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Japanese EFL Learners' Cognitive Processing of English Regular and Irregular Words

中 村 朋 子

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Tomoko Nakamura

Japanese EFL learners have to overcome two types of difficulties in learning English words. One is caused by the difference between L1, an orthographically shallow language in terms of kana, with strong connections between graphemes and phonemes, and L2, an orthographically deep language with numerous rules and exceptions. The other difficulty for learning, shared with English L1 learners, lies within the English lexicon, whose words can be classified into two groups: regular words, with a shallow orthography, and irregular words, with a deep orthography.

An experiment to examine the speed and accuracy of oral reading and dictation of single words was carried out, with data collected from three groups: high proficiency ninth graders, low proficiency adults (false beginners) and high proficiency adults at university. False beginners' output data typically show how difficult it is for Japanese English language learners to process irregular English words. On the other hand, high proficiency ninth graders' data demonstrate that Japanee English language beginners can reduce their dependance on misleading L1 knowledge in L2 word recognition. They become able to distance themselves from the influence of the Japanese lexicon, which seems to be a prerequisite for their further development as good L2 learners.

Key Words: Japanese EFL learners, cognitive processing of English single words, mapping of English orthography and phonology in accessing meaning

1 Introduction

Among Japanese EFL learners, there are unsuccessful English language learners who do not pass smoothly through a developmental continuum. They started taking English courses at the age of twelve or thirteen and whatever knowledge of English they acquire is through formal instruction at school. Once they have finished six year of English language instruction, they take English classes at universities but in many respects have made little progress in English. They are called false beginners in this research. The present study examines the lexical processing of such learners and discusses their language learning difficulties in the acquisition of word recognition skills.

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2. THEORETICAL BACKGROUND

Researchers of contrastive analysis have contributed to our understanding of L2 learners' cross-linguistic difficulties[1]. Some psycholinguists further explain the cross-linguistic factor on the basis of the orthographic depth hypothesis (Carello & Lukatera, 1992). They categorize languages into two groups : those with a shallow orthography, such as Serbo-Croatian language, for which there are strong connections between graphemes and phonemes, and those with a deep orthography, such as English, for which there are numerous rules or exceptions. Others explain L1 readers'

decoding difficulties with the English language in terms of intra-lingual factors; they categorize English words into two groups: regular words, with a shallow orthography, and irregular words, with a deep orthography, and propose that for poor readers their difficulty in the cognitive processing of irregular words hinders their reading comprehension.

Japanese EFL learners encounter two types of difficulties at the threshold level because of the above mentioned cross-linguistic and intra-lingual factors. In particular, low proficiency adults' data collected in this present experiment show these difficulties most obviously.

Where have adult low proficiency language learners been placed on the developmental scale? In general, language learners' abilities in their target languages are classified into three levels: beginner, intermediate, and advanced levels. Proficiency test results indicate where learners are in the developmental scale of second language acquisition. False beginners' results in proficiency tests indicate that they are beginner level students. In spite of six years of instruction at school, their knowledge of the target language is very limited. It has been demonstrated (Nakamura 1998) that there is no significance in the difference of results of a proficiency test between adult false beginners and ninth graders at public junior high schools randomly selected. Evaluated only by a proficiency test, adult low proficiency learners are beginners in spite of the fact that they have had many more years of EFL study than junior high school students.

In the experiment described below, data are collected from three types of Japanese EFL learners: high proficiency ninth graders, low proficiency adults at university (false beginners) and high proficiency adults at university. For this experiment, true beginners' data were collected from high proficiency ninth graders because randomly selected beginners' data vary widely and it was difficult to find the characteristics of the group as a type of language learner (See Nakamura, 1998). Therefore, the number of years the high proficiency university adults and false beginners spent for their study of English is matched, while the high proficiency beginners' and false beginners' language competence are reversed in this experiment.

No attempt has been made to compare two Japanese EFL learners' groups whose proficiency levels are reversed in terms of the difference of years they have spent for their study of English. L1 acquisition researchers have contributed to this kind of comparison. Perfetti & Hogaboam (1975) provide one example. They compare third grade high skilled and fifth grade low skilled L1 readers, and obtain a significant correlation in their experiment between comprehension level and word type. The fifth grade low skilled readers show longer vocalization latencies in decoding low frequency words and non-words. They conclude the deficiency in this decoding skill is related to the fifth graders' poor reading comprehension. Also, Backman et al. (1984) compare mean numbers of mispronunciation errors by English speaking children in grades 2,3,4, and at high school of four word classes: words which are exceptions (e.g., HAVE), are regularly inconsistent (e.g., PAID), are ambiguous (e.g., CLOWN), or are regular words (e.g., HOPE). The data show that L1 acquisition of multiple pronunciations is developmental because the number of errors in naming words from the four word classes shrink as L1 learners acquire reading skills. The researchers maintain that children eliminate the deficit of naming higher frequency exception words by ten years of age. They also reveal that poor readers in grades 3 and 4 are like good readers in grade [2].

As for L2 acquisition, only a small number of learners succeed in learning the target language to the point of achieving native-speaker competence (Selinker, 1972). Most L2 learners, ranging from children to adults, have language learning difficulties still to overcome: false beginners, especially, show a typical pattern of L2 learners who cannot pass smoothly through the sequence of developmental scale.

The present research deals with Japanese EFL learners' cognitive processing of single English words. The basic framework is examining their performances of lexical decision tasks of orally and visually presented English words by three codes: orthography, phonology, and meaning.

3. METHODOLOGY

3.1 Research Questions

The goals of this research are:

1. to identify what is required to be learned in what period of the L2 learning developmental continuum,

2. to observe how the phonological information used

by Japanese EFL learners, especially false beginners, works in lexical decisions,

3. to clarify where Japanese EFL beginners' difficulties lie in processing English words.

3.2 Participants

All the participants of the experiment share Japanese as a mother tongue. Also, their knowledge of English has been mainly acquired through formal instruction at school since they started taking English courses at the age of twelve or thirteen. False beginners and high proficiency university students are still taking English courses at university after having taken approximately 800-900 hours of formal English classes since starting at junior high school. The high proficiency ninth graders have taken English classes at school for approximately 400 hours so far.

3.3 Instruments

The following instruments were used in this data analysis:

1. STEP 3 and STEP 2 test papers[2], each comprising both a written test and a listening test, given in the fall of 1998.

2. A list of 40 visually presented English words.

3. A cassette tape containing a recording of 40 English words orally presented by a native English speaker.

The words used for the experiment were selected from the word list by Miura (1987), to ensure that the frequency, the number of syllables are controlled. The imageability of the words are also controlled because it is said that imageability plays an important role in access to meaning (Howard & Franklin, 1988). Wilson (1987) has rated the degree of imageability of 9240 English words, giving them the values in the range 100 to 700 (see Appendix).

3.4 Procedure

3.4.1 Grouping of participants

A class of private junior high school students (n=42) took STEP 3 test, and the top thirty students were selected as high proficiency beginners (hereafter H.B.). 161 1st year university students whose English levels were estimated as higher than STEP 2 level took a STEP 2 test; of these, the top thirty students were selected as high ability adults (hereafter H.A.). 113 university freshmen whose English levels were estimated as at the level of approximately STEP 3 or lower took a STEP 3 test; the bottom 30 students were selected as false beginners (hereafter F.B.).

The mean score and standard deviation of the H.B. and F.B.'s test scores were calculated (H.B.'s Mean Score=60.8, SD=2.99, F.B.'s Mean Score=26.67, SD=5.73), and there was a highly significant difference between them (t=-26.56, df=29, p<.01). Therefore, it can be said that H.B.'s proficiency level is higher than that of F.B.

3.4.2 Experiment

The experiment was conducted in the following order:

1. *Task A: Naming and meaning in Japanese.* Forty words had been classified into two word classes: a regular word group, and an irregular word group. The words visually presented to the participants were printed in capital letters [3] on a sheet. Each participant was required to read aloud each English word and say its meaning in Japanese.[4] Participants were encouraged to do this as quickly as possible. The task was conducted in a language laboratory and participants recorded their answers on cassette tapes.

Instruction to the participants specified the objectives of this experiment: to test the rapidity and accuracy of decoding phonetically and access to the meaning in Japanese. When participants realized they had made a mistake, they were allowed to repair it. Also, they were told not to omit saying any words whose pronunciation or meanings they did not know but say them as best they could. The reaction time and scores were used for statistical analysis, and errors for qualitative analysis.

2. *Task B: Dictation and meaning in Japanese.* 40 English words, 20 for each word class (regular and irregular), different from those used for task A, were selected. A native speaker of English read aloud each word with a 10 second interval and the reading was recorded on a cassette tape. On answer sheets, participants wrote down each word as dictated and wrote its meaning in Japanese. The scores from this task were also used for statistical analysis and the errors for qualitative analysis.

3.4.3 Criteria for the selection of words

All the target words were selected from the words which appear in the English textbooks for junior high school students. Some words were omitted: English

words daily used as loan words in Japanese, words with homophones, proper nouns, and words with inflectional endings. If one word had two or more meanings, the participants were told to give the meaning which first occurred to them.

Regular and irregular words were selected referring to former research in the field: Henderson (1982), Seidenberg et al. (1984), Seidenberg & McClelland (1989), and Funnell (1996). Regular words, i.e. words with a regular spelling-to-sound correspondence (Funnell, 1996), were selected according to the criterion that the words would be comparatively easy to decode in terms of pronunciation depending on knowledge of English sounds. Irregular words, i.e. words with irregular spelling-to-sound correspondences (Funnell, 1996), were selected as they would require English language learners' conscious learning about the specific words' pronunciations because of their irregularity.

3.6 Criteria for errors

3.6.1 Pronunciations

Participants' pronunciations were checked according to the following criteria: pronunciation of silent letters, eg. HALF: /half/, mispronunciation of vowels, eg. LOSE: / louz/, pronunciation followed by inflected endings, eg. MINUTE: /minits/.

3.6.1 Meanings in Japanese

The criterion for meanings is based on Kenkyusha's New English-Japanese Dictionary (1980). If participant's translation belongs to the different part of speech, it is counted as incorrect, eg. INTERESTING (an adjective): kyoumi (a noun).

It is sometimes argued that we cannot decide the learner's semantic knowledge only from the translation of a single word. Most L2 learners at the threshold level, however, learn the meaning of a word pairing with the equivalent word of their mother tongue. As Kroll & de Groot (1997) maintains that second language beginners tend to rely on a lexical translation strategy, this is very much the case for Japanese EFL learners, who start their L2 learning in classroom environment.

4. RESULTS

Separate analyses were performed on measures of participants' naming speed, naming, and dictation accuracy of performance.

Reaction Time. The reaction time data in naming English words were analyzed in a 3 (proficiency level) × 2 (word class) analysis of variance. There was a significant proficiency level effect, F (2, 87)=12.145, p<.01; the reaction time decreased as proficiency level rose. Post hoc comparisons showed that F.B.'s reaction time for regular and irregular words were longer than those for the two other groups: F.B.'s reaction time for regular words was longer than that of H.B.'s, t (29)=3.876, p<.01, and H.A.'s, t (29)=3.276, p<.05. Also, F.B.'s reaction time of irregular words was longer than that of H.B.'s, t (29)=2.812, p<.01, and H.A.'s, t (29)=3.417, p<.01. However, the H.B.'s performance did not differ from that of the H.A.; they named regular words, t (29)=-1.207, n.s., and irregular words, t (29)=1.511, n.s., as quickly as H.A.. The main effect of word class and the interaction of proficiency levels and word class were significant: F (1, 87)=34.791, p<.01, and F (2, 87)=4.587, p<.05.

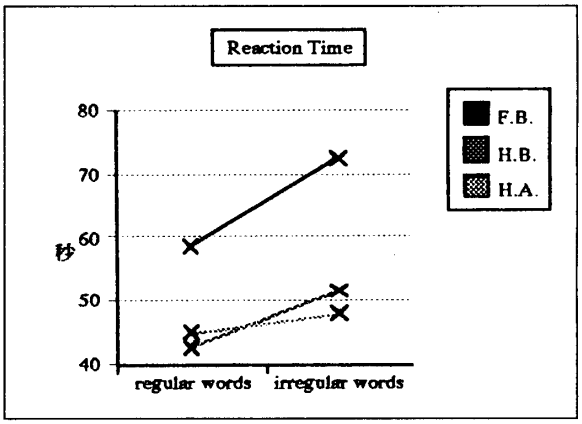

Fig. 1. Reaction time of visually presented regular and irregular words

Naming Scores. Naming scores were counted only when the pronunciation and the translation of a word were correct. Naming and translation scores were analyzed in a 3 (proficiency level) × 2 (word class) analysis of variance. There was a significant proficiency level effect, F (2, 87) =149.349, p<.01; scores increased with proficiency levels. Post hoc comparisons indicated that F.B.'s naming and translation scores for regular and irregular words were lower than those of the two other groups; F.B.'s naming and translation scores for regular words were lower than those of H.B.'s, t (29)= -4.877, p<.01, and H.A.'s, t (29)= -9.249, p<.01. Also, F.B.'s naming and translation scores for irregular words were longer than those of H.B.'s, t (29)= -9.449, p<.01, and

H.A.'s, t (29)= -15.784, p<.01. Moreover, H.B.'s performance differed from that of H.A.; they were unable to name and translate both regular words, t (29)= -5.959, p<.01 and irregular words, t (29)= -7.425, p<.01, as accurately as H.A.

The main effect of word class and the interaction of proficiency levels and word class were significant: F (1, 87)= 33.353, p<.01, and F (2,87)=93.163, p<.01.

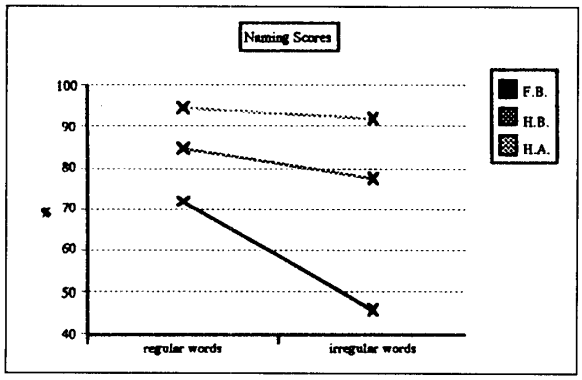

Fig. 2 Naming and translation scores of visually presented regular and irregular words

Dictation Scores. Dictation scores were counted only when the spelling and the translation of a word were correct. Dictation and translation scores were analyzed in a 3 (proficiency level) × 2 (word class) analysis of variance. There was a significant proficiency level effect, F(2, 87) = 115.744, p<.01; the scores increased with proficiency levels. Post hoc comparisons indicated that F.B.'s dictation and translation scores for regular and irregular words were lower than those of the two other groups; F.B.'s dictation and translation scores for regular words were lower than those of H.B.'s, t (29)=-6.904, p<.01, and H.A.'s, t (29)=-9.693, p<.01. Also, F.B.'s dictation and translation scores for irregular words were lower than those of H.B.'s, t (29)=-2.832, p<.01, and H.A.'s, t (29)=-13.622, p<.01. Similarly, the H.B.'s performance differed from that of H.A.; they were unable to write down dictated words or translate regular words, t (29)=-4.347, p<.01, and irregular words, t (29)=-11.203, p<.01, as accurately as H.A. The main effect of word class and the interaction of proficiency levels and words were significant: F (1, 87)=40.678, p<.01, and F(2,87)=16.033, p<.01.

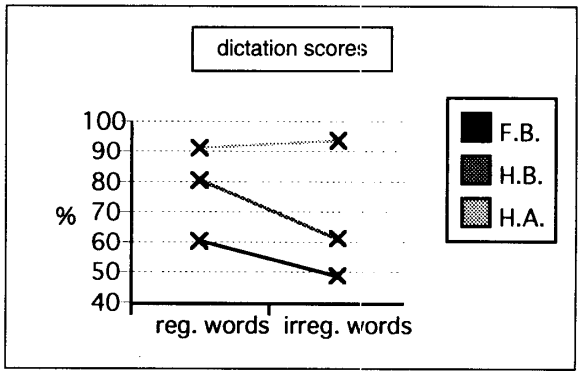

Fig. 3. Dictation and translation scores of orally presented regular and irregular words

Regularity Effects. Among these three groups, F.B. showed regularity effects for reaction time, t (29)=-3.392, p<.01, naming scores, t (29)=8.537, p<.01, and dictation scores, t (29)=3.724, p<.01. H.B. also showed a regularity effect for reaction time, t (29)=-6.52, p<.01, and naming, t(29)=4.807, p<.01, and dictation scores, t (29)=6.854, p<.01. H.A. also showed regularity effect for reaction time, t (29)=-3.769, p<.01., but the regularity effect for naming scores is marginal, t(29)=1.765, p=0.044., and they showed no regularity effect for dictation scores, t (29)=-1.076, n.s..

From these results, it appears that F.B.'s difficulty in English word recognition of irregular words is the main factor which explains the significance of the interactions of proficiency levels for rapidity and accuracy.

It should be noted that the results may slightly change according to the experimental conditions. In this present experiment, regular and irregular words are grouped together, and the participants named or wrote down in response to dictation of the regular word group first and then moved on to the irregular word group. This is considered in discussing the results in the following section.

5. DISCUSSION

The aim of this section is to see how the three Japanese learner groups recognize visually and orally presented English words and access their meanings. Also, the stimulus words of the target language presented to participants and their phonological and orthographic output are compared to gain a better understanding of their cognitive processing.

5.1 Task A: Naming and meaning in Japanese

5.1.1 Comparison of response time

While it takes F.B. much more time in processing visually presented irregular words than the other two groups, H.B. and H.A. do not have any significant difference between them without the regularity effect of word class (Fig.1). They seem to be able to automatically decode common English words they learn during the first three years of foreign language instruction at school. However, it is not sufficient to judge the three types of learners' actual learning conditions only with regard to the rapidity of word processing; in fact, H.B., who have seemingly reached the automatic level judging from their speed at processing basic words, show that they are still in the course of development in view of their lower levels of accuracy.

5.1.2 Comparison of naming accuracy

Figure 2 shows how accurately the three groups were able to decode visually presented stimulus words. H.B.'s scores of regular and irregular words are between those of F.B. and H.A,. They also have difficulty in processing irregular words although it is not so serious as F.B.

F.B. were able to process visually presented words to some extent, but their errors increase in processing irregular words. Nakamura (2000) has found that participants' regular reading of words with an irregular spelling-to-sound correspondence is a signal of their inhibition towards successfully embracing a semantic system. Moreover, it is revealed that 65.5% of meaning errors can be explained from this oral output.

Table 1 Examples of Regularization of Irregular Words with Meaning Errors

CHILD	/tʃild/	LAUGH	/la:dʒ/, /la:g/
LOSE	/louz/	FRUIT	/frait/, /fruit/
HALF	/half/, /helf/	BUSY	/buzi/
FAMOUS	/fa:mous/	FOREIGN	/foridʒin/
EARLY	/iəli/, /eəli/	SOUTH	/sous/
LISTEN	/listen/	ANSWER	/answeə/
MINUTE	/minju:t/	COUNTRY	/komtrai/
CHAIR	/tʃaiə/	DOWN	/doun/

In order for learners to access meaning of irregular words, they have to take several steps; after perceiving printed letters, they have to visually analyze the irregularity of spelling and activate their English lexicon . If this route is inhibited, they have to take a sub-lexical route, which bypasses the phonological lexicon. Funnell 1996 maintains that this route enables people to read and produce unfamiliar words orally without understanding their meanings. Therefore, it may be presupposed that H.A. and H.B. may take the same route when they process low frequency unfamiliar words even though the present experiment shows that they can decode high frequency words almost automatically.

5.2 Task B: Dictation and meaning in Japanese

5.2.1 Comparison of orthographic accuracy

The research of orally presented word recognition lags behind that for visually presented words because L1 word recognition research started with the aim of identifying obstacles to the mastery of reading comprehension and have focused on the analysis of decoding visually presented words (Shankweiler & Lundquist, 1992). Is there a bypass which enables learners to process orally presented words without going through the lexicon? In other words, do they access meaning trying to connect phonemes to graphemes directly when the phonological lexicon is inhibited? F.B.'s output data give us some clue regarding this question.

It is clear that F.B. have not learned English spelling well (Fig. 3). However, they can access meaning of words to some extent even if they cannot use English lexical knowledge by mapping phonology and orthography

Table 2 Percentage of Correct Access to Meaning with Spelling Errors (%)

Participants	Reg. Words (20 words)	Irreg. Words (20 words)
F.B. (n=30)	13	21
H.B. (n=30)	2.65	5.8
H.A. (n=30)	1.5	2.5

Referring to errors of consonants, they cannot distinguish /r/ and /l/, /m/ and /n/, /v/ and /b/, or /s/ and /θ/ This data confirms what has been established in contrastive analysis (Takefuta, 1981). However, the present study demonstrates that learners can sometimes access meaning even if they cannot discriminate phonological differences between L1 and L2. Moreover, clues as to why this may be lie in their spelling errors of vowels as shown in the examples from the data below: English spelling of regular words is not so simple as Japanese words spelled with Romaji script (Kess &

Miyamoto, 1999; 112). This seems to be one of the reasons why F.B. make spelling mistakes even with regular words. Yet, one question occurs; how, then, do they succeed in accessing meaning? They may use their knowledge of L1 orthography , *katakana* or Romaji script, as a learning strategy in accessing meaning. In other words, they have a "fuzzy" phonology recognition strategy which encompasses both standard English pronunciation and equivalent katakana pronunciation of the same words. The tendency to use this strategy is most marked in the output data of F.B.

False beginners depend on this strategy more in spelling out irregular words than do the other two groups (Table 2). It is generally believed that L1 and L2 learners cannot access meaning without going through the lexicon when they process irregular English words because English is an orthographically deep language (Tamaoka & Menzel, 1994). As a matter of fact, there are 128 cases of correct access to meaning with incorrect spelling of irregular words in false beginners' output data; the number of the cases is 45.16% of all the incorrect spellings of irregular words of Task B. The figures in parentheses show their frequency. The frequently occurring spelling errors show the tendency of phoneme-grapheme correspondence, *futer* (7), *bacouse* (5), *bout* (8), *mounten* (6), *maunten* (4), *hed* (5) *mouse* (6), *sience* (8), *frend*(4). This tendency explains the systematicity of Japanese EFL learners' spelling errors in processing orally presented English words. In their L1, they have acquired kana, the Japanese phonetic representation which has simple mapping system of phonology and orthography, and apply it to the L2. Therefore, it can be assumed that they do not hesitate to take the sub-lexical route which does not pass through L2 orthographic lexicon but is based on phoneme-grapheme rules.

Findings in this experiment are as follows:

1. In order for Japanese EFL learners to pass smoothly through the developmental continuum, they have to distance themselves from their knowledge of the Japanese lexicon which has shallow orthographic and phonological structure. As they go through the continuum, they can gradually eliminate their dependence on misleading L1 knowledge. If the dependence does not disappear, the learners may remain false beginners, unable to progress.

2. The phonological knowledge false beginners use in decoding English words includes their knowledge of L1 phonology. They use this knowledge as an L2 learning strategy in order to overcome the twofold difficulties caused by cross-linguistic and intra-lingual factors.

3. Japanese EFL beginners have learning difficulties in two ways because of the intra-lingual factor of English being an orthographically deep language, and of the cross-linguistic difference between L1, an orthographically shallow language in terms of *kana*, and L2, an orthographically deep language.

6. CONCLUSION

Further research will be necessary to make it clear whether word recognition is the main factor for text comprehension. There is a good deal of discussion in the literature as to how effective decoding of printed words affects L1 or L2 reading comprehension (Eskey,1988; Sagalowitz, et al. 1991; van den Bosch, 1995). Researchers tend to favor the major role in text comprehension of orthographic and phonological acquisition by L2 beginners. It may safely be said that the effective processing of single words is a prerequisite for text comprehension at the threshold level.

High proficiency ninth graders' output data show what L2 learners require so as to be able to proceed along the developmental continuum favorably in the early stage of their development; the lexical entry of the basic words into the learners' lexicon should be made and be available to automatic processing to some extent so that they can make room for macrostructure of cognitive learning such as syntax, discourse, and application of background knowledge needed for holistic comprehension.

False beginners' output data, on the other hand, indicate Japanese EFL beginners' perplexity when they encounter a target language with a more complex phonological and orthographic structure than their L1. The data also show that language teachers should be sensitive to these demands on EFL learners and respond in an aware and principled way. What, in practical terms, this should be is a subject for classroom-based research.

NOTES:

1) In this research L2 means any language other than the learner's mother tongue, L1.
2) STEP is short for Society for Testing English proficiency. According to the society, the data on reliability and validity of STEP tests have not been

open to public. The readability of STEP 2 and STEP3 tests used for the experiment was checked. Flesch's readability indexes for STEP 2 and STEP 3 are 63.9 and 105.19 respectively; The English passage used for STEP 2 is at the standard level, and for STEP 3 is very easy. Therefore, it is judged that STEP2 is more difficult than STEP 3.

3) For Task A, lower case letters were not used to avoid the possible complicating factor of participants using the shape of words in lower case letters as information for their processing of words (Haber & Haber).
4) It is considered to be appropriate for the participants to pronounce a word first and say the meaning next because English alphabets are phonetic representation and the phonological activation takes place before access to meaning (Perfetti et al. 1992).

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(主任指導教官：小篠敏明)

APPENDIX

Task A		Syllables	Frequency	Imageability
Regular	1. GLAD	1	8	445
Words	2. GROW	1	14	371
	3. FIFTEEN	2	11	491
	4. INTERESTING	3	31	359
	5. HOLIDAY	3	2	629
	6. ANIMAL	3	12	575
	7. DINNER	2	30	570
	8. RIVER	2	22	633
	9. EVENING	3	30	559
	10. STRONG	1	23	463
	11. SNOW	1	20	597
	12. HOSPITAL	3	10	602
	13. SICK	1	17	456
	14. SING	1	20	527
	15. SPRING	1	28	585
	16. RICH	1	8	467
	17. CLOCK	1	7	614
	18. FINISH	2	7	437
	19. TRAVEL	2	8	506
	20. WINDOW	2	20	602
	Mean	1.8	16.4	524.4
	SD	0.83	8.95	84.49
		Syllables	Frequency	Imageability
Irregular	1. ANSWER	2	23	368
Words	2. FOREIGN	2	13	404
	3. BREAKFAST	2	14	586
	4. CHILD	1	9	619
	5. FAMOUS	2	21	376
	6. COUNTRY	2	66	539
	7. HALF	1	15	458
	8. FIGHT	1	14	543
	9. BUSY	2	33	403
	10. EARLY	2	22	376
	11. WATCH	1	49	525
	12. LISTEN	2	14	378
	13. LAUGH	1	9	528
	14. LOSE	1	6	373
	15. MINUTE	2	6	473
	16. YOUNG	1	38	521
	17. CHAIR	1	11	610
	18. DOWN	1	50	459
	19. SOUTH	1	17	476
	20. FRUIT	1	6	587
	Mean	1.45	21.8	480.1
	SD	0.51	1.69	86.17

Task B		Syllables	Frequency	Imageability
Regular	1. drink	1	15	553
Words	2. fish	1	28	615
	3. king	1	15	585
	4. story	2	28	491
	5. dark	1	17	586
	6. garden	2	31	635
	7. letter	2	42	595
	8. black	1	21	589
	9. important	3	28	341
	10. bank	1	15	560
	11. stand	1	18	471
	12. green	1	34	609
	13. student	2	68	603
	14. pencil	2	22	607
	15. sister	2	42	613
	16. winter	2	19	621
	17. begin	2	8	359
	18. voice	1	9	489
	19. hard	1	24	460
	20. afternoon	3	37	513
	Mean	1.6	26.05	544.75
	SD	0.68	1.49	85.44
		Syllables	Frequency	Imageability
Irregular	1. boat	1	8	631
Words	2.head	1	10	593
	3.mouth	1	15	613
	4.bread	1	11	619
	5.future	2	9	413
	6. air	2	21	450
	7. friend	1	82	587
	8. build	1	6	399
	9. town	1	38	553
	10. because	2	52	244
	11. mountain	2	10	629
	12. once	1	12	322
	13. heart	1	12	617
	14. teach	1	5	429
	15. quiet	2	12	426
	16. beautiful	3	63	532
	17. great	1	38	390
	18. science	2	33	423
	19. face	1	20	581
	20. enough	2	21	580
	Mean	1.45	23.9	501.55
	SD	0.65	2.1	115.49