

## THE EFFECTS OF STROKE ORDER AND RADICALS ON THE KNOWLEDGE OF JAPANESE KANJI ORTHOGRAPHY, PHONOLOGY AND SEMANTICS

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The present study examined how much knowledge of Japanese kanji stroke order and radicals contributes to overall kanji lexical knowledge. Ninety-one undergraduate students, all native Japanese speakers, participated in this study. It was assumed that kanji writing skills (i.e., knowledge of kanji lexical orthography) would be supported by knowledge of precise stroke order sequence. However, a path model for kanji lexical knowledge, based on the results of this study, indicated that this is not true. In fact, the model shows that the only major contribution that knowledge of proper stroke order makes is to one's knowledge of radicals, and only in a limited way. In contrast, knowledge of kanji radicals directly supports all aspects of the kanji lexicon, namely phonology, orthography and semantics. Consequently, stroke order supports kanji lexical knowledge only indirectly via radicals. The path model also provided an illustration of the close interdependency between knowledge of kanji lexical phonology and knowledge of kanji lexical orthography, which also directly contributes to knowledge of kanji lexical semantics. This study suggests that stroke order plays only a minor role in kanji knowledge on the whole, but that knowledge of radicals serves as a basic element in acquiring kanji lexical knowledge.

**Key words:** kanji stroke order, radicals, kanji lexical knowledge, path model

Unlike those who learn English, written in the Roman alphabet consisting of 26 letters, Japanese school children have to spend many class hours memorizing a multitude of visually complex kanji. Traditionally, children have repeatedly written the same kanji many times on paper, following the rules for stroke order. Although kanji have a complex orthographic structure, a limited number of simpler figures are repeatedly used to construct them. Among these figures, 214 are called *radicals* which are used for classifying kanji in a typical Japanese kanji dictionary. Thus, the present study aimed at investigating how much knowledge of stroke order and radicals contributes to overall kanji lexical knowledge.

In 1958, the Ministry of Education, Science, Sports and Culture, Government of Japan (*Monbusho*; hereafter, it is simply called 'Japanese Ministry of Education'), published *Teaching Guidelines for Kanji Stroke Order*; which has been continuously used for over 40 years in Japanese schools. These guidelines established two main rules and eight sub-rules for stroke order. The guidelines also provided proper stroke order

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for 881 kanji (the older version of the *Educational Kanji List*) to be learned from Grades 1 to 6. In his historical study of kanji stroke order, Matsumoto (1998) pointed out that a few basic kanji have an alternate stroke order. These differences in stroke order occur because there are three coexisting sets of rules concerning stroke order: (1) the newer Japanese set of rules established in 1958, (2) the older set prior to 1958, and (3) the Chinese set of rules. Matsumoto (1998) suggested that these minor differences should be considered equally viable and kanji writing should not be restricted solely to the rules laid out by the Japanese Ministry of Education in 1958. Nonetheless, the present study examines how the rules for stroke order established in 1958 contribute to overall kanji knowledge.

Chinese calligraphy, drawing characters by hand using a soft-tipped brush, is traditionally practiced in China. Kao and his colleagues (Kao, 1998, 1999; Kao, Lam, Robinson, & Yen, 1989) conducted experimental research on the psychological effects of Chinese calligraphy such as visual perception and psychophysiological changes in the body during writing. Kao et al. (1989) found that there was a reduction in heart rate during commencement and progression of handwriting by brush rather than by felt pen. The study suggested that the writing of Chinese calligraphy leads to a relaxed physiological state. Kao (1999) also reported that the application of calligraphic writing for cognitive-perceptual deficiencies due to Alzheimer's Disease provided significant improvements in the spatial ability of patients. He suggested clinical applications of calligraphic writing.

Japanese elementary school students in Grades 1 to 6 spend one class hour per week, 35 weeks per year, learning how to neatly write kana and kanji. In fact, when officially referring to these classes, the Japanese Ministry of Education (1987) uses the term 書写 /syosya/, meaning 'to copy written script'. The Japanese Ministry of Education specifies that 20 class hours per year from Grades 3 to 6 are to be used to teach writing kana and kanji by traditional brush, which is called 毛筆 /moRhitu/<sup>1</sup> literally meaning 'fur brush'. (At the elementary school level, one class hour refers to 45 minutes of classroom instruction.) It should be noted that the term 書写 is different from the term 書道 /syodoR/ 'Japanese calligraphy' which is reserved for the fine arts. This shows that the Japanese Ministry of Education lays its emphasis on the neat and correct copying of kana and kanji.

Students in elementary schools in each grade spend an average of 255.3 class hours per year learning the Japanese language. Within this time period, they practice writing kana and kanji by pencil or brush for about 35 hours, or 13.7% of the total class hours allotted per year for Japanese language learning. From Grades 1 to 6, the total class hours for kana and kanji handwriting practice equal 210. When compared to the 105 class hours allotted each year for Science or Social Studies from Grades 3 to 6, this amount of class hours for Japanese handwriting practice is double. Even

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<sup>1</sup> Pronunciation of words in this paper is transcribed using Japanese phonemic symbols which indicate three special sounds in Japanese: /N/ for nasal, /Q/ for geminate and /R/ for long vowel. The present study makes frequency use of these phonemic symbols.

taking into consideration some of the psychological benefits achieved by writing practice, suggested by Kao and his colleagues (Kao, 1998, 1999; Kao, Lam, Robinson, & Yen, 1989), the amount of school hours allotted for the simple practice of writing kana and kanji seems far too long.

Japanese kanji has a classification system based upon 214 radicals. This system was actually adopted from the categorization system developed by the Chinese. It should be noted that the 214 radicals are simply used for the purpose of classifying all kanji in any given dictionary. Radicals are not the only elements used in the construction of kanji.

Many Chinese characters are constructed from only a limited number of radicals. A study of 8,711 Chinese characters found that out of 214 radicals, 17 were utilized as basic elements in constructing 50.17% of all of these characters (Leong, 1973). A similar tendency is also observed in Japanese. The Database for the 1,945 Basic Japanese Kanji produced by Tamaoka, Kirsner, Yanase, Miyaoka and Kawakami (2000) found that 24 radicals were used in constructing 54% (i.e., 1,057 kanji) of the 1,945 basic kanji used in Japanese. Among these radicals, the character for 'water', called *Sanzui*, was used the most frequently in more than 5% of the basic kanji, or 103 kanji out of the 1,945 basic kanji. The top ten most frequently-used radicals are used to construct about 34% (i.e., 669 kanji) of the 1,945 basic kanji. As in the case for Chinese characters, a relatively small number of radicals are used to construct many Japanese kanji. Taking this linguistic evidence into account, it was assumed that knowledge relating to radicals would show a great effect in all aspects of kanji.

Despite the usefulness of radicals when initiation time is examined (the interval between the audio presentation of a word and the instant a subject begins to write the word), one can see that writing kanji still remains a challenging task. According to a study by Tamaoka and Takahashi (1999), the initiation time for writing Japanese two-kanji compound words by mature Japanese undergraduate students was an average of 2,137 ms for high frequency words such as 優勝 /yuRsyoR/ (victory) and 自由 /jiyuR/ (freedom), and 2,542 ms for low frequency words such as 酪農 /rakunoR/ (farming) and 予言 /yogeN/ (prophecy). Even for high frequency and orthographically simple words such as 中央 /tyuRoR/ (center) and 反対 /haNtai/ (opposite), subjects took a long time (2,150 ms) to start writing them.

In contrast, native English speakers required an average of only 629 ms for words with regular sound-to-spelling correspondence and 684 ms for words with an irregular spelling. Relatively low frequency words with irregular spelling took subjects an average of 715 ms to write (Cottrell, 1989). Thus it is estimated that Japanese kanji compound words need at least three times the length of initiation time for writing than English words in the alphabet. In addition, Tamaoka and Takahashi (1999) reported that the actual writing time average for words with a mixture of simple and complex orthography combined was 5,142 ms for high frequency two-kanji compound words and 5,428 ms for low frequency ones. Mature native Japanese speakers spend more than 5 seconds on average to write a single common word such as 'victory', 'freedom', 'farming' or 'prophecy'. Despite their long writing time, Japanese native speakers

still had a relatively high error rate in writing these words – an average of 11% for high frequency words and 29% for low frequency words (Tamaoka & Takahashi, 1999). The difference in initiation time for writing Japanese and English words seems to indicate that writing Japanese kanji involves more effort due to its orthographic complexity. It seems an inescapable fact that writing even commonly used two-kanji compound words demands at least 5 seconds.

Given these figures regarding the time-consuming effort required for kanji writing, the question arises as to how knowledge of kanji stroke order and radicals relates to kanji lexical knowledge of orthography, phonology and semantics. In order to illustrate the overall make-up of kanji knowledge, the present study measured the five different aspects of stroke order, radicals, phonology, orthography and semantics. A structural path model was constructed for these five aspects of kanji knowledge to investigate their causal relationships.

## METHOD

### *Subjects:*

Ninety-one undergraduate students, all native Japanese speakers, participated in the study. Subjects consisted of 43 females with an average age of 20 years and 9 months ( $SD=10$  months) and 48 males with an average age of 21 years and 1 month ( $SD=12$  months). Overall average age of the 91 subjects was 20 years and 11 months.

### *Measurement:*

Five aspects of kanji lexical knowledge were measured by a written test. All kanji used on the test were taken from the 1,945 basic Japanese kanji (常用漢字 /joRyoR kanji/), most of which are learned by the ninth grade. All the actual items used for the present study are listed in the Appendix.

(1) Knowledge of stroke order was tested using a kanji stroke order numbering system. One stroke in each kanji was highlighted in bold type. Students were asked to identify the stroke number of this line in bold. For example, the middle horizontal line of the kanji 無, which means ‘nothing’ in English, was drawn in bold type. Subjects had to write “3” as the correct answer. There were 20 questions on stroke order using 20 kanji including 無<sup>2</sup> (nothing), 率 (to lead), 写 (to copy), 飛 (to fly) and 馬 (horse). Thus the maximum score for this part of the test added up to 20 points. Although Matsumoto (1998) pointed out that three different sets of rules for stroke order coexist in kanji writing, the present study considered only the 1958 set of rules laid out by the Japanese Ministry of Education in order to measure how effectively these rules contributed to the construction of kanji lexical knowledge. This is because those are the only set of rules being used currently in the Japanese school system.

(2) Knowledge of radicals was measured by asking subjects to pick out the radical element from the kanji and then to write the name of that radical. For instance, the kanji 思, meaning ‘to think’, has a radical of 心 (heart). Therefore, subjects had to write the radical 心. In addition, subjects were asked to write the name of the kanji radical in the phonetic script of hiragana: in this case, こころ ‘kokoro’, or more specifically, したごころ ‘shitagokoro’ when found in the kanji 思. Twenty kanji were used for this task including 簿 (list), 陰 (shadow), 飲 (to drink), 情 (feeling) and 思 (to think). Accordingly, the maximum possible score was 20 points for radical identification and 20 points for radical naming. Added up, they equated to a possible 40 points.

(3) Knowledge of kanji lexical orthography was measured by testing subjects’ ability to write the proper kanji equivalents for words presented in the phonetic script of katakana. As Japanese words often have multiple homophones, all the target words were presented within sentences where careful consideration was

<sup>2</sup> English translations in brackets refer to the common meaning for each kanji morpheme or two-kanji compound word.

given to the semantic context therein. An example of such a sentence is “あの人はシンチョウな性格です” which means ‘That man has a cautious personality’. In this sentence, the sound /siNtyoR/ (cautious), written in katakana, has several homophones such as 伸張 (expansion), 新調 (brand-new), and 身長 (height). However, subjects should have been able to identify the correct word ‘cautious’ as it semantically fits the context of the sentence where the man’s personality is being described. Correct responses for these 20 two-kanji compound words included 礼節 (manners), 冒険 (adventure), 名誉 (honor), 慎重 (cautious) and 沈黙 (silence). The maximum score on this test was 20 points.

(4) Knowledge of kanji lexical phonology was measured by asking subjects to write kanji’s pronunciation in hiragana. For example, the two-kanji compound word 遅延, which means ‘delay’, was written on paper. Subjects then had to write down the word’s correct pronunciation of /tieN/ in hiragana (ちえん). All 20 kanji compound words in this portion of the study had only one correct pronunciation. These twenty words included 仮病 /kebyoR/ (pretended sickness), 介抱 /kaihoR/ (nursing), 首相 /syusyoR/ (prime minister), 率先 /soQseN/ (initiation) and 遅延 /tieN/ (delay). The maximum score on this test added up to 20 points.

(5) Knowledge of kanji lexical semantics was measured in two different ways. First, subjects were presented with a word on paper and then asked to write an antonym for the word. For instance, subjects had to write 黒字, meaning ‘surplus’, for the word 赤字, meaning ‘deficit’. Naturally, some words had more than one acceptable answer. All these possible answers were counted as correct. Twenty kanji compound words were used for this test, including 善意 (good will) for 悪意 (malice), 縮小 (reduction) for 拡大 (expansion), 反抗 (rebellion) for 服従 (obedience), 敗北 (defeat) for 勝利 (victory) and 未来 (future) for 過去 (past).

In the second part of the section testing knowledge of kanji lexical semantics, subjects had to write a synonym of the word written on the test. Again, as above, more than one correct answer was possible. Twenty words were used in the second part of this measure, including 用意 (preparation) for 準備 (preparation), 短所 (shortcoming) for 欠点 (flaw), 収入 (earnings) for 所得 (income), 改良 (improvement) for 改善 (improvement) and 無事 (safety) for 安全 (safety). Therefore, with each part worth a maximum of 20 points, the total possible score added up to 40 points.

## RESULTS

Means and standard deviations for the five aspects of kanji lexical knowledge are presented in Table 1. Also included in this table are Pearson’s correlation coefficients of the five measures.

Four points are important to note about this correlation data. The first is that knowledge of stroke order correlated with knowledge of radicals ( $r=0.34$ ,  $p<.001$ ), as well as with knowledge of kanji lexical phonology ( $r=0.29$ ,  $p<.01$ ). However,

Table 1. Means, Standard Deviations, and Correlations for the Five Aspects of Kanji Knowledge on the Written Test

Variables	Max. points	1	2	3	4	5
1 Knowledge of stroke order	20	—				
2 Knowledge of radicals	40	0.34***	—			
3 Knowledge of kanji lexical orthography	20	0.22	0.48****	—		
4 Knowledge of kanji lexical phonology	20	0.29**	0.54****	0.51****	—	
5 Knowledge of kanji lexical semantics	40	-0.05	0.49****	0.47****	0.52****	—
<i>M</i>		11.56	14.53	14.57	15.78	22.53
<i>SD</i>		3.32	6.54	3.13	2.87	4.95

Note:  $n=91$ , \* $p<.05$ , \*\* $p<.01$ , \*\*\* $p<.001$ , \*\*\*\* $p<.0001$ .

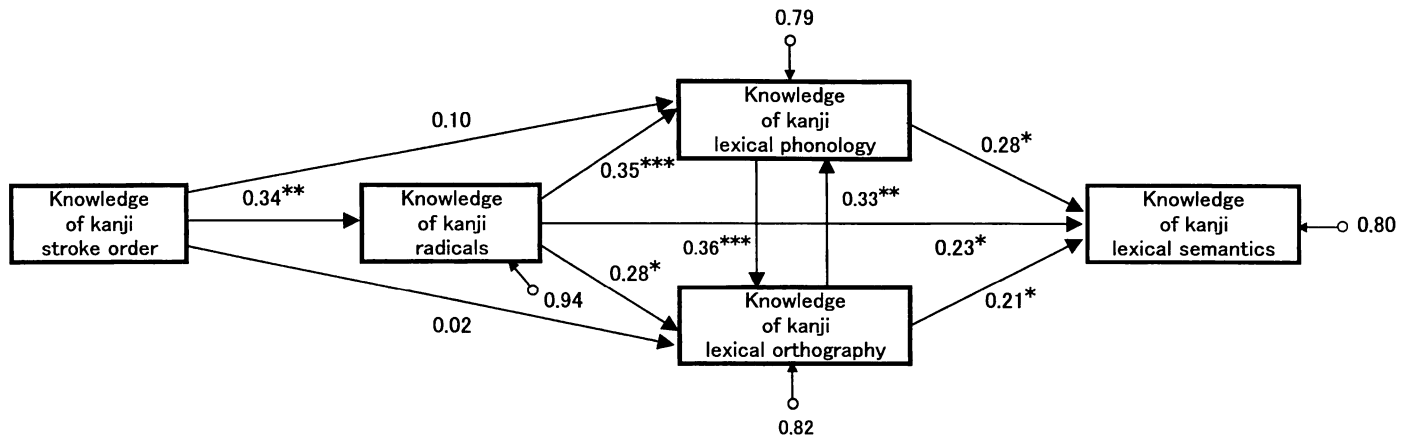


Fig. 1. Path model for Japanese kanji lexical knowledge.

Note 1: Numbers adjacent to the arrows are standardized path coefficients while those at the end of the small circles indicate the proportion of unexplained variance in the construct.

Note 2:  $n=91$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

secondly, knowledge of stroke order did not have a significant correlation with either knowledge of kanji lexical orthography or knowledge of kanji lexical semantics. This result was unexpected. Since stroke order is assumed to be the fundamental key to drawing a kanji, we anticipated that kanji lexical orthography would have, at least, a moderate correlation with stroke order. The third point is that, as shown in Table 1, knowledge of kanji radicals showed significant correlations with all lexical knowledge of kanji at the level of .0001: namely, with kanji phonology ( $r=0.54, p<.0001$ ), kanji orthography ( $r=0.48, p<.0001$ ) and kanji semantics ( $r=0.49, p<.0001$ ). Radicals clearly play an important role in constructing the kanji lexicon. The fourth point is that kanji lexical knowledge regarding orthography, phonology and semantics showed highly significant inter-correlations at the .0001 level: that is, correlations between kanji lexical knowledge of phonology and orthography ( $r=0.51, p<.0001$ ), between kanji lexical knowledge of phonology and semantics ( $r=0.52, p<.0001$ ), and between kanji lexical knowledge of orthography and semantics ( $r=0.47, p<.0001$ ). Where correlation matrices are concerned, knowledge of kanji phonology, orthography and semantics interrelate to construct overall kanji knowledge. Knowledge of kanji phonology, orthography and semantics interrelates to construct overall kanji knowledge.

Nevertheless, the simple correlation matrix in Table 1 do not show the overall contributions of the five aspects involved in the make-up of kanji lexical knowledge. Consequently, in order to do this, the present study constructed a path model. This structural path model is illustrated in Fig. 1. Because Pearson's correlation coefficient between knowledge of kanji stroke order and kanji lexical semantics was very low — 0.05, the path model does not include the causal direction from stroke order to semantics. The model in Fig. 1 represents the paths from the beginning of stroke order via radicals through kanji orthography and phonology toward kanji semantics.

Three interesting relations are apparent in Fig. 1. First, we intuitively expected that knowledge of stroke order would indicate, at least to some degree, a direct contribution to knowledge of kanji lexical orthography. Despite this expectation, the path model in Fig. 1 shows that knowledge of stroke order makes only a negligible contribution to knowledge of kanji lexical orthography as well as to kanji lexical phonology. Knowledge of kanji stroke order shows a significant direct contribution only to knowledge of kanji radicals. The absence of a direct contribution from stroke order to kanji lexical orthography and phonology suggests that knowledge of stroke order play only a role in knowledge of kanji radicals. Second, knowledge of kanji radicals shows significant direct contributions to all knowledge of kanji phonology, orthography and semantics. In this study, the direct effects of radicals were not limited to kanji lexical orthography but extended to kanji lexical phonology as well. Consequently, radicals influence all aspects of the kanji lexicon. Third, the path model postulates a close interdependency between knowledge of kanji lexical phonology and orthography, both of which further contribute directly to support knowledge of kanji lexical semantics.

## DISCUSSION

Despite our expectation that kanji writing skills (i.e., knowledge of kanji lexical orthography) would be supported by knowledge of precise stroke order sequence, our path model for Japanese kanji lexical knowledge indicates that knowledge of stroke order is limited only to knowledge of kanji radicals. In contrast, knowledge of radicals directly affects all aspects of the kanji lexicon, namely phonology, orthography and semantics. Consequently, stroke order directly affects kanji lexical knowledge only indirectly via knowledge of radicals. The path model also provides an illustration of the close interdependency between knowledge of kanji lexical phonology and orthography, which also directly supports the knowledge of kanji lexical semantics.

The most surprising result in the present study was the lack of direct influence of stroke order on kanji lexical knowledge of phonology, orthography and semantics. Taking previous studies into consideration, we expected a strong relationship between stroke order and orthography. However, contrary to our expectation, stroke order showed a direct influence only on knowledge of kanji radicals. Accordingly, we may have overestimated the function of knowledge of stroke order in terms of establishing kanji lexical knowledge. It is unlikely that practicing handwriting according to the right order of strokes will greatly aid in building one's lexical knowledge of kanji. Despite this actuality, students in Japanese schools spend many hours practicing kana and kanji handwriting which takes away a great amount of time from other subjects within the school curriculum.

The path model for kanji knowledge shows that knowledge of radicals makes a direct contribution to knowledge of lexical orthography, phonology and semantics. As previous studies suggested (e.g., Leong & Tamaoka, 1995; Saito, 1997; Saito, Masuda, & Kawakami, 1998 for Japanese and Ho & Bryant, 1997; Ho, Wong, & Chan, 1999; Leong, 1973; Taft & Zhu, 1995, 1997 for Chinese), radicals serve as a fundamental element in overall knowledge of kanji.

A particularly appealing finding showed that radicals have a strong relationship with knowledge of kanji lexical phonology. In classifying 996 kanji according to the six categories of kanji (六書分類, /rikusyo bunrui/), Watanabe (1976) found that phonetic compound kanji comprised the biggest category at 45.6%. Pictographic kanji made up only 11.5%. Ito (1979) also counted the same number of kanji according to four categorizations: pictographics, ideographs, compound ideographs and phonetic compounds. Out of the 996 kanji, 553 kanji or 55.5% were classified as phonetic compounds. Furthermore, Ito counted another set of kanji and found 1,211 phonetic compound kanji (65.5%) out of 1,850. Ito (1979) suggested that 'if kanji were divided into phonetic and semantic elements, they would be mastered more efficiently, especially by knowing the phonetic elements' (p. 75). Pictographic kanji, which are often cited as typical examples of kanji evolution from the shape of objects, actually comprise only a small number of Japanese kanji.

The phonetic elements of kanji are often used in order to aid in the pronunciation



of kanji. For example, the basic character of 白 (meaning 'white') is pronounced as /haku/ in *On*-reading (original Chinese reading or pronunciation) or /siro/ in *Kun*-reading (Japanese reading) and is often used to construct many other kanji such as 泊, 拍, 箔, 舶, 柏. Yet, all these kanji are read as /haku/ from the original *On*-reading of the basic kanji 白. Leong and Tamaoka (1995) examined whether students at the elementary school level made use of these phonetic elements of kanji. They presented unknown kanji with similar phonetic and semantic elements to students from Grades 4 to 6. For the kanji lexical decision task, students could process unknown kanji with phonetic elements more accurately and quickly than unknown kanji with semantic elements. In addition, Leong and Tamaoka (1995) observed two interesting factors affecting the student performance. First, from a developmental perspective, they found that the higher the student's grade, the better the task was performed. Second, in terms of Japanese language capability, the higher the student's language ability, the better the performance on the task. Therefore, the students' grade and language ability also seemed to affect the performance of kanji processing.

There is still more experimental evidence to show that native Japanese speakers can easily recognize the phonetic elements of kanji. Tamai and Abe (1999) asked Japanese university students to pronounce pseudo-kanji. All the pseudo-kanji in their experiment were constructed with two existing elements ('A' and 'B') arranged side by side to form 'AB'. Although these pseudo-kanji did not exist in Japanese, the study found that students could read almost all of them within an average of 2 seconds. In addition, students were likely to use the right-side element 'B' to name the whole kanji, rather than the left-side element 'A'. Therefore, when native Japanese speakers read these pseudo-kanji, they utilized the phonetic elements out of the pseudo-kanji in order to do so. When they found two phonetic elements in a single pseudo-kanji, they tended to use the one on the right side to aid in identification. This tendency would appear to come from the common experience of students encountering various patterns of kanji that often have their phonetic cues on the right side.

Although it was not an expected result of the present study, the path model postulates the interdependency between knowledge of kanji lexical phonology and orthography, both of which further contribute directly to support knowledge of kanji lexical semantics. The illustration of these three aspects in the path model is congruent with the interactive-activation model proposed by various researchers having done studies on cognitive word processing (e.g., Saito, Masuda, & Kawakami, 1998; Seidenberg & McClelland, 1989; Taft, 1991; Tamaoka & Hatsuzuka, 1995, 1998; Tan & Perfetti, 1997, 1998). In fact, kanji is often described as having the three aspects of 形 /kei/ 'orthography', 音 /oN/ 'phonology', and 義 /gi/ 'semantics' which act interdependently to perform various tasks.

#### CONCLUSION

The present study can be summarized into three points. First, contribution of

kanji knowledge of stroke order to overall kanji lexical knowledge is not as strong or direct as previously thought. Instead, stroke order shows a direct contribution only to knowledge of radicals. Given this, the emphasis placed on handwriting practice in Japanese elementary schools may have a lot more to do with tradition than simply with cognitive knowledge of kanji. Second, knowledge of kanji radicals acts as a basic building block of lexical knowledge in all aspects of kanji orthography, phonology and semantics. The 1,945 basic Japanese kanji are constructed in part (54%) by 24 radicals. Third, the path model indicates that there is a close interdependency of knowledge of kanji orthography, phonology and semantics, which is congruent with various previous studies.

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## Appendix

## (1) Test items for knowledge of kanji stroke order

無 率 門 火 九 例 止 写 垂 臣 飛 堯 左 延 再 集 馬 星 母 布 王 美

## (2) Test items for knowledge of kanji radicals

簿 黒 玉 敗 雲 例 粉 穩 空 臟 飲 情 道 刈 海 疲 思 都 行 離 祈 起

## (3) Test items for knowledge of kanji orthography

礼節 小判 素人 冒險 名誉 戒律 丈夫 実力 慎重 好物  
御頭 雜踏 陰曆 応援 遺言 雨戸 夫婦 沈黙 頭痛 強烈

## (4) Test items for knowledge of kanji phonology

暴露 仮病 介抱 拍子 首相 甘受 確執 出納 強引 率先  
遅延 質屋 淡白 田舎 知己 不朽 羽毛 尽力 読点 寸暇

## (5) Test items for knowledge of kanji semantics

## (A) Opposite meaning

悪意 拡大 乗車 服従 勝利 起点 以上 異常 過去 下品  
進化 公用 赤字 自律 往信 上手 陰気 在家 点火 別居

## (B) Similar meaning

原料 準備 簡単 自負 欠点 精読 救助 一樣 永久 苦心  
入念 形式 天気 有名 方向 所得 決意 改善 真実 安全