ohuisu-de ii-desu.ka?*
Today-GEN meeting office-LOC ok-polite.Q
“Is it ok to have today’s meeting in the office?”

However, the prompt in the quiz (“How about Sunday night?”) requires the use of *doo desuka*, such as in (3a), instead of *ii desuka* (3b):

3. a. *nitiyoobi-wa doo-desu.ka?*
Sunday-TOP how-polite.Q
“How about Sunday night?”
- b. **nitiyoobi-wa ii-desu.ka?*
Sunday-TOP ok-polite.Q
“Ok about Sunday night?”

Thus, although *doo desuka* and *ii desuka* are sometimes interchangeable while maintaining grammaticality and similar pragmatic meaning, in other cases only one of the two is acceptable.

The L2 learners had the greatest difficulty using *daizyoobu desuka*, as they made errors 72.0% of the time with this interrogative (as opposed to *doo desuka*, which was incorrectly produced only 11.4% of the time). This prompt required learners to write an email stating allergies that others had, and confirming whether they would be fine for a lunch. The high rate of errors included both orthographic errors, such as writing だいじょ一ぶですか, だいじょぶですか, or だいじょぶうですか, and functional errors, such as writing other interrogatives (e.g., *ii desuka*, *doo desuka* or *yorosii desuka*), which

have different meanings. Given that using the correct interrogative for a given situation is crucial for successful communication, the learners failed to demonstrate an ability to communicate effectively in this particular context.

It is not clear why the error rate was so high for this interrogative. One reason may be differences in proficiency: the assessment that targeted *daizyoobu desuka* was in the first semester, and the one that targeted *doo desuka* was in the second semester. These results would thus suggest that as students became more familiar with a language, they are able to show greater understanding, even with just one additional semester of instruction. Another possibility is that it is an example of learners violating grammaticality in production, even when they have the relevant grammatical knowledge. A classic example of this is the use of pronouns in English: children often violate the uses of 'him' and 'her', despite having an understanding of the grammatical constraints on pronouns (Grimshaw & Rosen, 1990). Because the data in the current study did not involve a grammaticality or aural judgment task, we cannot determine whether learners lacked a command of proper interrogative usage. In fact, given that the instructional method places strong emphasis on using the correct pragmatic phrases in specific situations, these learners should have had such an ability. Future research that uses receptive judgment tasks would be a useful complement to production data of the type used here.

6. Conclusion

The current study demonstrated that errors in L2 Japanese written productions are not exclusively orthographic, grammatical, or pragmatic, but rather overlap. Building on the previous research showing L1 influence on orthographic errors, this study also showed that the L1 writing system influences grammatical and functional errors. However, there are other factors to consider as well: some students have issues with indicating existence (e.g., writing *desu* instead of *arimasu*, which is a trifecta of orthographic, grammatical, and functional errors), and case particles (which involves not only an analysis of accuracy in particle choice, but also structural considerations and possibly further L1 influence). That is, an error analysis of spelling and writing, especially in L2 Japanese, requires a comprehensive and in-depth analysis of more than a single factor. In turn, these findings highlight the importance for language instructors to be aware of the multiple linguistic factors that influence student error. Fortunately, the results also show that errors diminish as L2 learners advance in proficiency. Nonetheless, given that research in L2 written Japanese is still scarce, future research in this area has great potential for unlocking a broader and more nuanced picture of L2 writing development in Japanese.

References

- Adachi, T. (2003). Accurate learning of word usage: Differentiating semantically similar words. *Foreign Language Annals*, 36(2), 267-278. doi:10.1111/j.1944-9720.2003.tb01476.x
- Adachi, T. (2005). Memory of socially-obtained information versus non-socially-obtained information. *Foreign Language Annals*, 38(4), 514-522. doi:10.1111/j.1944-9720.2005.tb02518.x
- Ahrenholz, B. (2000). Modality and referential movement in instructional discourse: Comparing the production of Italian learners of German with native German and native Italian production. *Studies in Second Language Acquisition*, 22(3), 337-368.
- Alexander, P. A., & Fox, E. (2004). A historical perspective on reading research and practice. *Theoretical models and processes of reading*, 5, 33-68.
- Allington, R. L., & McGill-Franzen, A. (2000). Looking back, looking forward: A conversation about teaching reading in the 21st century. *Reading Research Quarterly*, 35(1), 136-153. doi:10.1598/RRQ.35.1.10
- Andersen, R. W. (1984). The one to one principle of interlanguage construction. *Language Learning*, 34(4), 77-95. doi:10.1111/j.1467-1770.1984.tb00353.x
- Andersen, R. W., & Shirai, Y. (1996). The primacy of aspect in first and second language acquisition: The pidgin-creole connection. *Handbook of second language acquisition*, 2, 527-570.
- Bardovi-Harlig, K. (1999). Exploring the interlanguage of interlanguage pragmatics: A research agenda for acquisitional pragmatics. *Language Learning*, 49(4), 677-713. doi:10.1111/0023-8333.00105
- Biase, B. D., & Kawaguchi, S. (2002). Exploring the typological plausibility of Processability Theory: Language development in Italian second language and Japanese second language. *Second Language Research*, 18(3), 274-302. doi:10.1191/0267658302sr204oa
- Chikamatsu, N. (1996). The effects of L1 orthography on L2 word recognition: A study of American and Chinese learners of Japanese. *Studies in Second Language Acquisition*, 18(04), 403-432. doi:10.1017/S0272263100015369
- Chikamatsu, N. (2006). Developmental word recognition: A study of L1 English readers of L2 Japanese. *The Modern Language Journal*, 90(1), 67-85. doi:10.1111/j.1540-4781.2006.00385.x
- Dewey, D. P. (2004). Connections between teacher and student attitudes regarding script choice in first-year Japanese language classrooms. *Foreign Language Annals*, 37(4), 567-577. doi:10.1111/j.1944-9720.2004.tb02423.x
- Eisenstein, M., & Bodman, J. W. (1986). 'I very appreciate': Expressions of gratitude by native and non-native speakers of American English. *Applied Linguistics*, 7(2), 167-185. doi:10.1093/applin/7.2.167
- Geyer, N. (2007a). The grammar-pragmatics interface in L2 Japanese: The case of contrastive expressions. *Japanese Language and Literature*, 41(1), 93-117. doi:10.2307/30198023

- Geyer, N. (2007b). Self-qualification in L2 Japanese: An interface of pragmatic, grammatical, and discourse competences. *Language Learning*, 57(3), 337-367. doi:10.1111/j.1467-9922.2007.00419.x
- Grabe, W. (2009). *Reading in a second language: Moving from theory to practice*. Cambridge: Cambridge University Press.
- Grimshaw, J., & Rosen, S. T. (1990). Knowledge and obedience: The developmental status of the binding theory. *Linguistic Inquiry*, 21(2), 187-222.
- Hansen, L., & Chen, Y.-L. (2001). What counts in the acquisition and attrition of numeral classifiers. *JALT Journal*, 23(1), 83-100.
- Hansen, L., Umeda, Y., & McKinney, M. (2002). Savings in the relearning of second language vocabulary: The effects of time and proficiency. *Language Learning*, 52(4), 653-678. doi:10.1111/1467-9922.00200
- Hatta, T., & Kawakami, A. (1997). American Japanese learners. In H.-H. Chen (Ed.), *Cognitive Processing of Chinese and Related Asian Languages*. Hong Kong: Chinese University Press.
- Hatta, T., Kawakami, A., & Tamaoka, K. (1998). Writing errors in Japanese kanji: A study with Japanese students and foreign learners of Japanese. *Reading and Writing*, 10(3), 457-470. doi:10.1023/a:1008014811683
- Hatta, T., Kawakami, A., & Tamaoka, K. (2002). Errors in writing Japanese kanji: A comparison of Japanese schoolchildren, college students and second-language learners of Japanese. *Asia Pacific Journal of Speech, Language and Hearing*, 7(3), 157-166. doi:10.1179/136132802805576427
- Igarashi, K., Wudthayagorn, J., Donato, R., & Tucker, G. (2002). What does a novice look like? Describing the grammar and discourse of young learners of Japanese. *Canadian Modern Language Review*, 58(4), 526-554. doi:10.3138/cmlr.58.4.526
- Inagaki, S. (2001). Motion verbs with goal PPs in the L2 acquisition of English and Japanese. *Studies in Second Language Acquisition*, 23(2), 153-170.
- Ishida, K. (2006). How can you be so certain? The use of hearsay evidentials by English-speaking learners of Japanese. *Journal of Pragmatics*, 38(8), 1281-1304. doi:http://dx.doi.org/10.1016/j.pragma.2005.10.006
- Ishida, M. (2004). Effects of recasts on the acquisition of the aspectual form -te i-(ru) by learners of Japanese as a foreign language. *Language Learning*, 54(2), 311-394. doi:10.1111/j.1467-9922.2004.00257.x
- Jorden, E. H., & Noda, M. (1987). *Japanese: The spoken languages, Parts I, II, III*. New Haven, CT: Yale University Press.
- Kasper, G., & Rose, K. R. (2002). Pragmatic development in a second language. *Language Learning: A Journal of Research in Language Studies*, 52, 1.
- Katz, L., & Frost, R. (1992). The reading process is different for different orthographies: The Orthographic Depth Hypothesis. In R. Frost & M. Katz (Eds.), *Orthography, Phonology, Morphology, and Meaning*. Amsterdam: Elsevier.
- Kawaguchi, S. (2000). Acquisition of Japanese verbal morphology: Applying Processability Theory to Japanese. *Studia Linguistica*, 54(2), 238-248. doi:10.1111/1467-9582.00063
- Keenan, E. L., & Comrie, B. (1977). Noun phrase accessibility and Universal Grammar. *Linguistic Inquiry*, 8(1), 63-99.

- Keenan, E. L., & Comrie, B. (1979). Data on the noun phrase accessibility hierarchy. *Language*, 55(2), 333-351. doi:10.2307/412588
- Kizu, M., Pizziconi, B., & Iwasaki, N. (2013). Modal markers in Japanese: A study of learners' use before and after study abroad. *Japanese Language and Literature*, 93-133.
- Koda, K., & Zehler, A. M. (2008). *Learning to read across languages: Cross-linguistic relationships in first- and second-language literacy development*. New York: Routledge.
- Koike, D. A. (1989). Pragmatic competence and adult L2 acquisition: Speech acts in interlanguage. *The Modern Language Journal*, 73(3), 279-289. doi:10.2307/327002
- Kondo-Brown, K. (2006). How do English L1 learners of advanced Japanese infer unknown kanji words in authentic texts? *Language Learning*, 56(1), 109-153. doi:10.1111/j.0023-8333.2006.00343.x
- Kudo, M. (1995). *Aupekuto tensu taikai to tekusuto [Aspect-tense system and text]*. Tokyo: Hitsuhi Shobo.
- Li, N., & Martin, K. I. (In Press). *Orthographical errors in beginning and intermediate learners of L2 Japanese from two L1s*. Paper presented at the 2016 Pacific Second Language Research Forum, Tokyo, Japan.
- Li, N., & Shirai, Y. (2015). The L2 acquisition of the present in the Japanese tense-aspect system. In D. Ayoun (Ed.), *The Acquisition of the Present* (pp. 215-252). Amsterdam: John Benjamins. doi: http://dx.doi.org/10.1075/z.196.08li
- Matsumoto, K. (2013). Kanji recognition by second language learners: Exploring effects of first language writing systems and second language exposure. *The Modern Language Journal*, 97(1), 161-177. doi:10.1111/j.1540-4781.2013.01426.x
- McBride-Chang, C., Cho, J.-R., Liu, H., Wagner, R. K., Shu, H., Zhou, A., . . . Muse, A. (2005). Changing models across cultures: Associations of phonological awareness and morphological structure awareness with vocabulary and word recognition in second graders from Beijing, Hong Kong, Korea, and the United States. *Journal of Experimental Child Psychology*, 92(2), 140-160. doi:10.1016/j.jecp.2005.03.009
- Mori, Y. (1999). Beliefs about language learning and their relationship to the ability to integrate information from word parts and context in interpreting novel kanji words. *The Modern Language Journal*, 83(4), 534-547. doi:10.1111/0026-7902.00039
- Mori, Y. (2002). Individual differences in the integration of information from context and word parts in interpreting unknown kanji words. *Applied Psycholinguistics*, 23(3), 375-397. doi:10.1017/S0142716402003041
- Mori, Y. (2003). The roles of context and word morphology in learning new kanji words. *The Modern Language Journal*, 87(3), 404-420. doi:10.1111/1540-4781.00198
- Mori, Y., & Mori, J. (2011). Review of recent research (2000–2010) on learning and instruction with specific reference to L2 Japanese. *Language Teaching*, 44(4), 447-484. doi:10.1017/S0261444811000292
- Mori, Y., Sato, K., & Shimizu, H. (2007). Japanese language students' perceptions on kanji learning and their relationship to novel kanji word learning ability. *Language Learning*, 57(1), 57-85. doi:10.1111/j.1467-9922.2007.00399.x

- Navas, A. L. G. P. (2004). Implications of alphabetic instruction in the conscious and unconscious manipulations of phonological representations in Portuguese-Japanese bilinguals. *Written Language & Literacy*, 7(1), 119-131. doi:10.1075/wll.7.1.10nav
- Nishi, Y. (2008). *Verb learning and the acquisition of aspect: Rethinking the universality of lexical aspect and the significance of L1 transfer*. (Doctoral dissertation), Cornell University, Ithaca, NY.
- Nishi, Y., & Shirai, Y. (2007). Where L1 semantic transfer occurs: The significance of cross-linguistic variation in lexical aspect in the L2 acquisition of aspect. *Diversity in language: Perspectives and implications*, 219-241.
- Nishi, Y., & Shirai, Y. (2016). The role of linguistic explanation in the acquisition of Japanese imperfective -teiru. In A. G. Benati & S. Yamashita (Eds.), *Theory, Research and Pedagogy in Learning and Teaching Japanese Grammar* (pp. 127-155). London: Palgrave Macmillan UK.
- Ortega, L. (2009). *Understanding Second Language Acquisition*. London: Hodder Education.
- Ozeki, H. (2005). Does the acquisition of noun-modifying constructions in L2 Japanese follow the noun phrase accessibility hierarchy? *Acquisition of Japanese as a Second Language*, 8, 64-82.
- Ozeki, H., & Shirai, Y. (2007). Does the noun phrase accessibility hierarchy predict the difficulty order in the acquisition of Japanese relative clauses? *Studies in Second Language Acquisition*, 29(2), 169-196. doi:10.1017/S0272263107070106
- Pienemann, M. (1998). *Language processing and second language development: Processability theory*. Amsterdam: Benjamins.
- Salsbury, T., & Bardovi-Harlig, K. (2000). Oppositional talk and the acquisition of modality in L2 English. *Social and cognitive factors in second language acquisition*, 57-76.
- Salsbury, T., & Bardovi-Harlig, K. (2001). "I know your mean, but I don't think so": Disagreements in L2 English. *Pragmatics and language learning*, 10, 131-152.
- Sawazaki, K. (2009). Processing of relative clauses by learners of Japanese: A study on reading times of English/Korean/Chinese L1 learners. *Acquisition of Japanese as a Second Language*, 12, 86-106.
- Share, D. L. (2008). On the Anglocentricities of current reading research and practice: The perils of overreliance on an "outlier" orthography. *Psychological Bulletin*, 134(4), 584-615. doi:10.1037/0033-2909.134.4.584
- Shirai, Y., & Kurono, A. (1998). The acquisition of tense-aspect marking in Japanese as a second language. *Language Learning*, 48(2), 279-244. doi:10.1111/1467-9922.00041
- Sugaya, N., & Shirai, Y. (2007). The acquisition of progressive and resultative meanings of the imperfective aspect marker by L2 learners of Japanese: Transfer, universals, or multiple factors? *Studies in Second Language Acquisition*, 29(01), 1-38.
- Taguchi, N. (2009). *Pragmatic competence (Vol. 5)*. Berlin: Mouton de Gruyter.
- Tamaoka, K. (1997). The processing strategy of words presented in kanji and kana by Chinese and English speakers learning Japanese. *Studies in Language and Literature*, 17, 65-77.

- Tamaoka, K., Kiyama, S., & Chu, X.-J. (2012). How do native Chinese speakers learning Japanese as a second language understand Japanese kanji homophones? *Writing Systems Research*, 4(1), 30-46. doi:10.1080/17586801.2012.690008
- Teramura, H. (1984). *Nihongo no sintakusu to imi II [Japanese syntax and meaning II]*. Tokyo: Kurosio.
- Walters, J. (1980). Grammar, meaning, and sociocultural appropriateness in second language acquisition. *Canadian Journal of Psychology/Revue canadienne de psychologie*, 34(4), 337-345. doi:10.1037/h0081107
- White, L., Hirakawa, M., & Kawasaki, T. (1996). *Effects of instruction on second language acquisition of the Japanese long-distance reflexive zibun* (Vol. 41). Toronto: University of Toronto Press.
- Yabuki-Soh, N. (2007). Teaching relative clauses in Japanese: Exploring alternative types of instruction and the projection effect. *Studies in Second Language Acquisition*, 29(02), 219-252. doi:10.1017/S027226310707012X
- Yamashita, S., & Ishihara, N. (2016). An integrated grammar-pragmatics approach: Teaching style shifting in Japanese. In A. G. Benati & S. Yamashita (Eds.), *Theory, Research and Pedagogy in Learning and Teaching Japanese Grammar* (pp. 187-218). London: Palgrave Macmillan UK.
- Yoshizawa, M. (2005). Incidental vocabulary learning and comprehension in L2 reading: The effects of dictionary and marginal glosses as a function of Japanese proficiencies. *Acquisition of Japanese as a Second Language*, 8, 24-42.
- Ziegler, J. C., & Goswami, U. (2005). Reading acquisition, developmental dyslexia, and skilled reading across languages: A psycholinguistic grain size theory. *Psychological Bulletin*, 131(1), 3-29. doi:10.1037/0033-2909.131.1.3

Appendix A

Excerpts of interrogatives and drills from the Japanese curriculum

Below are the excerpts from dialogues and drills that involve the interrogatives of interest for this study from *Japanese: The Spoken Language*, lessons 1 through 6. The interrogatives presented in the lessons are given first, followed by the relevant dialogues. The parentheses following the dialogues are example phrases used in class.

Lesson 1

Interrogative: *ii desuka*

- 1) A. ii desu ka
B. ii desu yo
- 2) A. Ii desu ka
B. Doozo
- 3) A. Ii desu ka
B. Ee, ii desu yo.
- 4) A. Ii desu ka
B. Ee, ii desu yo.
- 5) A. Ii desu ka
B. Ie, yoku arimasen.

Lesson 2

Interrogative: *daizyoubu desuka*

- 6) A. Doo desu ka. Dame desu ka.
B. Iya, daizyoobu desu yo.
- 7) A. Daizyoobu desu ka
B. Ee, daizyoobu desu yo.
- 8) A. Ii desu ka.
B. Iie, yoku arimasen yo. OR Iie, yoku nai desu yo.
- 9) A. Dame desu ka.
B. Sore desu ka. Iie, daizyoobu desu yo.

Lesson 4

Interrogatives: *ii desuka, ikaga desuka*

- 10) A. Tyotto sumimasen. Sono kuroi kasa, misete kudasai.
B. Ame desu ka.

- A. Ee....Tyotto ookikunai desu ka.
- B. Zyaa, kono aoi no wa ikaga desu ka.
- A. Soo desu ne....Zyaa, kore onegai-simasu.
- B. Arigatoo gozaimasu.

- 11) A. X wa yoku nai desu ne.
B. Zyaa, Q ga ii desu ka.
A. (Satoo-san wa yoku nai desu ne.)
B. (Zyaa, dare ga ii desu ka.)

- 12) A. Kyoo wa X yo.
B. Zyaa, asita wa doo desu ka. Asita wa X ka.
A. (Kyoo wa ikimasen yo)
B. (Ayaa, asita wa doo desu ka. Asita wa ikimasu ka)

- 13) A. Irassyaimase.
B. Konna boorupen, arimasu ka.
A. Syoosyoo omati-kudasai... Tyoodo onazi zya nai desu kedo, ikaga desu ka.
B. Soo desu ne....Maa, kore, ni-hon kudasai.

- 14) A. X ikaga desu ka.
B. Ee. Konna X o # kudasai.
A. (Pen wa ikaga desu ka.)
B. (Ee. Konna pen o san-bon kudasai.)

Lesson 5

Interrogatives: *dou desuka, ii desuka, ikaga desuka, yorosii desuka*

- 15) A. Motto yasui no ga irimasu ne.
B. Soo desu ne. Kore wa doo desu ka. Tyotto tiisai desu kedo..
A. Iya, ii desu yo. Kore kudasaai.

- 16) A. Koohii ikaga desu ka.
B. A, arigatoo gozaimasu. Itadakimasu.
A. Osatoo wa?
B. Doo mo....Oisii desu ne.... Gotisoosama desita.

- 17) A. Kore ga ii desu ka.
B. Ee, kore mo are mo ii desu yo.

- 18) A. Ii desu ka.
B. Ie, yoku nai desu yo.

Lesson 6

Interrogatives: *daizyoubu desuka, ii desuka, polite usage of desyou ka.*

- 19) A. Dotira no hoo ga ii desu ka.
B. Kotira no hoo ga ii desu nee.

- 20) A. Are wa ryokan desyoo ka nee.
B. Soo, doo desyoo ka nee.... Yappari ryokan desu ne!
A. Takai desyoo nee.
B. Soo desyoo nee.
- 21) A. Asoko wa X desyoo ka.
B. Saa. Doo desyoo ka nee....Yappari X desu ne!
A. (Asoko wa ryoozikan desyoo ka.)
B. (Saa. Doo desyoo ka nee....Yappari ryoozikan desu ne!)
- 22) A. Daizyoobu desu ka.
B. Ee, daizyoobu desyoo nee.

Appendix B

List of kanji tested

The following are the kanji that were tested the second semester of the elementary level and both semesters of the intermediate level.

Elementary level

Quiz 4

東京、本屋、駅前、待つ、買った、食べる

Quiz 5

赤、店、白、入口、毎朝、待つ

Intermediate level

Quiz 1

新聞、地図、覚える

Quiz 2

昼、茶色、天ぷら、頼む

Quiz 3

客様、料理、過ぎる

Quiz 4

所、洋食、和食、食堂、医者、借りる、連れる、食べる

Quiz 5

植木、相談、止める

Quiz 6

夏子、失礼、映画、遅れる、待つ

Quiz 7

心配、市内、お宅、間違い、合う、速く、届ける、立てる

Quiz 8

非常、有名、政治、関係、何回、泊まる、済む

Appendix C

Summary of written products collected, by level, L1, semester, and year of data collection

| Level | Year of data collection | L1 | Semester 1 (Fall) | | | | Semester 2 (Spring) | | | |
|--------------|-------------------------|---------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------------|----------------------------|
| Elementary | 1 | English | Homework 1 – kana (35) | Quiz 1 – kana (26) | -- | -- | Quiz 4 – kanji (29) | Quiz 5 – kanji (29) | Quiz 5 – free writing (29) | Quiz 6 – free writing (29) |
| | | Chinese | Homework 1 – kana (17) | Quiz 1 – kana (19) | -- | -- | Quiz 4 – kanji (12) | Quiz 5 – kanji (14) | Quiz 5 – free writing (14) | Quiz 6 – free writing (14) |
| | 2 | English | Quiz 1 – kana (46) | Quiz 3 – kana (46) | -- | Final – kana (37) | -- | -- | -- | -- |
| | | Chinese | Quiz 1 – kana (38) | Quiz 3 – kana (37) | -- | Final – kana (34) | -- | -- | -- | -- |
| Intermediate | 1 | English | Quiz 1 – kanji (16) | Quiz 2 – kanji (16) | Quiz 3 – kanji (16) | Quiz 4 – kanji (16) | Quiz 5 – kanji (11) | Quiz 6 – kanji (10) | Quiz 7 – kanji (11) | Quiz 8 – kanji (10) |
| | | Chinese | Quiz 1 – kanji (4) | Quiz 2 – kanji (4) | Quiz 3 – kanji (4) | Quiz 4 – kanji (4) | Quiz 5 – kanji (2) | Quiz 6 – kanji (2) | Quiz 7 – kanji (2) | Quiz 8 – kanji (1) |
| | 2 | English | Quiz 1 – kanji (11) | Quiz 2 – kanji (11) | Quiz 3 – kanji (9) | Quiz 4 – kanji (9) | Quiz 5 – kanji (8) | Quiz 6 – kanji (8) | Quiz 7 – kanji (8) | -- |
| | | Chinese | Quiz 1 – kanji (4) | Quiz 2 – kanji (4) | Quiz 3 – kanji (4) | Quiz 4 – kanji (3) | Quiz 5 – kanji (3) | Quiz 6 – kanji (5) | Quiz 7 – kanji (5) | -- |

Note. Each cell indicates the type of written product (homework, quiz, final exam) and the type of grapheme (kana, kanji, or a combination [for free writing]) produced. The number of students providing data for each written product are given in parentheses.