Aural Recognition of English-Based Loanwords by Japanese Learners

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Research suggests that Japanese learners have extensive knowledge of English vocabulary through their existing familiarity with loanwords. They may also be able to identify English words with associated loanwords more easily than those without loanwords. This pilot study tested Japanese university students' aural recognition and ability to spell and translate 20 English words, 10 with associated loanwords drawn from the Academic Borrowed Words List (Daulton, 2008) and 10 without associated loanwords from the Academic Word List (Coxhead, 2000). The results indicate that participants were able to spell and translate English words with associated loanwords at, on average, more than twice the rate of words without loanwords. These results suggest that educators need to give attention to the existence of loanwords and adjust their teaching of vocabulary items accordingly. Problems with the present study are discussed, along with directions for further research.

日本人学習者は、既存の借用語に慣れ親しんでいるために、英単語の知識が豊富であるという研究結果がある。また、借用語に関連する英単語は、借用語に関連しない英単語よりも容易に識別できる可能性がある。本研究では、日本の大学生が20の英単語を聴覚的に認識し、スペルおよび翻訳する能力をテストした。そのうち10語はAcademic Borrowed Words List (Daulton, 2008) から抽出した借用語関連のもの、あとの10語は Academic Word List (Coxhead, 2000) から抽出した借用語と無関連のものであった。その結果、借用語関連の英単語は、そうでない英単語に比べ、平均して2倍以上の確率でスペルと翻訳ができることがわかった。この結果は、教育者が借用語の存在に注意を払い、それに応じて語彙項目の指導を調整する必要があることを示唆している。また、本研究の問題点と今後の研究の方向性についても考察した。

Learning any foreign language is a considerable challenge, but the challenge for Japanese learners of English seems to be much greater due to the linguistic differences between the two languages. A study by Hart-Gonzalez and Lindemann (1993) found that of the 43 languages investigated, Japanese along with Korean was the most difficult for native English speakers to learn. This does not necessarily show that the same is true for L1 Japanese speakers when learning English, but it does highlight the differences between the two languages. Grammatically, Japanese has a subject-object-verb structure whereas English follows a subject-verb-object order. Phonologically, Japanese has only five vowel sounds compared to fourteen vowel sounds in English. Japanese also has very few consonant clusters, which means that they find connected speech in English difficult to produce and hard to understand (Thompson, 2001). Along with other differences in orthography and stress timing, there is clearly considerable linguistic distance between Japanese and English.

Despite these differences, it is important to identify areas where L1 knowledge of Japanese might facilitate L2 English learning. Ringbom (2007, p.2) wrote that languages already known to the learner should be viewed as an aid to learning a new language. By identifying items already known to the learner, it should be possible to build on this knowledge and add new information. It is in vocabulary where there is perhaps the greatest overlap between Japanese and English. This is because Japanese shares many cognates with English. For the purposes of this study, *cognates* are defined as L1 and L2 words that are similar in form and sometimes in meaning (Carroll, 1992). Japanese has been borrowing words from English since the 17th century (Daulton, 2015) and this trend has resulted in an abundance of loanwords known as *gairaigo* in Japanese. Research by Daulton (2010) found that of the most frequent 3,000 word families in the British National Corpus (BNC) almost 50% corresponded to one or more common loanwords in Japanese. Furthermore, Daulton found that 27% of words on the Academic Word List (AWL) have a corresponding Japanese loanword. Daulton (2005) used these words to

create his Academic Borrowed Word List (ABWL). The ABWL is therefore a subset of those words on the AWL that have loanwords in Japanese.

Cognates have a lower learning burden than non-cognates and can help learners achieve a level of proficiency faster than would otherwise be the case (Ringbom & Jarvis, 2009). Thus, loanwords might provide Japanese learners with a lexical bridge to cross the gap between Japanese and English.

There are several caveats to the view that loanwords are an aid to Japanese learners of English. When English words are borrowed into Japanese they go through several linguistic modifications (Uchida, 2001). Firstly, English-based loanwords change their phonology to fit the Japanese sound system, which has a limited number of syllables. As a result, the pronunciation and spelling of Japanese loanwords can differ considerably from their English counterparts. Secondly, when English words are borrowed into Japanese they go through various morphological changes. Nouns are easier to borrow than other parts of speech, so most English-Japanese loanwords are nouns. Verbs, adjectives, and adverbs all require inflectional changes to integrate into Japanese. Shortening or clipping is a common feature of Japanese and this also occurs with loanwords. This often results in the final syllable of words being dropped, such as in the word *apaato* (apartment). These changes to loanwords can cause confusion for Japanese learners of English when trying to identify or produce the original English word.

In addition to morphological changes, loanwords in Japanese are also modified semantically. Uchida (2001, pp. 43-45) developed a typology of these modifications:

- *True cognates* share the same meaning in English and Japanese, so are likely to provide the most aid to learners.
- *Convergent cognates* are those where multiple Japanese words converge onto one denotation in English. For example, the loanword *tsuna* (tuna) only means tinned tuna in Japanese while the non-loanword, *maguro*, is used for all other types of tuna. Thus, two different words in Japanese have converged onto one English word.
- *Divergent cognates* represent the opposite relationship: One word in Japanese is represented by two or more divergent words in English. For example, the cognate *sumaato* (smart) can be used to mean intelligent or slim. Both convergent and divergent cognates can be helpful to learners in some cases, but misleading in others.
- *Close false cognates* have a meaning which is close in both languages, but clearly different. An example of this is that *dasshu* (dash) means a rush or hurry in Japanese. Uchida (2001) proposes that this is the most difficult group of cognates to master because it is harder to distinguish between the loanword and the English counterpart.
- *Distant false cognates* are words with distant or unconnected meanings. For example, *konsento* (consent) denotes an electric socket in Japanese.

In short, these discrepancies in the lexical gridding of English-based loanwords in Japanese can add to the burden of vocabulary learning.

Despite the potential pitfalls for recognition and production of English-based loanwords, there is evidence for a positive loanword effect for recognition and spelling of cognates by Japanese learners. Hashimoto (1992) tested Japanese learners on their ability to write down dictated words and sentences. She found that students were able to recognize loanwords more easily than non-loanwords. A further study by Hashimoto (1993) found that in a dictation test Japanese ESL learners were able to spell loanwords more accurately than non-loanwords. Furthermore, this study found that the loanword effect was almost as strong as the impact of word frequency on the accuracy of spelling. Daulton (1998) used a closed test using Japanese prompts to measure the loanword effect on spelling accuracy. He found that Japanese university students were considerably better at spelling English-based loanwords than non-loanwords. Thus, previous research suggests that cognates do facilitate vocabulary learning in terms of word recognition and spelling.

This research will focus on aural recognition of words on the AWL. We wanted to measure this effect with regards to spelling accuracy and translation with a view to acquiring a better knowledge of what our students already know of academic vocabulary, and also to identify any gaps in their knowledge that would require attention in the classroom. The research questions guiding this study are:

RQ1. Are loanwords on the AWL easier to spell than non-loanwords?

RQ2. Are Japanese learners more likely to be able to translate loanwords on the AWL into Japanese than non-loanwords?

Methods

Selection of Vocabulary Items

For this research, we selected ten English words from the ABWL compiled by Daulton (2005) which have an associated Japanese loanword, and ten English words for which there is no commonly used loanword from the AWL compiled by Coxhead (2000). The

words were selected from subsets 5, 6, and 7. Each subset contains 60 words, with subset 5 containing words of frequency rank 251 – 300, subset 6 of words ranked 301 – 360, and subset 7 of words ranked 361 – 420. This was done to present a range of word frequencies and to increase the possibility that learners (generally of lower-intermediate ability) would need to rely on loanword knowledge to identify more difficult vocabulary.

In order to verify that each item was correctly classified as having a loanword (or not), all items were screened by a panel of three native speakers of Japanese. The items were only approved for inclusion if all three raters agreed. During the process, several items were rejected because one or more raters felt that the word was actually a loanword despite not being on the ABWL. The rejected items were *draft*, *logic*, *estate*, *quote*, and *paradigm*. The final list of items is presented in Table 1, below.

Table 1

Vocabulary Items Used in This Study

Loanwords			Non-loanwords	
AWL Subset	Items	Katakana	AWL Subset	Item
5	license	ライセンス	5	compound
5	symbol	シンボル	5	revenue
5	trend	トレンド	5	ratio
6	expert	エキスパート	6	author
6	instructor	インストラクター	6	subsidy
6	motivation	モチベーション	6	citation
7	extract	エキス(トラクト)	7	hierarchy
7	survival	サバイバル	7	thesis
7	mode	モード	7	decade
7	volunteer	ボランティア	7	successor

Participants

The participants in this study (N = 69; m = 57, f = 12) were students enrolled in the authors' first- and second-year English classes at two private Japanese universities. Their English level was not tested but was estimated to range from pre-intermediate to upper intermediate. They were asked to participate voluntarily and were informed that the results of the study would have no impact on their grades. All the participants gave informed consent, and the project was cleared with the universities' institutional review boards.

Testing, Data Collection, and Screening

We created an online test with the 20 vocabulary items using a commercially available testing website (www.formative.com). The advantages of this platform are that audio files can be embedded directly into the test, students input answers by typing directly into the website, their answers are scored automatically, and data is easily output to a spreadsheet. Participants completed the test at home using a personal computer or tablet. For each vocabulary item, they clicked on the audio and were able to hear the word pronounced twice in British-accented English as recorded by one of the study's authors. They then typed the spelling of the word in English. Next, they were asked to input the Japanese translation in *kanji*, *hiragana*, or *katakana* as they saw fit. Although in theory they were expected to listen to each word twice, in practice the platform does not limit the number of times users can click to listen to each word, nor was there a time limit for completion of the test.

Upon completion of the test participants submitted their data, which was collected and output to a spreadsheet program, Microsoft Excel, for screening and analysis. The Excel Analysis ToolPak was used to calculate *t*-values and effect sizes.

Several respondents did not complete the test. Some participants reported that they lost their connection to the website mid-test. These participants were excluded from the study, as were any respondents who did not answer at least 80% of the questions. (It was assumed that in other cases participants did not answer questions simply because they did not know the answer.) The figure N = 69 represents the number of participants who completed the study.

Answers were scored as either right or wrong. In the case of spelling *license*, *licence* was also scored as correct. Assessing the translations was more complicated. Several possible translations for each item were input in advance to be marked correct automatically. For example, *instructor* had several possible answers including *sensei*, *shidōsha*, *shidōin*, *kyōin*, *shihan,* and *kōshi.* After the data had been collected, all wrong answers were checked manually for unanticipated correct answers.

Results

Test Score Reliability

Because this is a pilot study, a calculation of Cronbach's Alpha was performed to assess the internal consistency of results for each subtest. The calculation for the spelling test yielded a result of $\alpha = 0.69$, a level of reliability considered "satisfactory" (DeVellis, 2003) while the value for the translation test was $\alpha = 0.81$, considered "good."

Spelling Test

All 10 loanwords were more likely to be known by the participants than the 10 non-loanwords. Descriptive statistics for the test are presented in Table 2. The data for the spelling test is presented in Figure 1.

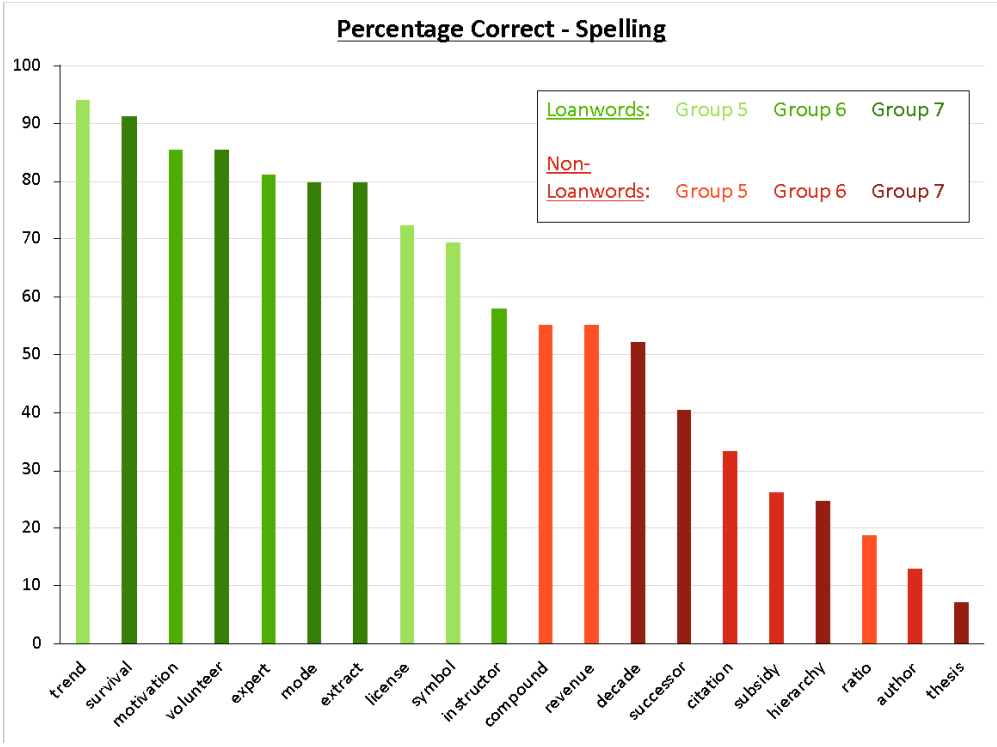
Table 2

Descriptive Statistics of Spelling Test

Loanwords		Non-loanwords	
Mean Score	79.7%	Mean Score	32.6%
Std. Err.	2.01%	Std. Err.	2.90%
Upper 95% Conf. Int.	83.7%	Upper 95% Conf. Int.	38.4%
Lower 95% Conf. Int.	75.7%	Lower 95% Conf. Int.	26.8%

Figure 1

Vocabulary Item Spelling Rate



On average, loanwords were spelled accurately by more participants ($M = 79.7$, $SE = 2.01$) than non-loanwords ($M = 32.6$, $SE = 2.90$). These results are statistically significant $t(68) = 18.2$, $p < .001$, and represent a large effect, $d = 0.91$.

Translation Test

For the translation test, all the loanwords were translated correctly by more participants than the non-loanwords, with the exception of *extract*. Descriptive statistics are presented in Table 3. Full results are presented in Figure 2.

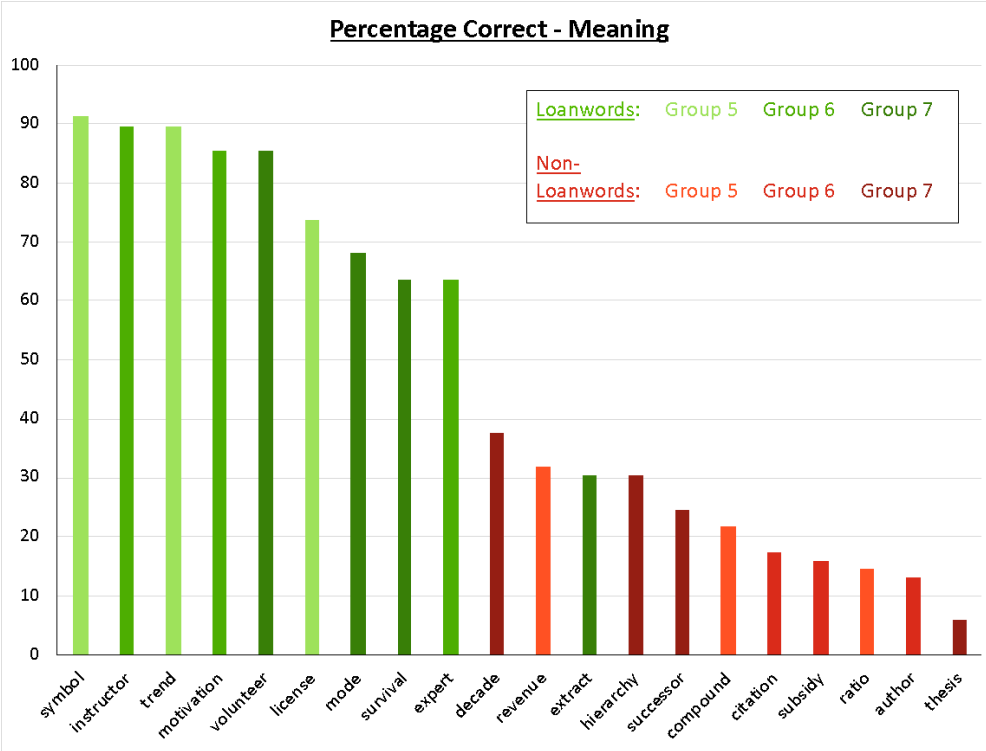
Table 3

Descriptive Statistics of Meaning Test

Loanwords		Non-loanwords	
Mean Score	74.2%	Mean Score	21.3%
Std. Err.	1.80%	Std. Err.	2.42%
Upper 95% Conf. Int.	77.8%	Upper 95% Conf. Int.	26.1%
Lower 95% Conf. Int.	70.6%	Lower 95% Conf. Int.	16.5%

Figure 2

Vocabulary Item Translation Rate



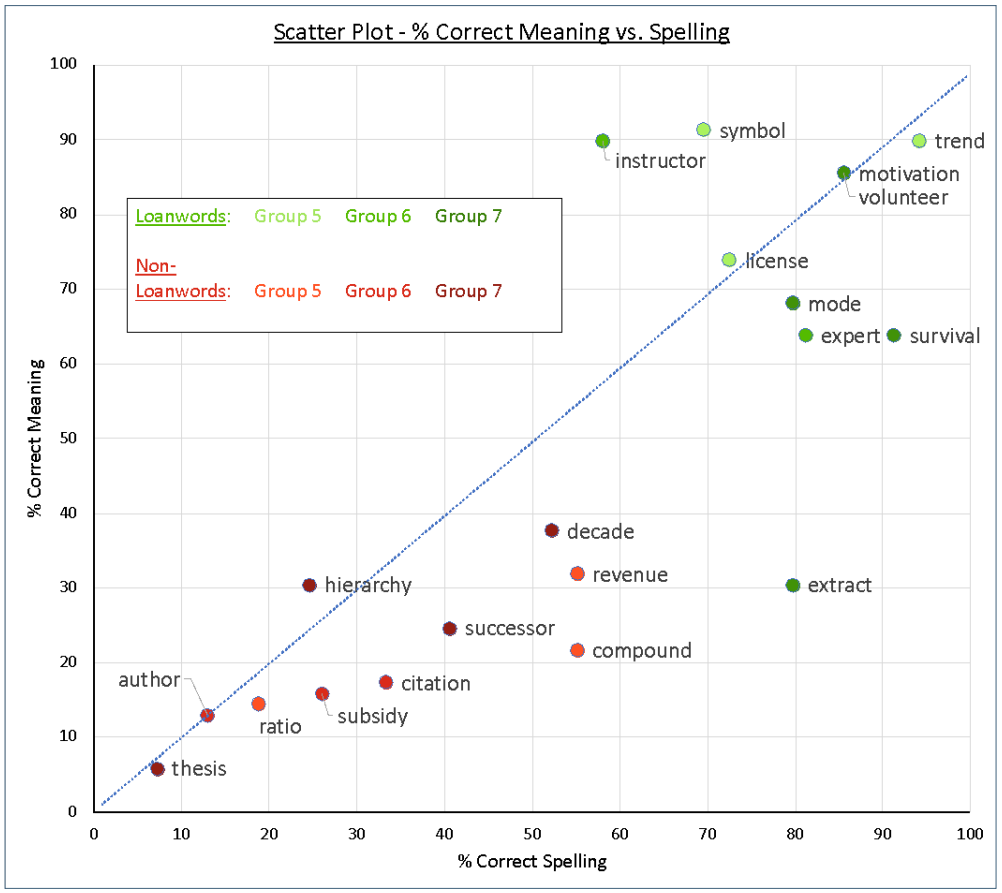
On average, loanwords were translated accurately by more participants (M = 74.2, SE = 1.80) than non-loanwords (M = 21.3, SE = 2.42). These results are statistically significant $t(68) = 21.9$, $p < .001$, and represent a large effect, $d = 0.94$.

Scatter Plot

Another way to visualize the data and view correlations is to create a scatter plot of the vocabulary items' meaning scores vs. their spelling scores, where each word appears as a point on the graph. The upper-right quadrant represents better-known words while the lower-left quadrant represents less-known words. The results of this test show that with few exceptions, the loanwords fall in a cluster in the upper-right quadrant, while non-loanwords cluster in the lower-left quadrant. This separation into two groups suggests a large difference between students' familiarity with loanwords and non-loanwords.

Furthermore, words that fall on or close to the normal line y = x (shown in blue) may be characterized by a balance between the difficulty in spelling and translating them. Conversely, items falling far from this line exhibit some discrepancy. The main outliers are *compound*, *extract*, and *instructor*.

Figure 3
Meaning vs. Spelling Rate Scatter Plot



Discussion

On the Effects of Loanword Cognates

The results of the present study indicate a large effect on both spelling and translation scores when the item is a loanword, with spelling accuracy being more than two times greater for loanwords, and translation accuracy roughly three times greater. The effect from an item being a loanword is far greater than the effects of word frequency within groups. These results support the findings from previous studies, such as those by Hashimoto (1992, 1993) and Daulton (1998).

Most loanwords were recognized and spelled at a high rate of accuracy. One exception was *instructor*, for which almost all errors were due to participants changing the final *-or* to *-er*, or to changing the middle *u* to an *a.* The former error is a common one even among native English speakers who often confuse the suffixes *-er* and *-or*. The latter error likely arises from interference from the *katakana* spelling of the loanword *insutorakutaa.*

As suggested by Uchida (2001), words that are divergent or false cognates may pose special problems for Japanese learners. In the current study, the item *extract* was translated incorrectly by the participants more often than other loanwords. This may be because the related loanword in Japanese is the clipped version *ekisu* (e.g., a plant or herbal extract). When borrowed words are changed significantly (in this case, shortened) it may disguise the connection to the English word and create a barrier to comprehension.

Limitations and Future Directions

The current study is limited in scope, with only 20 vocabulary items across a limited frequency range. A next step for further research would be to expand both the number and the frequency range of test items.

In terms of methodology, the use of an online quiz provided a convenient way to test participants. Indeed, as this research was conducted during the Coronavirus pandemic, it was perhaps the only way to do so. Nevertheless, some problems arose, such as participants not completing the test because they reported being disconnected from the website. It is possible that some participants listened to audio clips several times while others listened only once. It is also possible that some participants consulted online dictionaries or other resources. We consider this unlikely, because the participants had no motivation to unfairly achieve a high score. Also, the low accuracy of items such as *thesis* suggests that the test was conducted fairly. Nevertheless, considering these issues, a more consistent and controlled delivery system would be desirable in future studies.

Furthermore, the audio was recorded by one of the authors with British pronunciation, while the other author's students were probably more accustomed to his North American pronunciation. This difference may have affected their aural comprehension. Further studies should ideally feature recordings of multiple accents by third parties.

Perhaps most significantly, the line between what is and what is not a loanword is not always clear. A good example is the item *ratio*, which does not appear as a loanword in most dictionaries, and which our raters designated as not being a loanword. In some contexts, however, it does appear in connection with other words, such as *asupekuto-reshio* (aspect ratio). Indeed, many words which are not in common usage as loanwords may be used in specialized fields like engineering and medicine, and English words are entering the Japanese lexicon every day. It is unclear when they might be in common enough usage to be considered loanwords. To overcome this problem, our study utilized three native speakers as raters. However, a larger panel of raters would be desirable for future research, or a more objective methodology drawing upon frequency of appearance in a Japanese corpus.

Future studies should take into account the differences between test items in more detail, comparing for example the number of syllables, phonemes, and letters. Longer words and those with spelling constructions that may pose problems for Japanese learners, such as consonant clusters, should be considered more difficult.

Finally, more thought needs to be given to the deliberate inclusion of various kinds of cognates among the test items, and the effects this has on spelling and translation accuracy. The present study raises interesting questions about the interference caused by these cognates, and more research needs to be done to investigate what kind of errors this interference leads to.

Implications for Classroom Instruction

With its large vocabulary, learning English is a huge challenge. The results of this pilot study indicate that drawing upon preexisting knowledge of loanwords can provide a means for enhancing students' comprehension of vocabulary items. Educators must, however, be careful about the pitfalls of convergent, divergent, and close false cognates, as illustrated in the current study by the low recognition of the item *extract*, where the participants appear to have been confused by the meaning of this word due to interference from the loanword *ekisu*. (Interestingly, the word was spelled correctly by almost 80% of respondents, so a good knowledge of English spelling patterns served them well here.)

We would encourage teachers to make learners conscious of the similarities as well as the differences between English words and their cognates when teaching vocabulary. A meta-awareness of their preexisting knowledge may help raise students' confidence in their ability to master new vocabulary items. Teachers should take special care to emphasize parts of speech, because knowledge of how English words may change when they are borrowed into Japanese (e.g., the tendency for verbs to become nouns) will help learners use new vocabulary appropriately.

Conclusion

The results of this pilot study support the results of previous research in this area. Considering the importance of vocabulary teaching, however, we feel that more research into this subject is needed.

Our results indicate a strong loanword effect on both spelling and translation, stronger than the effect of word frequency within the loanword and non-loanword groups. At the same time, in a few cases loanword interference appeared to result in comparatively low levels of spelling or translation accuracy. Exactly how this interference occurs suggests an interesting avenue for future research. As an example, post-test interviews could be conducted with a sample of the participants to analyze and identify the sources of their errors.

The results of this study may have implications for how instructors teach vocabulary in the classroom. Instead of introducing the most frequent words first, for example, it may be productive to introduce vocabulary items with loanwords first, starting with true cognates, then close cognates, followed by more distant and false cognates. Whenever vocabulary is taught, it will be important to address the issue of loanwords and how vocabulary may be similar to or different from the loanwords with which learners are already familiar. Furthermore, although this pilot study supports the view that English-based cognates can facilitate positive transfer of receptive vocabulary, it does not address the problems associated with spoken production of English words that have corresponding loanwords in Japanese. Solving these problems may prove a much greater challenge for students and teachers alike.

Bio Data

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