

# A Japanese logographic character frequency list for cognitive science research

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This paper describes a Japanese logographic character (kanji) frequency list, which is based on an analysis of the largest recently available corpus of Japanese words and characters. This corpus comprised a full year of morning and evening editions of a major newspaper, containing more than 23 million kanji characters and more than 4,000 different kanji characters. This paper lists the 3,000 most frequent kanji characters, as well as an analysis of kanji usage and correlations between the present list and previous Japanese frequency lists. The authors believe that the present list will help researchers more accurately and efficiently control the selection of kanji characters in cognitive science research and interpret related psycholinguistic data.

In many empirical psycholinguistic studies, word frequency is used as an independent variable to select materials having desired frequency characteristics or as a control variable to match two or more sets of materials in order to minimize performance differences attributable to word frequency effects in word recognition, memory, or retrieval performance. It is sometimes important in psycholinguistic research to focus on the frequency effects of linguistic units smaller than words, such as letter clusters (e.g., bigrams or trigrams), syllabic-type units (syllable vs. nonsyllable), morpheme units, as well as position (i.e., word-initial, word-middle, or word-final positions; Appleman & Mayzner, 1981; Grainger & Jacobs, 1993; Srinivas, Roediger, & Rajaram, 1992). For example, logographic character frequency is a crucial factor to consider in word experiments using languages with logographic scripts, such as Chinese, Japanese, or Korean, where each logographic character may function as a word (Matsunaga, 1996). In short, it is important to carefully control the frequency of printed characters and/or words when empirical psycholinguistic studies are conducted.

In the past, compiling linguistic corpora was an extremely labor-intensive process, plagued by reliability concerns caused by human error. However, as computer technology continues to develop, researchers are obtaining more reliable linguistic corpora and compiling word or character frequency lists on the basis of these corpora for linguistic or cognitive science research. For American English, some widely used word frequency lists are the Brown corpus (Kučera & Francis, 1967), the *American Heritage Word Frequency Book* (Carroll, Davies, & Richman, 1971), and the Thorndike–Lorge count (Thorndike & Lorge, 1944; see the summary in Solso, Juel, & Rubin, 1982). Many of these corpora and lists are available in computer database form and/or through the Internet. Consequently, researchers may use these corpora and lists to control word frequency in empirical language research more easily, efficiently, and accurately than in the past. Corpora for non-English languages, including Japanese, remain limited in number or are still under development (Edwards, 1993; Leech & Fligelstone, 1992).

## **Word and Character Frequency Lists in Japanese**

Over the last two decades, researchers in the area of experimental psychology, especially word recognition and memory, have increasingly focused on the Japanese language, owing to the uniqueness of its writing system (Kess

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& Miyamoto, 1994; Paradis, Hagiwara, & Hildebrandt, 1985; Yokoyama, 1997). In particular, kanji (characters in a logographic script that is one of three scripts used in writing Japanese) has been widely used in experimental materials in order to examine new aspects of cognitive processing, relative to alphabetic language systems, in word recognition and memory and hemispheric involvement in the acquisition and usage of language. However, although many studies have been conducted that use Japanese words, the development of Japanese word frequency lists or kanji character frequency lists has not kept up with the demand for such lists. As a result, for example, the kanji character or word frequency of selected kanji items has often not been controlled or mentioned in Japanese word recognition studies when frequency has not been used as a dependent variable (e.g., Eko & Nakamizo, 1989; Flores d'Arcais & Saito, 1993; Flores d'Arcais, Saito, Kawakami, & Masuda, 1994; Kikuchi, 1996; Morton, Sasanuma, Patterson, & Sakuma, 1992; Nagae, 1994; Naito & Komatsu, 1989; Osaka, 1992; Sekiguchi & Abe, 1992; Wang, 1988; Yokosawa & Shimomura, 1993). In many other studies, the frequency of kanji characters or words is controlled on the basis of (1) the researcher's subjective, intuitive judgment (e.g., Flores d'Arcais, Saito, & Kawakami, 1995; Hatta, Koike, & Langman, 1994; Shimomura & Yokosawa, 1991), (2) the examinee's judgment, such as subjects' rating on selected items (e.g., Yamada, Mitarai, & Yoshida, 1991), (3) the categorization of kanji characters standardized by the Japanese Ministry of Education (e.g., Kyoiku kanji or Gakushu kanji<sup>1</sup>; see, e.g., Hayashi, 1988; Hirose, 1992; Nakagawa, 1994; Sakuma, Itoh, & Sasanuma, 1989), (4) lists compiled by examiners themselves (e.g., Wydell, Butterworth, & Patterson, 1995; Wydell, Patterson, & Humphreys, 1993), or (5) the National Language Research Institute's (NLRI's) 1962 or 1976 word/character frequency lists (Cabeza, 1995; Morikawa, 1985; Naito & Komatsu, 1988; Sasanuma, Sakuma, & Kitano, 1992; Tsuzuki, 1993).

One of the main impediments to the development of Japanese word frequency lists is that the electronic representation of Japanese characters is more complicated than that of alphabetical languages. At present, there are three primary electronic coding systems for Japanese characters (i.e., kana and kanji): Japanese Industrial Standards (JIS), Shift-JIS (SJIS), and Extended Unix Code (EUC). Generally, EUC is used in Unix workstations on the Internet, whereas JIS is used for Japanese electronic mail. However, SJIS has been adopted for use with personal computers. Consequently, if different coding systems are used across tasks or methods, one must transfer one character code to another, using a converter such as the network kanji code conversion filter (NKF).

Another factor impeding the development of Japanese frequency lists is the Japanese writing system itself, which comprises three types of orthographies—hiragana, katakana, and kanji. Hiragana and katakana are syllabic scripts in which each symbol represents a sound unit (a syllable). These scripts each contain 46 basic forms, with additional diacritic and historical forms giving a total

of 83 hiragana and 86 katakana forms encoded in JIS and EUC. Hiragana and katakana share the same syllabic-sound representation and can be transcribed one by the other (e.g., a syllable /sa/ is transcribed as さ in hiragana and サ in katakana). The third Japanese orthography, kanji, is a logographic script adopted from the Chinese language, in which each symbol represents meaning and functions as a morpheme. A single kanji character may represent an independent word (e.g., 本 /hon/, *book*) or part of a word (e.g., 本 in 日本 /nihon/, *Japan*). The meaning of each constituent (i.e., a single character) in a kanji word is sometimes less clear or transparent than that of an independent word. Owing to the manner in which kanji characters were transferred from the Chinese to the Japanese language over the centuries, a single kanji character may have obtained more than one reading and may be pronounced in several different ways. For instance, the character 頭, which means *head*, is read as /to/, /do/, /zu/, /ju/, /saki/, /atama/, /kashira/, /kobe/, /kaburi/, and /tsumuri/ (Coulmas, 1989). Furthermore, a great number of homophones (i.e., kanji characters that share a common pronunciation but represent different meanings) occur in Japanese kanji usage. For instance, 木 (*tree*), 気 (*feeling*), 機 (*chance*), 輝 (*to glow*), 期 (*period*), and many others are all pronounced /ki/. Thus, in contrast to both hiragana and katakana, kanji characters do not have a systematic sound representation or a one-to-one relationship between sound and symbol. The number of kanji characters is quite large and practically uncountable (i.e., kanji dictionaries may contain between 12,000 and 50,000 entries; Kindaichi, 1991; Morohashi, 1989).

Among hiragana, katakana, and kanji, usually only one is conventionally chosen and used to write a given Japanese word. Hiragana is used primarily for words that have a grammatical function, such as particles or case-makers, and for some native Japanese content words. Katakana is used for loan words (i.e., words mainly borrowed from western languages, such as English, French, and Portuguese). Kanji is used for content words, such as nouns, verbs, and adjectives.<sup>2</sup> Thus, a single Japanese sentence is usually written with all three scripts combined.

However, choice of script is not always consistent and may vary, depending on a writer's intention or a publisher's guidelines for style. For instance, the Japanese word meaning *egg*, pronounced /tamago/, could be written as たまご in hiragana in one context, but as 卵 in kanji in another context. In their study of the *subjective frequency of script type*, Ukita, Sugishima, Minagawa, Inoue, and Kashu (1996) studied 750 Japanese words that can be written in more than one Japanese script. The study was conducted by asking 836 Japanese college students to judge whether a given word (written in a given script) is seen often, occasionally, or rarely. The results showed that more than half of the tested words were identified as words seen in more than one script. This inconsistency in orthographic representation makes word counting in Japanese extremely difficult and complicated. In addition, word segmentation in Japanese is more complex than that in English, since word boundaries are not separated with

spaces in written texts. A single kanji character could be a morpheme of a part of a word or a word by itself and may be pronounced differently, depending on the context. Without clear word boundaries, compound words are easily formed. Thus, complications in word counting and segmentation present nontrivial challenges for those compiling word frequency lists in Japanese.

Owing to these problems, few have attempted to make word and kanji character frequency lists in Japanese. The NLRI in Japan published a word frequency list in 1962, based on a corpus derived from 90 different journals and magazines with five different genres, all published in 1956. A total of 140 million tokens, consisting of 40,000 different words (i.e., types), were analyzed in order to develop a frequency list of words possessing a frequency of at least nine. In 1976, the NLRI also published a kanji (character) frequency list based on a corpus published in 1966 derived from three major newspapers, *Asahi*, *Yomiuri*, and *Mainichi*. This corpus provided a total of 991,375 kanji tokens and a frequency list of 3,213 different kanji characters. This was the first attempt to analyze a Japanese corpus with computers, and the results were used to standardize and regulate the use of kanji characters for mass media and education in Japan. For the past three decades, researchers have used these lists as an informative resource for many language-related research projects. In 1997, the NLRI published its 1962 list in floppy disk format (NLRI, 1997).

However, several problems are associated with the use of the NLRI lists for empirical studies. First, the lists are based on dated media samples. Almost three or four decades have passed since the corpora of the 1962 and 1976 lists were collected. Consequently, the reliability of these lists is open to question, since the use of words or kanji in mass media and education may have changed. Second, the 1976 list does not identify low-frequency kanji. The 1962 word list does not contain words possessing a frequency less than nine, and the 1976 kanji list does not provide characters possessing a frequency less than nine. Low-frequency words or characters with the frequency of one are required for many empirical language studies. Third, the lists are not easily accessed, since both were available only in hard copy form until recently. Although the NLRI 1962 list is now available in floppy disk format,<sup>3</sup> it is not as accessible, especially to researchers outside Japan, as other language lists that are available over the Internet. It is crucial that these lists be accessible to researchers in computer database format to help make the control and selection of word and kanji frequency simpler, more effective, and more accurate.

In 1994, the situation for Japanese corpus linguistics changed for the better, when CD-ROM databases of newspaper articles became available at a relatively low cost. These computerized corpora of newspapers made it possible to develop an updated kanji frequency list accessible on computers and over the Internet.

The purpose of the present project is to develop a new kanji character frequency list to be made accessible

through the Internet. In consideration of the word segmentation and other problems mentioned above, the authors decided to start by developing frequency lists of kanji characters before attempting kanji word frequency lists. Furthermore, the current usage of kanji in printed mass media is analyzed on the basis of a comparison with 1966 frequencies from the NLRI 1976 list.

#### Source of Data, Method of Analysis, and Results

The present corpus is available on a CD-ROM entitled *CD-HIASK'93* (Nichigai Associates & *Asahi*, 1994), which contains the text of articles appearing in a major newspaper, covering 1 year of morning and evening editions published in 1993. The data analysis was conducted on Unix workstations, with the program written by the authors in Perl and awk. First, headlines were excluded<sup>4</sup> from the approximately 110,000 articles<sup>5</sup> in the data. Second, all the printable characters were counted and ranked by frequency from highest to lowest in each category (e.g., kanji, hiragana, or katakana). Frequency ratio (%) and cumulative frequency ratio (%) were also calculated.

The corpus provided a total of 56,563,595 printable characters,<sup>6</sup> making it, at the time, the largest corpus used for the compilation of Japanese word/character frequency lists. Ideally, in addition to newspapers, corpora would be collected from other printed texts, such as magazines and novels of various genres. However, most of these printed materials are not yet available in computer-readable form. As a result, it is not currently feasible to gather sufficient amounts of data from these materials. Furthermore, copyright issues complicate the process of copying and studying printed mass media in Japan and may pose an obstacle to making lists based on such materials freely available to the public.

The 56,563,595 characters in the 1993 collection of the *Asahi* newspaper form the basis of the present character frequency list and break down into the general categories shown in Table 1. A total of 23,408,236 kanji tokens were found, making up 4,476 different types. Kanji covered 41% of all the printable characters in the newspapers. The central result of this survey is a list of the kanji characters found, sorted according to their frequencies. The first 3,000 characters are listed in Appendix A with their ranking, raw frequency, frequency ratio (%), and cumulative frequency ratio (%). In addition, frequency lists of hiragana and katakana characters are also included in Appendices B and C,<sup>7</sup> respectively, with the same headings.

**Cumulative percentage of kanji character use.** The cumulative frequency ratio of kanji characters, ranked from high to low frequency, is shown in Table 2. Although it has been conventionally said among learners and teachers of Japanese that knowledge of 2,000–3,000 kanji characters is required for one to read Japanese newspapers, this conventional wisdom was not supported by the present data. According to the results of the present analysis, the top 500 most frequent kanji characters accounted for approximately 80% of total kanji use. Furthermore, the top 1,600 most frequent characters covered 99%

**Table 1**  
**Printable Character Type Totals**

Characters	Types	Tokens	Frequency Ratio (%)
Kanji	4,476	23,408,236	41.38
Hiragana	83	20,711,361	36.62
Katakana	86	3,608,288	6.38
Punctuation and symbols	99	7,406,035	13.09
Arabic numerals	10	1,169,902	2.07
Latin alphabet	52	259,773	0.46

of total use and the rest—that is, the next 3,000 characters—made up only 1% of the total kanji use.

The cumulative frequency ratio obtained from the 1966 corpus (i.e., the NLRI 1976 list) is also indicated in Table 2. The results from the two corpora, which are 30 years apart, indicate almost identical ratios for each frequency level. Furthermore, according to the current frequency list, of the 500 most frequent characters ranked in 1966, 445 characters are also ranked among the 500 most frequent characters in the 1993 corpus, but all of those 55 characters lower than the first 500 fall within the 1,000 most frequent characters in the 1993 corpus. Thus, the high-frequency kanji characters that account for over 80% of the total kanji use have not changed much in the last 30 years.

**Correlation coefficient of chronological character use.** To examine change in kanji usage over the past 30 years, a correlation analysis was conducted between the present 1993 list and the NLRI 1976 list based on the 1966 newspaper corpus. The raw frequencies of the 3,000 highest frequency characters in the present list<sup>8</sup> and the equivalent characters in the NLRI 1976 list were converted to their base-10 logarithmic equivalents<sup>9</sup> and submitted to a Pearson correlation coefficient analysis. The result indicates a high correlation ( $r = .95$ ) and was significant [ $F(1,3029) = 28,037.67, p < .01$ ]. In Figure 1, although low-frequency characters scatter more than high-frequency characters, the distribution is close to linear.<sup>10</sup> Thus, on the basis of the analysis, it appears that the overall pattern of kanji usage has not significantly changed over the past 30 years.

**Discussion**

In the present project, the authors introduced the first computer-based kanji character frequency lists derived from the largest corpus of Japanese newspaper texts. It is important to control the frequency of kanji characters in psycholinguistic studies, although researchers have often neglected this variable, owing to the unavailability of reliable frequency lists. Using the present list, the authors have compared kanji usage observed in data from 1966 and 1993. Although changes in language usage are often discussed in Japanese linguistic studies in terms of syntax, phonology, lexicography, and pragmatics, the usage of kanji characters did not show any significant variation over the past 30 years.

However, there are several issues left to discuss in the present study. First, the corpus of the present word list was

developed from a single newspaper. Although the newspaper used in the present project is a major Japanese newspaper that currently publishes 10 million copies every day for 120 million people in Japan (one paper is usually read by more than one person), there may be some bias in terms of the selection of topics and style. Goto (1995) warned of this problem for researchers using a corpus derived from newspapers, arguing that newspapers usually focus heavily on politics, economics, and foreign policy. As a result, vocabulary related to those areas may appear in newspapers more often than in other types of published materials. In addition, each newspaper has its own regulations or standards for choosing words and expressions. Furthermore, the number of newspaper writers, compared with the number of readers, is limited, and consequently, the effects of idiosyncratic writing styles and word selection may be exaggerated, causing a bias in any analysis based exclusively on such data. Since the present character list was made from a corpus of newspapers, future research should be aimed at employing a variety of genres and types of publications to develop linguistic corpora.

To examine this issue of the bias in the present newspaper corpus, a correlation analysis of kanji frequency was conducted among the present list developed with 1993 newspapers, the NLRI 1962 list with 1956 magazines, and the NLRI 1976 list with 1966 newspapers. The results indicated a significant and high correlation between the 1956 magazine list and the 1966 newspaper list ( $r = .92, p < .01$ ), and between the 1956 magazine list and the 1993 newspaper list, ( $r = .89, p < .01$ ; see Table 3). The higher correlation between the 1956 and 1966 lists was probably due to the closer timing of data collection, compared with that between the 1956 and 1993 lists. However, these high correlation results may indicate that the data collected from a single newspaper in this present analysis may be a reliable resource for predicting kanji character frequency in printed mass media in general.

To examine the reliability of the present list, an additional correlation analysis was conducted with the kanji characters grouped according to frequency level. The 3,000 ranked characters were divided into three groups: (1) high-frequency characters ranked from 1 through 1,000, (2) mid-frequency characters ranked from 1,000

**Table 2**  
**Cumulative Frequency Ratio of Kanji Character Use**

Frequency Rank	Cumulative Frequency Ratio (%)	
	1993	1966
10	10.00	10.61
50	27.41	27.64
100	40.71	40.15
200	57.02	56.05
500	80.68	79.42
1,000	94.56	93.88
1,500	98.63	98.40
2,000	99.72	99.63
2,500	99.92	99.90
3,000	99.97	99.98

Note—Frequency rank = size of the group of highest frequency characters.

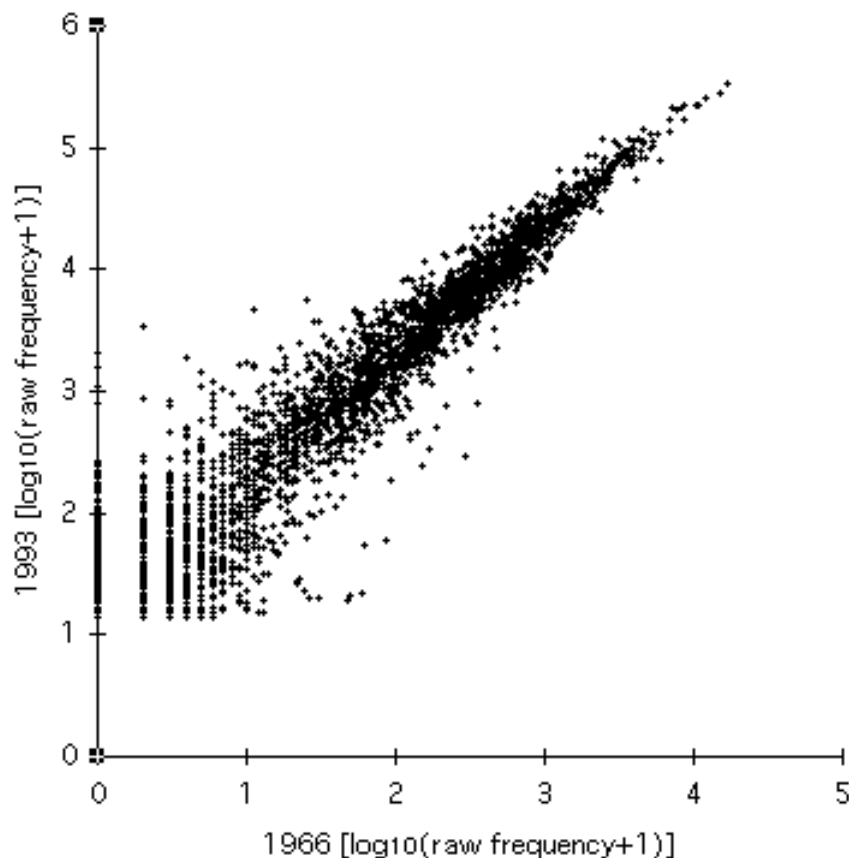


Figure 1. Kanji usage correlation distributions of top 3,000 characters between 1966 and 1993.

though 2,000, and (3) low-frequency characters ranked from 2,001 through 3,000. Although the correlations vary, depending on the levels and lists, all were significant at the  $p < .01$  level (see Table 4).

The results indicate high correlations at the high-frequency levels between the present list and the other two lists. Notably, a high correlation of the 1993 newspaper list with the 1966 newspaper list at the high-frequency level ( $r = .92$ ) indicates again that the present list can be a reliable resource, especially at the high-frequency levels, although the data were collected from a single newspaper.

In contrast, at the low-frequency levels, the correlations of the present list are low with the 1966 list ( $r = .43$ ) and with the 1956 list ( $r = .28$ ). This may imply a drastic change of kanji usage over the decades or some unreliability of the present list at the low-frequency level. The first interpretation is easily dismissed, considering the overall high correlations with other lists, as indicated in Table 3, and the similar low correlation between the 1966 and 1956 lists at low-frequency level ( $r = .40$ ), which were developed relatively close in time. Does this mean that the present list is not reliable at the low-frequency list? That does not have to be the conclusion. The most likely interpretation is that the low correlations are due to the differences in size of the corpora of the three lists.

The size of the 1993 kanji corpus was much greater than the other two, containing 23,408,236 tokens and 4,476 types. The 1966 list was compiled on the basis of 991,375 kanji tokens and 3,213 types, and the 1956 list was based on 280,094 kanji tokens and 3,328 types. Since the present correlation analysis was conducted with the 3,000 highest ranked characters in the 1993 list, some characters did not even exist in the 1966 or 1956 list. For instance, among the 38 characters ranked at 2,996 in the 1993 list, 17 characters were not included in the 1956 list, and 23 characters were not included in the 1966 list. Thus, the size difference in the corpus seems to be the most probable reason for the low correlation between the lists. If that is the case, the largest corpus could be the most reliable information for low-frequency characters—that is, the present list can be plausibly used as the most

Table 3  
Correlation of Kanji Frequency Among 1993, 1966,  
and 1956 Lists With All 3,000 Ranked Characters

List	1993 N	1966 N	1956 M
	<i>r</i>	<i>r</i>	<i>r</i>
1993 N	1.00		
1966 N	.95	1.00	
1956 M	.89	.92	1.00

Note—N, newspapers; M, magazines.

**Table 4**  
**Correlation of Kanji Frequency Among 1993, 1966, and 1956 Lists With High-, Mid-, and Low-Frequency Ranked Characters**

List	Frequency	1966N	1956M
		<i>r</i>	<i>r</i>
1993N	high	.92	.80
	mid	.68	.55
	low	.43	.28
1966N	high	1.00	.86
	mid	1.00	.60
	low	1.00	.40

Note—N, newspapers; M, magazines. High = characters ranked from 1st through 1,000th. Mid = characters ranked from 1,001st through 2,000th. Low = characters ranked from 2,001st through 3,000th.

reliable resource. Thus, the correlation analysis among the three lists can support the high reliability of the present list.

Another issue relating to the present project is the reliability of a computerized Japanese corpus (i.e., *CD-HIASK'93*), transformed from the original hard copy form (i.e., the *Asahi* newspaper). There are few instances in which kanji characters appearing in the newspaper did not appear encoded as kanji in the current CD-ROM corpus. The original locations of those characters in the newspaper were marked by symbol characters, such as the “geta mark” (≡) in the electronic format (Yokoyama, Sasahara, Nozaki, & Long, 1998). This is due to several revisions made in JIS,<sup>11</sup> which is an electronic character encoding standard and assigns a code to approximately 6,300 kanji characters. Although only a few hundred of these cases were observed out of 23 million kanji tokens in the current CD-ROM corpus and these were among the lowest frequent characters, this inconsistency between printed and electronic data formats should be kept in mind when low-frequency characters are used or focused on.

In the present project, a new kanji character frequency list was developed with the largest newspapers corpus in Japanese corpus linguistic history. Although there are still some issues left, the present list provides useful information on kanji usage in the current printed media. Furthermore, the present list has become available and accessible in computer database over the Internet,<sup>12</sup> which helps researchers control and interpret logographic psycholinguistic studies more accurately and efficiently.

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## NOTES

1. The set of Kyoiku kanji contains 881 characters to be taught in elementary schools. These characters were selected by the Ministry of Education in 1948. This set was revised, and 1,006 characters were selected and defined as Gakushu kanji for the same purpose in 1989.
2. Verbs, adjectives, and adverbs are often written in a combination of kanji and kana characters. The stem of those words, which does not change in conjugation, is written in kanji, and the inflectional endings in hiragana. For instance, 食べる /ta-beru/ (to eat), 大きい /oo-kii/ (big), and 早く /haya-ku/ (early) are all written with the first character in kanji and the rest in hiragana.
3. Owing to Japanese copyright ownership issues, it may not be feasible to provide the 1976 NLRJ kanji list in computer database form in the near future.
4. Headlines were excluded from the present analysis because inconsistencies were observed in headlines in hard copy versions of the newspapers, as compared with headlines downloaded from the CD-ROM.
5. In addition to the articles downloaded from CD-ROM, 114 articles were input manually into the database, since they were not included in the CD-ROM.
6. These printable characters include kanji, hiragana, katakana, Latin alphabets, Arabic numerals, punctuation, and symbols (commas, periods, quotation markers, etc.).
7. Appendix C, katakana frequency list, is cited from Nozaki, Chikamatsu, and Yokoyama (1997).
8. The first 3,000 ranks included 3,031 characters in the 1993 list.
9. Logarithmic transformation was used because the data were positively skewed—that is, there were more low-frequency characters and fewer high-frequency characters. A value of 1 was added before the logarithmic transformation,—that is,  $\log_{10}(\text{raw frequency}+1)$  instead of  $\log_{10}(\text{raw frequency})$ . This is because many of lowest frequency characters in the 1993 list were not found at all in the 1966 list (i.e., zero occurrence), which would make the logarithmic transformation impossible.
10. No value of logarithmic transformation was plotted between 0 and 1 in the y-axis because all top 3,000 ranked characters occurred more than 13 times in the 1993 list and the value of  $\log_{10}(\text{raw frequency}+1)$  was more than 1.
11. JIS has been revised four times over the last two decades, in 1978, 1983, 1990, and 1997. In each revision, a few new codes were added or replaced with old codes for kanji characters. Consequently, although it is very rare, some characters may appear different, depending on the version used for decoding on computers. For instance, four kanji characters that are part of the 1983 JIS standard were replaced by symbol characters on the CD-ROM. For further discussion, see Yokoyama et al. (1998).
12. The presently developed kanji character frequency list is available at <http://nozaki-lab.ics.aichi-edu.ac.jp/> on the World-Wide Web.

APPENDIX A  
Kanji Character Frequency List

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
1	日	336465	51	発	79543	101	取	50477	151	持	36776	201	向	29488	251	切	25212
2	一	285089	52	方	79040	102	用	50447	152	支	36750	202	結	29372	252	福	24992
3	十	254534	53	高	76965	103	治	50357	153	和	36728	203	岡	29329	253	変	24944
4	二	223075	54	内	76927	104	現	49844	154	加	35822	204	込	29150	254	店	24852
5	人	218967	55	百	76402	105	法	49730	155	海	35672	205	共	29075	255	案	24761
6	大	218693	56	金	75885	106	気	49272	156	続	35583	206	品	28933	256	屋	24643
7	年	216931	57	七	75735	107	経	49270	157	正	35472	207	信	28881	257	得	24601
8	会	214989	58	定	72917	108	公	48710	158	安	35185	208	局	28645	258	住	24598
9	国	199502	59	子	72711	109	話	48152	159	進	34984	209	集	28644	259	木	24517
10	三	173495	60	的	72485	110	最	47347	160	売	34845	210	活	28343	260	台	24395
11	本	170127	61	対	72438	111	野	47088	161	書	34842	211	建	28332	261	始	24379
12	長	141025	62	手	71638	112	川	46819	162	水	34761	212	引	28252	262	価	24237
13	中	138362	63	立	71475	113	家	46750	163	知	34483	213	交	28078	263	無	24203
14	五	129146	64	田	70301	114	務	46373	164	工	34475	214	反	28047	264	打	24143
15	出	128173	65	回	69078	115	制	46263	165	近	34449	215	告	28035	265	昨	24010
16	事	117146	66	選	66881	116	外	46208	166	指	34355	216	利	28026	266	在	23961
17	社	116636	67	今	66659	117	区	45537	167	電	34184	217	億	27919	267	感	23799
18	市	116094	68	連	65066	118	作	45442	168	心	34036	218	済	27543	268	費	23693
19	者	114768	69	県	64462	119	性	45322	169	改	34030	219	次	27526	269	口	23422
20	月	114266	70	代	64343	120	期	45294	170	物	33863	220	件	27462	270	聞	23384
21	四	113331	71	開	64144	121	設	44641	171	点	33828	221	村	27355	271	情	23300
22	九	113226	72	約	62107	122	戦	44302	172	北	33755	222	考	27353	272	歳	23215
23	同	107910	73	力	61533	123	名	44160	173	元	33499	223	投	27286	273	料	23190
24	自	107594	74	関	60381	124	来	43502	174	文	33456	224	減	27200	274	藤	23153
25	政	104317	75	体	58480	125	要	43500	175	午	33206	225	面	27115	275	論	23025
26	時	103394	76	明	58291	126	意	43371	176	記	33090	226	派	27115	276	役	22841
27	業	103093	77	山	58290	127	機	43047	177	初	32808	227	任	27108	277	示	22768
28	分	99180	78	動	57575	128	言	42392	178	報	32752	228	解	27081	278	各	22672
29	上	98454	79	万	57238	129	産	42157	179	車	32680	229	運	26996	279	営	22402
30	前	96880	80	通	57128	130	成	41775	180	府	32674	230	際	26698	280	空	22371
31	生	95740	81	目	56649	131	氏	41498	181	資	32619	231	側	26673	281	参	22244
32	合	95483	82	千	56562	132	数	41321	182	首	32609	232	広	26386	282	革	22213
33	行	95351	83	全	56089	133	権	40315	183	町	32408	233	税	26328	283	州	22108
34	部	95054	84	京	55727	134	教	39517	184	世	32407	234	省	26272	284	基	22071
35	地	94297	85	実	55624	135	題	39433	185	女	32208	235	使	25994	285	流	22038
36	後	88040	86	問	54953	136	道	39407	186	拳	31999	236	増	25973	286	領	21999
37	議	87500	87	決	54695	137	保	38994	187	院	31607	237	認	25858	287	死	21864
38	党	87133	88	相	54614	138	受	38775	188	委	31539	238	付	25779	288	井	21843
39	八	86828	89	米	54562	139	勝	38645	189	査	31519	239	官	25779	289	容	21808
40	民	86051	90	当	54077	140	総	38639	190	界	31240	240	求	25754	290	疑	21612
41	六	85900	91	度	54048	141	原	38404	191	団	31087	241	半	25640	291	検	21533
42	見	85767	92	下	54047	142	思	38272	192	校	30621	242	別	25521	292	古	21530
43	問	84934	93	主	53796	143	以	37777	193	予	30617	243	阪	25465	293	私	21472
44	新	84073	94	理	52743	144	強	37577	193	第	30617	244	企	25377	294	特	21456
45	員	83847	95	表	52129	145	平	37547	195	画	30581	245	朝	25330	295	係	21338
46	入	82282	96	化	52076	146	協	37433	196	計	30563	246	策	25292	296	格	21211
47	場	81652	97	調	51942	147	組	37309	197	判	30441	247	直	25281	297	勢	20973
48	円	80909	98	所	51314	148	島	37052	198	先	30439	248	男	25279	298	宮	20969
49	学	80845	99	小	51107	149	都	36971	199	西	30405	249	統	25273	299	神	20783
50	東	79738	100	不	50768	150	多	36947	200	重	30219	250	職	25253	300	式	20690
CF		27.4104	CF		40.7119	CF		49.9366	CF		57.0228	CF		62.8109	CF		67.7131



## APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
301	止	20667	351	敗	17216	401	斤	14694	451	愛	12884	501	樣	11241	551	火	9865
302	置	20579	352	術	17108	402	武	14668	452	橫	12865	502	園	11203	552	他	9828
303	果	20557	353	說	17106	403	造	14659	453	族	12820	503	橋	11197	553	滿	9827
304	放	20507	354	足	17040	404	佐	14601	454	被	12773	504	答	11174	554	錄	9805
305	割	20281	355	施	16982	405	与	14566	455	供	12765	505	隊	11130	555	丸	9796
306	裁	20234	356	食	16925	406	視	14564	456	医	12713	506	察	11115	556	夜	9792
307	少	20100	357	補	16851	407	副	14471	457	室	12706	507	移	11066	557	惡	9780
308	土	20027	358	起	16798	408	試	14383	458	映	12685	508	児	11047	558	融	9768
309	演	19987	359	乘	16746	409	質	14369	459	末	12631	509	程	11046	559	介	9762
310	有	19917	360	球	16712	410	限	14335	460	負	12610	510	細	11037	560	候	9722
311	線	19884	361	断	16709	411	路	14264	461	個	12585	511	独	11020	561	河	9711
312	石	19633	362	残	16660	412	態	14262	462	器	12552	512	光	11012	562	討	9708
313	語	19561	363	額	16657	413	景	14202	463	低	12544	513	捕	10955	563	单	9699
314	過	19517	364	導	16610	414	象	14129	464	若	12482	514	命	10871	564	達	9684
315	終	19363	365	算	16602	415	技	14120	465	字	12461	515	推	10822	565	林	9642
316	必	19359	366	南	16563	416	助	14113	466	追	12443	516	洋	10796	566	効	9634
317	転	19320	367	港	16520	417	郎	14053	466	差	12443	517	衛	10795	567	署	9624
318	確	19254	368	証	16463	418	準	13949	468	值	12393	518	専	10790	568	極	9595
319	両	19246	369	真	16324	419	待	13933	469	種	12334	519	失	10752	569	系	9546
320	送	19104	370	究	16308	420	驗	13911	470	鉄	12259	520	評	10695	570	非	9532
321	状	18976	371	沢	16280	421	境	13818	471	風	12175	521	婦	10644	571	針	9444
322	害	18815	372	病	16259	422	親	13817	472	申	12148	522	白	10564	572	識	9436
323	提	18796	373	談	16201	423	席	13803	473	味	12137	523	兵	10563	573	久	9377
324	位	18746	374	争	16165	424	形	13788	474	整	12125	524	訪	10557	574	憲	9337
325	研	18714	375	急	16136	425	展	13711	475	音	11987	525	辺	10535	575	吉	9317
326	護	18702	376	楽	16093	426	頭	13708	476	退	11983	525	請	10535	576	庫	9314
327	収	18605	377	松	16063	427	戸	13646	477	守	11968	527	呼	10451	577	森	9311
328	再	18596	378	落	16052	428	谷	13624	478	注	11946	528	離	10447	578	並	9310
329	消	18557	379	援	16023	429	働	13525	479	返	11923	529	深	10345	579	益	9281
330	軍	18521	380	製	16017	430	沉	13490	480	環	11863	530	師	10289	580	接	9254
331	能	18513	381	何	16005	431	仕	13480	481	型	11808	531	史	10288	581	登	9160
332	比	18385	382	率	15978	432	葉	13479	482	太	11804	532	処	10249	582	衆	9104
333	銀	18379	383	宅	15916	433	早	13458	483	天	11756	533	段	10228	583	擊	9101
334	商	18302	384	例	15729	434	株	13379	483	客	11756	534	材	10224	584	券	9083
335	輪	18194	385	備	15708	435	監	13312	485	影	11739	535	販	10220	585	搜	9081
336	崎	18109	386	可	15703	436	授	13292	486	財	11721	536	積	10197	586	故	9009
337	警	18075	387	訴	15625	437	量	13285	487	含	11681	537	歩	10107	587	閣	9000
338	規	18056	388	構	15566	437	門	13285	488	望	11648	538	振	10094	588	城	8998
339	由	17958	389	番	15514	439	票	13241	489	紙	11624	539	修	10093	589	秋	8989
340	農	17877	390	張	15401	440	想	13219	490	觀	11516	540	競	10057	590	青	8975
341	常	17855	391	声	15245	441	然	13194	491	買	11465	541	婦	10029	591	母	8951
342	応	17850	392	美	15241	442	渡	13150	492	姿	11440	542	号	10023	592	周	8940
343	育	17845	393	着	15190	443	審	13125	493	科	11433	543	雄	9992	593	韓	8902
344	違	17785	394	担	15101	444	課	13069	494	響	11398	544	階	9991	594	編	8892
345	夫	17655	395	劳	15078	445	良	13056	495	花	11388	545	根	9986	595	責	8867
346	士	17596	396	優	14952	446	伝	13043	496	復	11306	546	船	9967	596	寄	8856
346	義	17596	397	域	14941	447	英	13009	497	春	11296	547	賞	9944	597	模	8847
348	身	17527	398	難	14846	448	管	13004	498	述	11293	548	赤	9908	598	鮮	8815
349	配	17505	399	防	14835	449	条	13000	499	好	11289	549	歌	9882	599	囚	8737
350	館	17362	400	幹	14780	450	念	12958	500	去	11273	550	浜	9873	600	催	8733
CF		71.7398	CF		75.1727	CF		78.1088	CF		80.6841	CF		82.9314	CF		84.9251

APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
601	右	8727	651	核	7701	701	占	6760	751	厚	6064	801	德	5313	851	遠	4810
602	央	8705	652	療	7693	702	留	6748	752	辭	6063	801	固	5313	852	老	4798
603	走	8703	653	余	7692	703	罪	6740	753	香	6062	803	震	5300	853	雜	4796
604	江	8700	654	週	7691	704	級	6736	754	灣	6021	803	熊	5300	854	狙	4787
605	障	8656	655	波	7654	705	竹	6735	755	暴	6009	805	坂	5293	855	削	4780
605	易	8656	656	完	7624	706	短	6728	756	丘	6003	806	塚	5292	856	臨	4760
607	清	8652	657	織	7616	707	等	6725	757	勤	5980	807	測	5280	857	燒	4759
608	速	8614	658	類	7594	708	換	6689	758	抗	5949	808	贊	5273	858	底	4754
609	博	8547	659	左	7545	709	將	6683	759	倍	5939	809	倒	5270	859	為	4747
610	歐	8543	660	講	7507	710	尾	6664	760	背	5920	809	旬	5270	860	昇	4724
611	友	8533	661	津	7503	711	芸	6632	761	昭	5845	811	普	5254	861	養	4720
612	秒	8517	662	顏	7492	712	每	6627	762	途	5831	812	版	5251	862	儀	4716
613	督	8505	663	駅	7454	713	締	6625	763	戻	5817	813	停	5231	863	努	4715
614	健	8477	664	就	7440	714	寺	6623	764	貨	5811	814	築	5217	864	混	4710
615	休	8473	665	夏	7423	715	丁	6590	765	帶	5768	815	脱	5208	865	樹	4701
616	除	8472	666	舞	7422	716	植	6556	766	順	5766	816	執	5201	866	温	4675
617	涉	8468	667	靡	7402	717	羽	6552	767	押	5747	817	輕	5196	867	宣	4674
618	飛	8448	668	裝	7382	718	亡	6545	768	曲	5742	818	練	5172	868	繩	4672
619	獻	8444	669	降	7376	719	迎	6536	769	岸	5738	819	康	5169	869	創	4663
619	均	8444	670	批	7357	720	績	6529	770	徒	5727	820	街	5163	870	絕	4637
621	存	8443	671	否	7351	721	旅	6527	771	崩	5724	821	浦	5158	871	郵	4627
622	航	8430	672	賀	7339	722	岩	6524	772	源	5703	822	避	5143	872	密	4623
623	介	8422	673	破	7285	723	盟	6507	773	彼	5686	823	棄	5141	873	令	4622
624	給	8327	674	紀	7224	723	喜	6507	774	則	5650	824	列	5120	874	惠	4612
625	藏	8320	675	腦	7201	725	沖	6505	775	輪	5647	825	損	5118	875	契	4595
626	超	8298	676	債	7188	726	陸	6501	776	精	5635	825	患	5118	876	線	4591
627	座	8248	677	廠	7176	727	標	6488	777	逆	5618	827	載	5109	877	救	4585
628	採	8194	678	藥	7175	728	弘	6480	778	困	5601	828	爆	5106	878	屆	4553
629	殺	8165	679	便	7168	729	替	6472	779	聰	5590	829	居	5094	879	齡	4532
630	從	8156	680	歷	7135	730	奈	6447	780	善	5587	830	募	5082	880	願	4521
631	未	8129	681	拔	7106	731	皇	6380	780	刑	5587	831	陣	5080	881	恐	4513
632	色	8125	682	危	7083	732	許	6372	782	池	5584	832	像	5064	882	遊	4512
633	險	8106	683	延	7069	733	因	6355	783	踏	5572	833	傷	5056	883	揭	4499
634	富	8102	684	冷	7061	734	伸	6332	784	服	5568	834	漁	5037	884	息	4492
635	幅	8101	685	興	7036	735	熱	6327	785	適	5547	835	乱	5024	885	致	4466
636	鹿	8098	685	越	7036	736	攻	6324	786	犯	5499	836	卒	5021	886	納	4452
637	旧	8090	687	馬	7023	737	永	6310	787	遲	5496	837	迫	5018	887	幕	4449
638	読	8069	688	異	6959	738	繼	6276	788	墨	5477	838	絡	4984	888	枚	4446
639	遣	8047	689	父	6921	739	王	6251	789	倉	5458	839	遣	4981	889	賃	4439
640	札	8007	690	劇	6910	740	散	6237	790	壞	5439	840	鬪	4967	890	血	4433
641	激	8002	690	拡	6910	741	玉	6233	791	角	5433	841	星	4961	891	更	4432
642	摘	7982	692	速	6902	742	油	6225	792	僚	5427	842	緊	4930	892	葬	4431
643	突	7968	693	買	6891	743	妻	6224	793	略	5388	843	諸	4918	893	衰	4407
644	黒	7943	694	及	6874	744	属	6217	794	欠	5346	844	惑	4904	894	栄	4404
645	写	7915	695	素	6836	745	禁	6210	795	郡	5344	845	彦	4887	895	抛	4400
646	豊	7908	695	覚	6836	746	志	6186	796	雨	5333	846	鳥	4874	896	染	4397
647	具	7901	697	頼	6796	747	静	6159	797	層	5326	847	跡	4862	897	岐	4387
648	司	7881	698	盛	6791	748	印	6099	797	償	5326	848	之	4848	898	抱	4379
649	苦	7851	699	習	6780	749	維	6094	799	婚	5324	849	浮	4837	899	需	4378
649	伊	7851	700	般	6779	750	幸	6067	800	宿	5314	850	庭	4823	900	兆	4370
CF		86.6954	CF		88.2397	CF		89.6189	CF		90.8281	CF		91.9183	CF		92.8971

## APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
901	房	4368	951	君	3878	1000	泉	3387	1051	俊	2893	1101	菱	2556	1151	紛	2262
902	刊	4362	952	拔	3875	1002	依	3376	1052	沿	2886	1102	魚	2554	1152	貞	2260
903	著	4346	953	痛	3866	1003	埋	3372	1053	贖	2884	1103	悲	2552	1153	舍	2259
904	巨	4345	954	秘	3858	1004	症	3362	1054	衝	2883	1104	荒	2548	1154	衣	2244
905	逃	4304	955	詰	3854	1005	宗	3358	1055	誉	2882	1105	吸	2537	1155	賄	2240
906	雇	4298	956	節	3853	1006	砂	3355	1056	豪	2876	1106	誤	2528	1155	童	2240
907	貴	4293	957	陽	3840	1007	粹	3344	1057	排	2874	1106	握	2528	1155	快	2240
908	招	4284	958	了	3835	1007	互	3344	1058	華	2857	1108	籍	2519	1158	訓	2239
909	隆	4278	958	緩	3835	1009	駐	3329	1059	孝	2849	1109	己	2515	1159	肝	2237
909	迷	4278	960	託	3831	1010	敬	3308	1060	兼	2848	1110	句	2513	1160	毛	2236
911	汚	4271	961	端	3827	1011	群	3290	1061	雪	2846	1111	袋	2509	1161	礼	2235
912	仲	4262	962	功	3820	1012	曜	3287	1062	唱	2814	1112	誠	2501	1162	炭	2232
913	抑	4261	963	探	3818	1013	慎	3260	1063	雅	2810	1113	包	2496	1163	濃	2230
914	草	4245	964	盤	3817	1014	紹	3254	1064	鋼	2807	1114	範	2495	1164	寢	2229
915	板	4239	965	卷	3802	1015	奪	3253	1065	照	2806	1115	搦	2480	1165	洗	2201
916	希	4230	966	却	3793	1016	購	3245	1066	隱	2796	1115	筆	2480	1166	驚	2189
917	暮	4198	967	訟	3773	1017	夢	3238	1067	剂	2790	1115	暫	2480	1167	也	2183
918	措	4190	968	阜	3749	1018	項	3220	1068	謝	2789	1118	析	2472	1168	慣	2179
919	刻	4188	969	布	3731	1019	診	3217	1069	撮	2788	1119	綱	2468	1169	昼	2162
920	併	4174	970	笑	3728	1020	簡	3194	1070	淡	2787	1120	梅	2460	1170	齒	2151
921	承	4113	971	困	3714	1021	律	3186	1071	携	2782	1121	揚	2457	1171	臣	2149
921	災	4113	972	縮	3707	1022	祭	3185	1072	巡	2770	1122	窓	2452	1172	柄	2148
921	季	4113	973	夕	3704	1023	拒	3183	1073	吹	2767	1123	床	2448	1173	宏	2143
924	誌	4109	974	徵	3691	1024	促	3149	1074	殿	2764	1124	渴	2441	1174	滑	2141
925	欲	4095	975	称	3649	1025	片	3131	1074	忠	2764	1125	侵	2439	1175	仁	2139
926	借	4077	976	閉	3645	1026	杉	3128	1074	晴	2764	1126	芝	2437	1176	至	2135
927	宇	4069	977	奥	3637	1027	躍	3114	1077	冬	2752	1127	茨	2428	1177	忘	2133
928	邦	4059	978	盜	3634	1028	充	3113	1078	茂	2751	1128	哲	2413	1178	微	2129
929	秀	4053	979	懸	3598	1029	免	3106	1079	揮	2744	1129	翌	2405	1179	歛	2117
930	堂	4036	980	飲	3591	1030	刺	3079	1080	徹	2739	1130	柳	2397	1180	焦	2108
931	複	4034	981	章	3586	1031	祉	3078	1081	捨	2737	1131	騷	2390	1181	掘	2089
932	骨	4033	982	還	3572	1032	銃	3077	1082	薄	2712	1132	暗	2388	1182	克	2081
933	里	4031	983	誘	3564	1033	勸	3066	1083	獲	2687	1133	索	2381	1183	抵	2079
934	折	4024	984	彈	3556	1034	看	3055	1084	戒	2679	1134	襲	2375	1184	泊	2075
935	瀨	4019	985	貸	3553	1035	圍	3042	1085	腐	2670	1135	娘	2372	1185	似	2062
936	描	4010	986	我	3548	1036	讓	3033	1086	柱	2667	1136	網	2349	1186	鉞	2061
937	純	4009	987	控	3538	1037	仙	3032	1087	飯	2659	1137	塩	2341	1187	液	2057
938	絵	3995	988	智	3531	1038	甲	3015	1088	敏	2655	1138	挑	2335	1188	牛	2056
939	酒	3969	989	裕	3515	1039	埼	3006	1089	堀	2650	1138	郷	2335	1189	括	2052
940	触	3963	990	預	3511	1040	仮	3004	1090	透	2645	1140	喪	2334	1190	嶋	2043
941	訳	3961	991	贈	3509	1041	壁	2993	1091	勉	2639	1141	到	2325	1191	鳴	2029
942	鈴	3957	992	緒	3496	1042	典	2962	1092	驅	2632	1142	緑	2320	1191	趣	2029
943	筋	3953	993	傾	3467	1043	操	2959	1093	隣	2631	1142	誕	2320	1193	阿	2028
944	弘	3923	994	掛	3465	1044	御	2948	1094	犧	2622	1144	弟	2312	1194	酸	2025
945	射	3919	995	薦	3452	1045	惱	2925	1095	妥	2621	1145	浩	2303	1194	胸	2025
946	弱	3913	996	仏	3451	1046	宝	2923	1096	敷	2599	1146	堅	2294	1196	乳	2022
947	扱	3900	997	慮	3430	1046	銭	2923	1097	滯	2595	1147	皮	2281	1197	較	2019
948	伴	3893	998	燃	3412	1048	荷	2918	1097	械	2595	1148	裂	2274	1198	距	2011
949	撤	3887	999	肉	3393	1049	顧	2912	1099	貯	2580	1148	双	2274	1199	斎	2008
950	奏	3880	1000	束	3387	1050	稻	2902	1100	茶	2559	1150	畑	2272	1200	偽	2002
CF		93.7751	CF		94.5564	CF		95.2278	CF		95.8138	CF		96.3309	CF		96.7869

APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
1201	杯	2000	1251	犬	1774	1301	虫	1616	1351	零	1425	1401	覆	1222	1451	喫	1075
1202	齊	1996	1252	尊	1771	1301	喚	1616	1352	序	1424	1402	嘉	1221	1452	溯	1070
1203	妙	1991	1253	鶴	1767	1303	踊	1615	1353	孤	1408	1403	卓	1212	1453	卸	1067
1204	既	1982	1254	縱	1758	1304	鯨	1614	1354	沒	1406	1404	拍	1210	1454	尻	1063
1205	淺	1959	1255	泳	1756	1305	勇	1612	1354	龜	1406	1405	煮	1204	1455	磁	1060
1205	飾	1959	1256	垣	1754	1306	丘	1611	1356	狹	1404	1405	垂	1204	1456	妹	1056
1207	雲	1957	1257	須	1748	1307	陳	1608	1357	耐	1395	1407	慢	1201	1456	帳	1056
1208	筑	1954	1258	旨	1747	1308	陷	1607	1357	恒	1395	1408	芳	1200	1458	栗	1054
1208	即	1954	1259	幼	1744	1309	祖	1601	1359	豆	1391	1409	凍	1199	1458	艦	1054
1210	湖	1952	1260	賢	1743	1310	俳	1600	1360	淨	1389	1410	俣	1195	1460	浸	1052
1211	硬	1950	1261	詩	1741	1310	枝	1600	1361	駒	1387	1410	彰	1195	1461	濕	1046
1212	威	1946	1262	懇	1737	1312	牲	1596	1362	瞬	1380	1410	曙	1195	1462	漫	1045
1213	露	1943	1263	昌	1736	1313	棍	1584	1363	拓	1377	1413	胞	1189	1463	冒	1041
1214	閥	1941	1264	貞	1734	1314	腰	1578	1363	郊	1377	1413	彫	1189	1463	訂	1041
1215	霸	1940	1264	泰	1734	1315	怒	1577	1365	彩	1373	1415	匹	1187	1463	刈	1041
1216	矢	1936	1266	菜	1732	1316	耳	1569	1366	糧	1370	1416	菌	1185	1466	壇	1040
1217	潮	1933	1267	翼	1731	1317	龍	1568	1367	塾	1360	1417	徑	1183	1467	淡	1035
1218	鎖	1926	1268	畿	1730	1318	浪	1566	1367	飼	1360	1418	輩	1181	1468	姉	1031
1219	祝	1923	1269	嫌	1729	1319	煙	1562	1369	李	1354	1419	默	1179	1469	祥	1030
1220	琴	1922	1270	毒	1726	1320	膨	1560	1369	菊	1354	1420	培	1174	1470	淚	1028
1221	邸	1919	1271	勵	1706	1321	覽	1559	1371	脚	1351	1421	恋	1172	1471	尼	1023
1221	积	1919	1271	輝	1706	1322	棟	1547	1372	冊	1346	1422	泣	1166	1472	筒	1019
1223	慶	1915	1273	添	1704	1323	丹	1541	1373	鏡	1345	1423	尋	1160	1473	庄	1017
1224	是	1905	1274	甘	1688	1324	丈	1538	1374	玄	1338	1424	磨	1159	1474	忙	1016
1225	旗	1904	1275	幌	1687	1325	那	1531	1375	粉	1332	1425	潜	1151	1474	虚	1016
1226	桜	1897	1276	沈	1682	1326	肥	1528	1376	殖	1329	1425	剩	1151	1476	披	1014
1227	封	1883	1277	蕃	1680	1327	簿	1527	1377	廷	1321	1427	鑑	1142	1476	暖	1014
1228	旭	1881	1277	脅	1680	1328	軸	1525	1378	軒	1320	1428	紅	1140	1476	征	1014
1229	熙	1880	1279	刷	1677	1329	魅	1524	1379	基	1309	1429	眼	1139	1479	唯	1013
1230	浴	1872	1280	黄	1676	1330	梨	1521	1380	寒	1306	1429	笠	1139	1480	謀	1008
1231	賠	1871	1281	沼	1675	1331	穗	1517	1381	怖	1300	1431	陰	1136	1481	叫	1000
1232	炎	1870	1282	湯	1668	1332	織	1516	1382	拘	1298	1432	阻	1129	1482	咲	997
1233	昔	1867	1283	諭	1661	1333	帝	1511	1383	頂	1297	1433	諧	1127	1483	奇	995
1234	宙	1864	1284	舖	1658	1334	穴	1507	1384	幡	1292	1434	灯	1120	1484	妨	987
1235	牧	1860	1285	炉	1656	1335	稿	1490	1385	噴	1289	1434	遂	1120	1485	晃	978
1235	兄	1860	1286	箱	1654	1336	啓	1489	1386	欄	1286	1436	髮	1119	1486	猶	973
1237	詳	1859	1287	竟	1653	1337	尽	1487	1387	眠	1285	1436	尚	1119	1486	屈	973
1238	寿	1857	1288	岳	1649	1338	倫	1484	1388	僕	1284	1438	弥	1111	1488	悔	972
1239	柔	1849	1289	劍	1641	1339	往	1483	1389	疲	1267	1438	概	1111	1489	釣	970
1240	繁	1842	1290	摩	1640	1340	糸	1482	1390	擁	1264	1440	秀	1110	1490	晚	968
1241	麻	1841	1290	砲	1640	1341	曾	1481	1391	悟	1257	1441	剛	1107	1491	肺	964
1242	滋	1829	1290	干	1640	1342	卵	1478	1392	恩	1256	1442	銘	1102	1492	媛	963
1243	肩	1825	1293	敵	1639	1343	聖	1476	1392	憶	1256	1443	掃	1094	1492	暇	963
1244	慰	1819	1294	珍	1637	1344	礎	1475	1394	皆	1255	1444	缶	1086	1494	嵐	959
1245	腕	1804	1295	柄	1631	1345	絞	1471	1395	誇	1254	1445	耕	1085	1495	跳	958
1246	貫	1802	1296	懲	1626	1346	頑	1456	1396	孫	1253	1446	靈	1083	1496	脈	957
1247	腹	1799	1296	錦	1626	1347	偏	1449	1397	殊	1246	1446	陶	1083	1497	辻	954
1248	朗	1788	1298	稼	1625	1348	貧	1447	1398	溶	1231	1448	脇	1078	1498	柴	953
1249	撲	1785	1299	罰	1623	1349	遇	1437	1399	軟	1228	1449	伏	1077	1498	隔	953
1250	滅	1779	1300	縁	1622	1350	漏	1435	1400	寬	1223	1450	熱	1076	1500	巢	948
CF		97.1912	CF		97.5529	CF		97.8808	CF		98.1645	CF		98.4101	CF		98.6258

## APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
1501	騰	943	1551	翔	818	1601	冠	729	1650	毅	649	1701	吳	559	1750	羅	484
1502	栽	942	1552	嘆	815	1602	墨	728	1652	唐	648	1702	机	558	1750	僧	484
1503	依	940	1553	衰	814	1603	霧	727	1653	釜	645	1703	尿	555	1753	肢	483
1504	獎	939	1554	澤	813	1604	墳	725	1654	澄	639	1704	惜	554	1753	怪	483
1505	秩	937	1555	徐	811	1605	蒸	722	1655	菽	636	1704	霞	554	1755	鍋	480
1506	塗	936	1556	靖	809	1605	拾	722	1656	牟	634	1706	隅	553	1756	盲	475
1507	祈	935	1556	懷	809	1607	峰	721	1656	靴	634	1707	朴	552	1757	灘	474
1508	菅	932	1558	塚	807	1608	邪	719	1656	勘	634	1708	臭	545	1757	踐	474
1508	唆	932	1559	粒	796	1609	陵	716	1659	乏	632	1709	猫	541	1759	圭	472
1510	隨	929	1560	貝	793	1610	艇	715	1659	髓	632	1710	辛	540	1760	鉢	469
1511	抽	919	1561	富	792	1611	鈍	714	1659	吾	632	1711	誦	539	1761	呂	466
1512	衡	917	1562	逸	787	1612	寮	709	1662	洞	628	1711	悼	539	1762	獸	463
1513	据	915	1563	疎	786	1613	泥	708	1662	笹	628	1711	壤	539	1762	宴	463
1514	斜	913	1563	虐	786	1614	奮	706	1664	誓	625	1714	鼻	535	1764	蒲	462
1515	桑	912	1565	才	784	1615	棋	704	1665	遭	624	1714	豈	535	1765	鳳	461
1516	莊	903	1566	陞	782	1616	亭	702	1666	宜	622	1716	累	534	1766	桃	458
1517	鬼	902	1567	刀	781	1617	幻	700	1667	劣	618	1717	狩	533	1767	麗	456
1518	乾	895	1567	汁	781	1618	恥	699	1667	矛	618	1717	寂	533	1768	乃	454
1519	佳	887	1567	慘	781	1618	姓	699	1669	桐	615	1719	赴	528	1768	呈	454
1520	粘	883	1567	葛	781	1618	肅	699	1669	芽	615	1719	膚	528	1770	吐	453
1521	拌	881	1571	粧	779	1621	廊	698	1671	輔	614	1719	炊	528	1771	裸	451
1522	隻	876	1571	准	779	1622	郭	695	1671	碑	614	1722	忍	527	1771	窻	451
1523	猛	875	1573	柏	778	1623	妃	691	1673	獄	612	1723	穀	523	1773	囚	449
1524	漠	874	1574	詐	777	1623	潔	691	1673	峽	612	1724	酷	520	1774	紳	444
1525	棒	873	1575	俗	773	1625	穩	689	1675	擦	611	1724	荻	520	1774	循	444
1525	碎	873	1576	滝	770	1626	悅	687	1676	肌	608	1726	帽	519	1774	綾	444
1527	糖	868	1577	酬	767	1627	欺	685	1677	頭	606	1727	亮	518	1777	幣	443
1528	架	865	1578	胆	766	1628	灰	682	1678	鎮	605	1727	庶	518	1778	鼓	441
1529	孜	864	1579	紋	764	1629	磯	680	1679	偶	589	1727	恭	518	1779	該	440
1530	脂	862	1579	稚	764	1630	桂	679	1680	把	587	1730	鷹	514	1780	遷	439
1530	銳	862	1581	芦	762	1631	皿	676	1681	椿	586	1730	怠	514	1781	搭	436
1532	盾	861	1582	綿	761	1632	疫	675	1682	坊	584	1730	弦	514	1782	坪	434
1533	緯	860	1582	漂	761	1633	伯	674	1683	搬	583	1733	匠	513	1783	漠	432
1534	苗	858	1582	溝	761	1634	駄	673	1684	符	582	1734	傘	512	1783	猪	432
1535	姬	855	1585	瑞	759	1635	妊	671	1685	敦	581	1735	拐	509	1783	腎	432
1535	堤	855	1586	雷	758	1635	凶	671	1686	傍	580	1736	寸	508	1783	飢	432
1537	紫	854	1587	奉	754	1637	舟	668	1686	垂	580	1737	憂	503	1787	琵琶	431
1538	銅	852	1587	嫁	754	1638	巧	667	1686	鉛	580	1738	瓶	502	1787	寧	431
1539	狂	850	1589	珠	753	1639	醉	664	1689	粗	578	1739	胃	496	1787	朱	431
1540	祐	847	1589	咬	753	1640	仰	662	1690	暑	574	1740	諾	494	1790	琶	430
1540	勲	847	1591	班	751	1641	晶	660	1690	后	574	1741	函	491	1791	窮	429
1542	洲	846	1592	伎	750	1642	汗	659	1692	幸	573	1742	頻	490	1791	憾	429
1543	氷	843	1593	詞	748	1643	淀	656	1693	塔	572	1742	枯	490	1793	蘭	425
1544	篠	842	1594	烈	747	1643	膜	656	1694	稔	567	1744	履	489	1793	鴨	425
1545	翻	838	1594	堰	747	1645	菓	655	1694	壯	567	1744	槽	489	1795	鳥	424
1546	淳	832	1596	鎌	741	1646	魔	652	1694	刃	567	1744	閔	489	1796	如	423
1547	癒	825	1597	棚	739	1646	辰	652	1697	縫	566	1747	錯	487	1797	舶	419
1548	麦	821	1598	劔	735	1646	涯	652	1698	鳩	565	1747	哉	487	1798	偉	418
1549	紡	820	1599	潤	734	1649	謙	650	1699	鐘	563	1747	魂	487	1799	濯	416
1550	軌	819	1600	穫	732	1650	盆	649	1700	弓	560	1750	虜	484	1800	曆	415
CF		98.8138	CF		98.9790	CF		99.1262	CF		99.2550	CF		99.3665	CF		99.4618

APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
1800	騎	415	1851	娛	363	1901	痴	302	1951	國	254	2000	梁	206	2049	僑	169
1802	俸	411	1852	幾	360	1902	撰	300	1951	遮	254	2002	嶽	204	2052	曳	168
1803	樋	410	1853	蛇	359	1903	享	299	1951	傑	254	2002	奔	204	2053	逝	167
1804	楠	408	1854	鍛	358	1904	岬	295	1951	茅	254	2004	瘍	202	2054	烏	166
1804	娠	408	1855	枢	354	1904	扶	295	1955	乙	252	2004	塀	202	2055	惧	165
1806	旋	405	1856	篤	351	1904	樺	295	1956	喬	251	2006	痢	201	2056	癖	164
1806	殼	405	1857	疾	350	1907	匿	293	1957	睦	250	2006	隈	201	2057	洗	163
1808	涼	404	1857	串	350	1907	偵	293	1957	睡	250	2008	諏	199	2057	痕	163
1808	腸	404	1857	朽	350	1907	錠	293	1959	廣	249	2008	擬	199	2059	聯	162
1808	畜	404	1860	紘	348	1907	渦	293	1960	播	248	2010	吟	198	2059	禎	162
1808	鷄	404	1861	憤	346	1911	紺	292	1960	肖	248	2011	漆	197	2059	祇	162
1812	粹	402	1861	扉	346	1912	猶	288	1962	絹	247	2011	蔭	197	2062	藻	161
1812	召	402	1861	柿	346	1912	猿	288	1963	曉	246	2013	棺	195	2063	勅	160
1814	虎	400	1864	泡	344	1914	陪	287	1964	胎	245	2014	峠	194	2064	卑	159
1815	藩	399	1864	碁	344	1914	甚	287	1965	檉	243	2015	鴻	193	2064	拳	159
1816	漬	398	1866	掌	340	1916	塊	286	1966	詠	241	2016	閑	191	2066	鍊	157
1817	洪	397	1867	飽	334	1917	窳	285	1967	忌	239	2016	眞	191	2066	硝	157
1818	縛	396	1867	伍	334	1918	剖	284	1968	白	237	2016	偷	191	2068	爾	156
1818	昆	396	1869	亘	333	1919	驚	283	1969	肯	236	2016	汎	191	2068	牡	156
1818	薰	396	1869	辱	333	1919	肇	283	1969	焔	236	2016	蕉	191	2070	條	155
1821	眺	395	1871	曇	332	1921	叙	282	1971	遍	233	2016	魁	191	2070	遙	155
1821	赦	395	1872	又	329	1922	窪	278	1971	帆	233	2022	驊	190	2072	庵	154
1823	弊	389	1873	戲	327	1922	俱	278	1971	琢	233	2023	奴	189	2073	姜	153
1824	苑	388	1874	悠	326	1924	喝	277	1974	樽	230	2023	爪	189	2073	慕	153
1825	蘇	385	1874	賁	326	1925	胴	274	1975	秦	228	2025	芭	188	2073	隼	153
1826	郁	384	1876	譜	323	1925	囑	274	1976	插	225	2026	厘	187	2073	謎	153
1827	磐	383	1876	酢	323	1925	尺	274	1977	寅	223	2026	此	187	2077	綻	150
1828	沸	382	1878	巴	322	1928	鵬	272	1978	薩	221	2028	抹	185	2078	渴	149
1829	琉	380	1878	曹	322	1929	屯	271	1978	沙	221	2028	欣	185	2079	藍	148
1830	哀	379	1880	弔	321	1929	冗	271	1978	敢	221	2028	閑	185	2079	櫃	148
1831	凡	377	1880	憎	321	1931	箕	269	1981	巖	219	2028	禍	185	2081	崔	146
1831	槻	377	1882	餓	320	1931	册	269	1982	屏	217	2032	漱	183	2081	潰	146
1831	扇	377	1883	笛	319	1931	亨	269	1982	館	217	2032	暢	183	2081	棧	146
1834	慈	376	1883	挾	319	1934	疏	268	1984	峯	216	2032	侍	183	2081	榭	146
1835	伐	374	1885	凝	316	1934	濛	268	1984	粕	216	2032	芥	183	2085	孃	142
1836	蓮	373	1886	瓦	315	1934	橘	268	1984	斗	216	2036	蒼	182	2086	蚩	141
1836	巳	373	1886	慨	315	1937	盧	267	1987	劉	214	2036	溪	182	2087	隸	140
1838	湊	372	1888	憩	314	1937	汽	267	1987	楊	214	2038	糾	181	2087	愁	140
1839	椎	371	1889	豚	312	1939	坑	266	1989	佑	213	2039	鶉	180	2089	腺	139
1839	濁	371	1890	窃	311	1940	栖	265	1990	鑄	212	2040	滴	179	2089	獅	139
1839	燥	371	1890	挫	311	1940	駿	265	1990	禪	212	2041	胡	176	2091	遼	138
1842	媒	370	1892	淵	310	1942	樓	264	1990	腫	212	2041	茎	176	2091	珂	138
1842	奄	370	1892	聰	310	1943	榎	263	1993	燕	210	2043	鍵	175	2091	鞍	138
1844	墜	369	1894	嗣	309	1943	唄	263	1994	湘	209	2044	尉	173	2094	誰	137
1845	愚	368	1895	淑	308	1945	鄭	262	1995	玲	208	2045	杵	172	2095	婿	136
1846	苦	367	1895	恨	308	1945	釀	262	1995	羊	208	2045	翁	172	2095	枕	136
1847	嶺	366	1897	崇	307	1947	廉	258	1995	閹	208	2047	慌	171	2095	姑	136
1848	醉	365	1898	礁	305	1948	酪	256	1998	肪	207	2048	匡	170	2095	幹	136
1848	轄	365	1899	斐	303	1949	雀	255	1998	桧	207	2049	迅	169	2099	畔	135
1850	晋	364	1899	舌	303	1949	款	255	2000	趙	206	2049	塞	169	2099	袖	135
CF		99.5445	CF		99.6146	CF		99.6736	CF		99.7226	CF		99.7627	CF		99.7953

## APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
2099	蚕	135	2150	楷	112	2200	堆	95	2249	廠	79	2298	爵	67	2351	際	59
2099	孔	135	2152	租	111	2200	櫛	95	2249	骸	79	2298	汐	67	2351	賦	59
2103	妖	134	2152	斥	111	2203	脊	94	2253	諫	78	2298	矩	67	2351	枇	59
2103	栓	134	2152	鯉	111	2203	稽	94	2253	褐	78	2298	欽	67	2351	淘	59
2105	揖	133	2152	允	111	2205	倭	93	2253	牙	78	2305	礮	66	2351	挺	59
2105	呆	133	2156	涛	110	2205	佃	93	2256	蜜	77	2305	疆	66	2351	帥	59
2105	繕	133	2156	賭	110	2207	雁	92	2256	杷	77	2305	侶	66	2351	叱	59
2105	拙	133	2156	宋	110	2207	旺	92	2256	榛	77	2305	揜	66	2351	蒔	59
2105	襟	133	2159	濱	109	2209	摯	91	2256	鷗	77	2305	衷	66	2351	閣	59
2110	庸	132	2160	築	108	2209	銚	91	2260	邨	76	2310	邱	65	2351	狐	59
2110	粟	132	2160	醜	108	2209	箸	91	2260	綜	76	2310	焉	65	2351	饗	59
2112	萬	131	2162	侮	107	2212	逐	90	2260	漕	76	2310	妄	65	2351	凱	59
2112	其	131	2162	峻	107	2213	實	89	2260	膳	76	2310	鋪	65	2351	芋	59
2114	虹	130	2164	褒	106	2213	芙	89	2260	迎	76	2310	蕃	65	2364	汪	58
2114	杜	130	2165	煥	105	2213	罷	89	2265	鎔	75	2310	檀	65	2364	蔑	58
2116	餅	129	2165	祿	105	2213	銚	89	2265	釐	75	2310	惰	65	2364	槌	58
2116	迭	129	2167	暉	104	2213	捉	89	2265	曠	75	2317	董	64	2364	旦	58
2118	哨	128	2167	壽	104	2213	采	89	2265	嬾	75	2317	伽	64	2364	餌	58
2118	謹	128	2167	藪	104	2219	萌	88	2265	桶	75	2319	管	63	2369	諫	57
2120	泌	127	2167	孟	104	2219	逗	88	2270	脩	74	2319	冤	63	2369	舵	57
2121	蛭	126	2167	賊	104	2219	讚	88	2271	菩	73	2319	悖	63	2369	狍	57
2122	渥	124	2167	唇	104	2219	驚	88	2271	埴	73	2319	瞳	63	2369	杭	57
2123	祀	122	2167	玩	104	2223	鐸	87	2271	錫	73	2319	戴	63	2373	祢	56
2123	幽	122	2174	瑠	103	2223	凹	87	2274	潘	72	2319	噌	63	2373	堵	56
2125	蝶	120	2174	霜	103	2223	葵	87	2274	壕	72	2319	卿	63	2373	帖	56
2125	瀧	120	2174	芹	103	2226	檜	86	2274	玖	72	2326	魯	62	2373	畝	56
2127	稜	119	2174	馨	103	2226	璃	86	2277	壺	71	2326	箔	62	2373	碓	56
2127	蜂	119	2174	蚊	103	2226	賜	86	2277	詣	71	2326	勺	62	2373	梓	56
2129	碧	118	2179	魏	102	2226	菌	86	2277	於	71	2326	忒	62	2379	壺	55
2130	叔	117	2179	眉	102	2226	瑛	86	2277	杏	71	2326	抄	62	2379	箠	55
2130	酌	117	2179	穴	102	2231	拷	85	2281	堯	70	2326	儒	62	2379	某	55
2130	兜	117	2182	彬	101	2231	牽	85	2281	尹	70	2326	斬	62	2379	鋒	55
2130	姻	117	2182	蚤	101	2233	湧	84	2281	汰	70	2326	頃	62	2379	菰	55
2134	洛	116	2182	蹴	101	2234	墮	83	2281	愬	70	2326	蓋	62	2379	艷	55
2134	頤	116	2185	慧	100	2235	濤	82	2281	伺	70	2326	胤	62	2385	賈	54
2134	零	116	2186	斑	99	2235	圓	82	2281	鮪	70	2336	團	61	2385	浙	54
2134	甌	116	2186	巽	99	2235	棕	82	2287	曝	69	2336	鏢	61	2385	拉	54
2134	壹	116	2186	擗	99	2235	豎	82	2287	杖	69	2336	弄	61	2385	麩	54
2139	耗	115	2186	股	99	2235	陀	82	2289	譚	68	2336	瞭	61	2385	榭	54
2139	矯	115	2186	逢	99	2235	呪	82	2289	皓	68	2336	邑	61	2385	篇	54
2139	蟹	115	2191	冥	98	2235	侯	82	2289	煩	68	2336	冶	61	2385	菲	54
2139	燕	115	2191	堪	98	2235	鮎	82	2289	埜	68	2336	婆	61	2385	綴	54
2143	升	114	2191	叡	98	2243	嗟	81	2289	宵	68	2336	痘	61	2385	銑	54
2143	殉	114	2194	貌	97	2243	麴	81	2289	朔	68	2336	綬	61	2385	狗	54
2143	雌	114	2195	厄	96	2243	峨	81	2289	紕	68	2336	鮫	61	2385	韻	54
2143	嚇	114	2195	蒙	96	2243	茺	81	2289	徽	68	2336	惟	61	2396	佛	53
2147	凸	113	2195	廕	96	2247	附	80	2289	葦	68	2347	榮	60	2396	繭	53
2147	嫡	113	2195	拭	96	2247	鍾	80	2298	黎	67	2347	恣	60	2396	廟	53
2147	翠	113	2195	寡	96	2249	赴	79	2298	狼	67	2347	傲	60	2396	酉	53
2150	籠	112	2200	甫	95	2249	啄	79	2298	柘	67	2347	灸	60	2400	彌	52
CF		99.8220	CF		99.8434	CF		99.8626	CF		99.8776	CF		99.8926	CF		99.9039

APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
2400	已	52	2449	蟻	46	2496	瓜	40	2543	耶	35	2599	蔡	31	2646	惠	28
2402	璧	51	2449	婉	46	2496	鯪	40	2543	瓢	35	2599	澆	31	2646	彭	28
2402	晟	51	2449	沌	46	2503	擘	39	2543	燈	35	2599	鬱	31	2646	咸	28
2402	溜	51	2449	悌	46	2503	牌	39	2543	溺	35	2599	幫	31	2646	借	28
2402	蓉	51	2449	諫	46	2503	醜	39	2543	鯛	35	2599	風	31	2646	備	28
2402	輿	51	2449	坦	46	2503	塑	39	2543	楚	35	2599	麟	31	2646	養	28
2402	廬	51	2449	只	46	2503	漸	39	2543	蟬	35	2599	爺	31	2646	釘	28
2402	丞	51	2449	卯	46	2503	穰	39	2543	稀	35	2599	膿	31	2646	蔦	28
2402	昏	51	2459	舩	45	2503	砦	39	2559	箏	34	2599	廿	31	2646	蜘蛛	28
2402	梗	51	2459	冴	45	2503	醐	39	2559	禮	34	2599	凧	31	2646	燦	28
2411	襄	50	2459	袴	45	2503	杳	39	2559	拗	34	2599	脆	31	2646	絃	28
2411	藪	50	2459	崖	45	2512	迪	38	2559	傲	34	2599	雛	31	2646	仇	28
2411	婁	50	2459	云	45	2512	虔	38	2559	唾	34	2599	梱	31	2646	咽	28
2411	但	50	2464	齊	44	2512	隄	38	2559	捷	34	2599	昂	31	2664	瑋	27
2411	槍	50	2464	勃	44	2512	洽	38	2559	鷓	34	2599	始	31	2664	殷	27
2411	厨	50	2464	薙	44	2512	櫻	38	2559	硯	34	2616	簞	30	2664	杞	27
2411	蔣	50	2464	醬	44	2512	姪	38	2559	飴	34	2616	筌	30	2664	揄	27
2411	紗	50	2468	井	43	2512	鱒	38	2568	綺	33	2616	癩	30	2664	擲	27
2411	綺	50	2468	歪	43	2512	罵	38	2568	昂	33	2616	涵	30	2664	穉	27
2411	窟	50	2468	渚	43	2512	樟	38	2568	恰	33	2616	濫	30	2664	囧	27
2411	夷	50	2468	坐	43	2512	柵	38	2568	瀕	33	2616	斌	30	2664	嗜	27
2422	聰	49	2468	訣	43	2512	腔	38	2568	剥	33	2616	庇	30	2664	備	27
2422	洙	49	2468	怨	43	2512	巷	38	2568	妬	33	2616	墻	30	2664	牢	27
2422	捺	49	2468	噓	43	2512	喉	38	2568	梯	33	2616	壬	30	2664	彪	27
2422	宕	49	2475	蕭	42	2512	鞠	38	2568	裾	33	2616	蛙	30	2664	套	27
2422	兎	49	2475	毳	42	2512	俺	38	2568	嵩	33	2616	厩	30	2664	拂	27
2422	耐	49	2475	巖	42	2527	鸞	37	2568	梢	33	2616	或	30	2664	佼	27
2422	湛	49	2475	碗	42	2527	嘲	37	2568	漉	33	2616	茜	30	2664	袈	27
2422	爽	49	2475	鱗	42	2527	賂	37	2568	寓	33	2629	羞	29	2664	姦	27
2422	薪	49	2475	葺	42	2527	吞	37	2568	喰	33	2629	齋	29	2664	虻	27
2422	絢	49	2475	膽	42	2527	填	37	2581	辜	32	2629	澁	29	2681	軛	26
2432	絆	48	2475	諦	42	2527	舛	37	2581	笙	32	2629	曼	29	2681	蛭	26
2432	寄	48	2475	摺	42	2533	濶	36	2581	揆	32	2629	琳	29	2681	薇	26
2432	攤	48	2475	嘗	42	2533	禱	36	2581	拈	32	2629	滯	29	2681	茫	26
2432	撫	48	2475	戎	42	2533	詫	36	2581	峙	32	2629	剃	29	2681	笮	26
2432	詔	48	2486	鍼	41	2533	吏	36	2581	們	32	2629	叢	29	2681	瞑	26
2432	喧	48	2486	邊	41	2533	涌	36	2581	螺	32	2629	棲	29	2681	焯	26
2432	桁	48	2486	膠	41	2533	蔓	36	2581	牝	32	2629	棲	29	2681	掙	26
2432	萱	48	2486	嘶	41	2533	汀	36	2581	昧	32	2629	菖	29	2681	嵩	26
2440	頸	47	2486	娼	41	2533	碩	36	2581	丙	32	2629	偲	29	2681	檣	26
2440	輿	47	2486	簪	41	2533	壑	36	2581	挽	32	2629	纂	29	2681	蕘	26
2440	旛	47	2486	弧	41	2533	箇	36	2581	莫	32	2629	撈	29	2681	吠	26
2440	捧	47	2486	哇	41	2543	雉	35	2581	疏	32	2629	庚	29	2681	懂	26
2440	舜	47	2486	癌	41	2543	衛	35	2581	夙	32	2629	茄	29	2681	砥	26
2440	而	47	2486	丑	41	2543	禹	35	2581	姨	32	2629	挨	29	2681	撰	26
2440	儉	47	2496	莉	40	2543	檄	35	2581	粥	32	2646	蛛	28	2681	趨	26
2440	穎	47	2496	緻	40	2543	楸	35	2581	蝦	32	2646	莽	28	2681	裳	26
2440	噶	47	2496	傳	40	2543	乖	35	2581	畏	32	2646	炳	28	2681	垢	26
2449	釉	46	2496	砺	40	2543	蕨	35	2599	袁	31	2646	溥	28	2681	俠	26
2449	諧	46	2496	廻	40	2543	孀	35	2599	蓼	31	2646	榜	28	2681	砧	26
CF		99.9139	CF		99.9239	CF		99.9331	CF		99.9381	CF		99.9431	CF		99.9481



## APPENDIX A (Continued)

R	C	F	R	C	F	R	C	F	R	C	F	R	C	F	R	C	F
2681	臥	26	2725	頰	24	2785	羨	21	2836	終	19	2886	遜	17	2931	淋	15
2702	陝	25	2752	邁	23	2785	屍	21	2836	鐙	19	2886	惹	17	2931	悶	15
2702	鐵	25	2752	磋	23	2785	糠	21	2836	貼	19	2886	忽	17	2931	踈	15
2702	躡	25	2752	溪	23	2785	叶	21	2836	紬	19	2886	繫	17	2931	鏑	15
2702	躡	25	2752	棹	23	2785	甥	21	2836	瘦	19	2886	禽	17	2931	寵	15
2702	謳	25	2752	曖	23	2806	鄒	20	2836	鳴	19	2886	誼	17	2931	耽	15
2702	訃	25	2752	慄	23	2806	胚	20	2836	碣	19	2907	靡	16	2931	蛸	15
2702	蓄	25	2752	寇	23	2806	總	20	2836	虞	19	2907	顯	16	2931	蹟	15
2702	肛	25	2752	勁	23	2806	箏	20	2836	巾	19	2907	躬	16	2931	妾	15
2702	渾	25	2752	侑	23	2806	矮	20	2836	駕	19	2907	贅	16	2931	竣	15
2702	泄	25	2752	聾	23	2806	瞞	20	2861	鯨	18	2907	蜃	16	2931	勾	15
2702	斂	25	2752	簾	23	2806	甦	20	2861	靱	18	2907	紕	16	2931	糊	15
2702	哈	25	2752	苓	23	2806	珀	20	2861	蘆	18	2907	秉	16	2931	鯪	15
2702	藁	25	2752	頰	23	2806	游	20	2861	荼	18	2907	狠	16	2931	蛻	15
2702	楓	25	2752	鞭	23	2806	晰	20	2861	絲	18	2907	熾	16	2931	苛	15
2702	紐	25	2752	疋	23	2806	雙	20	2861	笕	18	2907	柚	16	2966	裔	14
2702	梲	25	2752	昆	23	2806	劍	20	2861	祠	18	2907	弊	16	2966	蕞	14
2702	凋	25	2752	尖	23	2806	猷	20	2861	琥	18	2907	互	16	2966	膀	14
2702	黛	25	2752	鉦	23	2806	貞	20	2861	爛	18	2907	諒	16	2966	胱	14
2702	煎	25	2752	餐	23	2806	錨	20	2861	戎	18	2907	營	16	2966	畏	14
2702	凄	25	2752	堯	23	2806	汜	20	2861	巍	18	2907	焚	16	2966	篁	14
2702	桴	25	2772	瞪	22	2806	囊	20	2861	咤	18	2907	拇	16	2966	疥	14
2702	疹	25	2772	庖	22	2806	汝	20	2861	叟	18	2907	杓	16	2966	當	14
2702	蟻	25	2772	佻	22	2806	吊	20	2861	儲	18	2907	匙	16	2966	璋	14
2725	鴈	24	2772	崑	22	2806	叩	20	2861	豹	18	2907	甌	16	2966	獨	14
2725	饒	24	2772	毀	22	2806	曾	20	2861	弼	18	2907	轟	16	2966	猴	14
2725	藝	24	2772	凌	22	2806	戚	20	2861	稗	18	2907	謁	16	2966	愕	14
2725	笏	24	2772	蒜	22	2806	斯	20	2861	緋	18	2907	洩	16	2966	哭	14
2725	琲	24	2772	嬪	22	2806	坤	20	2861	碇	18	2907	姥	16	2966	勸	14
2725	珈	24	2772	鎧	22	2806	砒	20	2861	蛋	18	2907	穉	16	2966	于	14
2725	洒	24	2772	臆	22	2806	鉞	20	2861	苔	18	2931	鬆	15	2966	勿	14
2725	椒	24	2772	溢	22	2806	妓	20	2861	梢	18	2931	隕	15	2966	亦	14
2725	扁	24	2772	亥	22	2806	莞	20	2861	邇	18	2931	閔	15	2966	膝	14
2725	奎	24	2772	椅	22	2806	侃	20	2861	詮	18	2931	鉉	15	2966	誹	14
2725	哺	24	2785	檣	21	2806	迂	20	2861	裳	18	2931	邇	15	2966	秤	14
2725	匯	24	2785	闊	21	2836	邊	19	2886	藏	17	2931	萍	15	2966	岱	14
2725	椀	24	2785	鎬	21	2836	辣	19	2886	耿	17	2931	舫	15	2966	筍	14
2725	蠟	24	2785	葭	21	2836	蕪	19	2886	糝	17	2931	聚	15	2966	蝕	14
2725	憐	24	2785	筍	21	2836	茗	19	2886	筍	17	2931	紆	15	2966	燭	14
2725	緬	24	2785	瞰	21	2836	篆	19	2886	瘤	17	2931	斂	15	2966	膏	14
2725	禱	24	2785	滯	21	2836	礫	19	2886	瀦	17	2931	瓊	15	2966	倦	14
2725	轍	24	2785	暎	21	2836	滓	19	2886	潘	17	2931	榕	15	2966	頸	14
2725	醒	24	2785	憑	21	2836	臬	19	2886	柎	17	2931	恂	15	2966	枯	14
2725	楯	24	2785	凜	21	2836	皓	19	2886	晨	17	2931	衍	15	2966	碍	14
2725	咋	24	2785	柚	21	2836	噪	19	2886	嘔	17	2931	彙	15	2966	襖	14
2725	犀	24	2785	蓬	21	2836	喻	19	2886	伶	17	2931	巫	15	2996	瑤	13
2725	乞	24	2785	埠	21	2836	雙	19	2886	沃	17	2931	儼	15	2996	韶	13
2725	汲	24	2785	馴	21	2836	愈	19	2886	鼎	17	2931	傀	15	2996	霍	13
2725	劾	24	2785	腿	21	2836	刼	19	2886	馳	17	2931	煉	15	2996	鏢	13
2725	鶯	24	2785	揃	21	2836	斧	19	2886	筆	17	2931	燐	15	2996	賤	13
CF		99.9531	CF		99.9581	CF		99.9631	CF		99.9681	CF		99.9731	CF		99.9781

APPENDIX A (Continued)

R	C	F
2996	謗	13
2996	諍	13
2996	臚	13
2996	腑	13
2996	聿	13
2996	聘	13
2996	經	13
2996	籃	13
2996	炯	13
2996	榴	13
2996	楷	13
2996	梵	13
2996	將	13
2996	學	13
2996	娜	13
2996	俯	13
2996	豫	13
2996	慾	13
2996	圃	13
2996	扮	13
2996	棋	13
2996	遁	13
2996	澹	13
2996	禿	13
2996	澆	13
2996	孀	13
2996	鞞	13
2996	鮭	13
2996	惚	13
2996	劫	13
2996	怯	13
2996	鋸	13
2996	竿	13
2996	盈	13
CF		99.9815

Note—R = Rank of frequency, C = Character of kanji, F = Frequency occurrence in 23,408,236 character corpus.

APPENDIX B  
Hiragana Letter Frequency List

R	C	F	R	C	F
1	の	1918313	49	ほ	48752
2	に	1108840	50	へ	47013
3	た	1067566	51	び	32312
4	い	1060284	52	む	31212
5	は	937811	53	ご	26965
6	を	936356	54	ね	23490
7	と	927938	55	ぶ	23280
8	る	916652	56	ぐ	21549
9	が	860742	57	ぎ	19865
10	し	848132	58	ひ	19148
11	で	764834	59	よ	14425
12	て	758316	60	づ	13125
13	な	720156	61	ぼ	12402
14	か	537294	62	ざ	12108
15	っ	467350	63	ふ	11606
16	れ	450805	64	や	11522
17	ら	423294	65	ぞ	10047
18	も	396142	66	ゆ	8486
19	う	352965	67	ぜ	6893
20	す	340654	68	ぬ	5124
21	り	333999	69	ば	4349
22	こ	312227	70	ゅ	2755
23	だ	280911	71	び	1608
24	ま	278599	72	ぼ	1315
25	さ	258960	73	ぶ	986
26	き	233505	74	ぺ	477
27	め	223806	75	あ	125
28	く	221960	76	え	106
29	あ	204256	77	ぢ	82
30	け	199362	78	ゑ	75
31	ど	196555	79	ゐ	48
32	ん	190068	80	お	21
33	え	163664	81	い	21
34	よ	154206	82	わ	3
35	っ	153999	83	う	1
36	や	146156			
37	そ	131611			
38	わ	123077			
39	ち	99183			
40	み	89264			
41	せ	83444			
42	ろ	73467			
43	ば	72228			
44	お	65870			
45	じ	56857			
46	べ	56005			
47	ず	53256			
48	げ	49126			

Note—R = Rank of frequency, C = Character of hiragana, F = Frequency occurrence in 20,711,361 character corpus.

**APPENDIX C**  
**Katakana Letter Frequency List**

R	C	F	R	C	F
1	ン	290948	49	ネ	22462
2	ル	189442	50	ガ	22061
3	ス	178214	51	ハ	21839
4	ト	162802	52	ワ	21784
5	ア	127845	53	ソ	20784
6	イ	120807	54	ケ	20633
7	ラ	117203	55	モ	20070
8	リ	106744	56	ノ	19572
9	ク	98209	57	ズ	19240
10	ツ	86894	58	ピ	18692
11	カ	82982	59	ホ	18204
12	シ	80626	60	エ	17817
13	タ	75319	61	ヨ	17731
14	ロ	75301	62	ペ	14881
15	ド	74257	63	ゴ	13931
16	ジ	61171	64	ヤ	12526
17	フ	61115	65	ギ	10732
18	レ	60608	66	ヨ	10318
19	メ	60230	67	ザ	10144
20	コ	58724	68	ア	10121
21	マ	56123	69	ゼ	7689
22	プ	54159	70	ヒ	7289
23	テ	53404	71	ヘ	7129
24	ム	50758	72	ユ	6653
25	チ	48437	73	ゲ	6481
26	バ	44970	74	オ	6245
27	ビ	44462	75	ヌ	2897
28	グ	40433	76	ゾ	2640
29	キ	39608	77	ヴ	1145
30	ウ	39323	78	ウ	1050
31	サ	39202	79	ヂ	149
32	ニ	38711	80	ヅ	127
33	ナ	38047	81	ヲ	122
34	エ	36458	82	エ	73
35	ブ	35920	83	キ	40
36	パ	35416	84	カ	14
37	セ	34883	85	ワ	9
38	オ	34718	86	ケ	2
39	イ	33747			
40	デ	32665			
41	ユ	32616			
42	ミ	29262			
43	ヤ	28144			
44	ボ	26651			
45	ダ	26396			
46	ッ	24541			
47	ポ	23742			
48	ベ	22755			

Note—R = Rank of frequency, C = Character of katakana, F = Frequency occurrence in 3,608,288 character corpus.

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