University Student Knowledge of Loanwords Versus Non-loanwords

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Students (*N* = 408) from 3 Japanese universities took 2 vocabulary tests of their receptive and productive knowledge of English loanwords versus nonloanwords. Six loanwords (LWs) and 6 nonloanwords (NLWs) from each of the 8 JACET8000 levels were tested in a passive recognition yes-no test followed by an passive recall translation (English to Japanese) test of the same 96 items. Overall, students showed knowledge of 57% more LWs than NLWs on the yes-no test, but knew 195% more on the translation test. The differences between LW and NLW results decreased as English ability levels increased. LWs were better known than NLWs at every frequency level on the translation test and recognized more often on all but 2 of the higher frequency levels on the yes-no test. These results have implications for vocabulary teachers and testers, in terms of the differences in the learning difficulty of LWs versus NLWs, as well as the risks these differences pose for vocabulary assessment.

日本国内の3大学に通う大学生（408人）を対象に、英語における借用語と非借用語の受容的・生産的理解に関する2つの語彙テストを実施した。JACET8000における8つの頻度レベルそれぞれから借用語6語と非借用語6語の計96語を選び、受動型のYes／No認識テストと、英語を日本語に直す能動型の生産的翻訳テストを実施した。その結果、被験者はYes／Noテストにおいて借用語の得点が非借用語よりも57％高く、翻訳テストでは195％も高かった。また、英語能力レベルが低い大学の被験者ほど借用語と非　借用語の得点差が大きかった。テスト別に見ても、翻訳テストでは、被験者は全ての頻度レベルで非借用語よりも借用語を多く理解し、Yes／Noテストでも、被験者は2つの高頻度レベルを除き、非借用語よりも借用語を多く認識した。これらの結果は語彙を教える教師やテスト作成者への示唆となろう。

Loanwords **(LW)** can be thought of as "lexical items in two or more languages which are identified by speakers as related by their form," regardless of meaning (Uchida, 2001, p. 9). When learners pair L1 and L2 words as LWs, "they make a connection between L2 stimuli and L1 representations stored in the mental lexicon" (Uchida, 2001, p. 9). Encouraging students to notice and use English LWs common in their native language is "a very effective vocabulary expansion strategy" (Nation, 2003, p. 2).

The Japanese language contains thousands of English LWs, "many of which are well-established and in universal use" (Kay, 1995). It has been estimated that about half of the most common 3,000 words of English have some borrowed form in Japanese (Daulton, 1998). Of a random selection of words contained in the Reading Sections (parts four and five) of two official TOEIC® Bridge Practice Tests (Ashmore et al., 2007), it has been found that 53% of them were English LWs in Japanese. Stubbe (2010) suggested that LW recognition was significantly

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better than nonloanword (NLW) recognition, especially among lower level students. The lower ability students in that study knew 44% of all words, but 143% more LWs than NLWs, while the higher level students knew 72% of all words but only 76% more LWs. Additionally, the low students knew only 60% of the LWs whereas the high students knew 85% of them. It is "possible that the low-level students have more difficulty in recognizing LWs which they already know in L1" (Stubbe, 2010, p. 718) than their high-level counterparts.

In the pilot to this present study (Stubbe & Yokomitsu, 2012), it was found that Japanese university students' receptive knowledge of a random selection of 60 English LWs across all levels of the JACET List of 8,000 Basic Words (JACET, 2003) (hereinafter J8000) was on average almost twice their passive knowledge of an equal number of NLWs from the same frequency levels, as measured by a yes-no checklist vocabulary test (means of 78.8% for LWs versus 40% for NLWs). That investigation also found that those same students' recall knowledge as measured by an English to Japanese (L2 to L1) translation test of the same LWs was on average three times greater than their productive knowledge of the same NLWs (46% for LWs and 13.2% for NLWs). Thus it was concluded that LW status strongly influenced student lexical knowledge across all levels of the J8000 (Stubbe & Yokomitsu, 2012).

The nearly 50% drop in item means reported in Stubbe and Yokomitsu (2012) (49.6% versus 25.0% of the full 120 items for yes-no and translation tests respectively) may suggest that students were simply overestimating their lexical knowledge on the yes-no test. However, Waring and Takaki (2003) reported a nearly 70% decrease in mean scores between a similar recognition checklist test (15.3 of 25 items) and an L2 to L1 translation test (4.6 of the same 25 items). It is possible that students taking the yes-no test in Stubbe and Yokomitsu (2012) as well as the recognition checklist test in Waring and Takaki (2003) were signaling items which they thought they recognized and believed they knew a meaning of, whereas the translation test results of both studies showed that their translations were often lacking or faulty. In other words there appears to be a considerable gap between thinking one knows a word and actually being able to produce a correct translation for that word. In the pilot study only 45.6% of the 120 items were attempted on the translation test, with 45.3% of those being incorrect (Stubbe and Yokomitsu, 2012). Waring and Takaki (2003) also conducted a multiple-choice test of the same 25 pseudowords, and reported a mean of 10.6 (42.4%). Discussing Waring and Takaki (2003), Nation and Webb (2011, p. 282) wrote:

> Thus only a small number of words were learned well (per the results of the translation test), but quite a large number were learned at least partially. If only the translation test had been given, the amount of vocabulary learning from the reading would have been greatly underestimated.

Similarly, it is possible that the students involved in the Stubbe and Yokomitsu (2012) study signaled knowledge of words which they had partial knowledge of, and this could account for a portion of the gap between those yes-no and translation test scores.

Method

In preparation for this research project a pilot study was undertaken to evaluate the words to be tested as well as the testing instruments to be employed. In this pilot, four LWs and four NLWs were randomly selected from the top half and the bottom half of each of the eight J8000 word frequency levels; for a total of 64 items for each group (Stubbe & Yokomitsu, 2012). To improve the separation between adjacent J8000 levels for the

present study it was decided to sample words only from the bottom half of each level (e.g., words 501-1000 for the 1K level). Thus half of the items used in the pilot study were eliminated from the item pool for this study. Rasch analysis using Winsteps (Linacre, 2011) was performed on the remaining 64 items for both tests to determine which words, if any, had poor model fit statistics. In total, 20 words were found to not perform well on either the yes-no or translation test or both, and were also excluded from this study's item pool. Hence, only 44 of the words from the pilot were included in this study. It was also decided to decrease the number of words tested from 128 to 96 to lessen the burden of marking the expected 400 plus translation tests. To complete the desired item pool of 96 words (6 LWs and 6 NLWs from each J8000 level), 52 additional words (25 LWs and 27 NLWs) were randomly selected as required from the eight levels of the J8000. In creating this item pool, consideration was not given to word class (nouns, verbs, etc.) primarily because LWs are usually found in Japanese as nouns (Daulton, 2008), and restricting this study to a comparison of LW and NLW nouns was deemed too restrictive and cumbersome. As it turned out, 44 of the 48 LWs were nouns, compared to the 28 NLW nouns.

These 96 items (see Appendix) were used to create two vocabulary tests, the first being a receptive yes-no vocabulary test. The second test was a passive recall test of the same 96 items from English into the students' L1. This latter test was given in part to ensure students knew a proper translation of the English words as opposed to a usage found only in Japanese (for example *trump*, which means *playing cards* in Japanese). Students were given the option not to participate in this research. The following waiver appeared on the top of both test forms, in English and Japanese:

> This is not a test. This is an optional level check. This form will help teachers better understand and improve the vocabulary program. By completing this form you agree to

participate in this research. If you do not wish to participate please turn the form face down and do not mark it. Your information will be held confidentially and your responses will not be used to identify you. Your class grade will not be affected by filling in this form or not.

> この用紙はテストではありません。任意のレベルチェックです。レベルチェックはボキャブラリー研究の理解と向上に役立ちます。この用紙を記入することにより、この研究に参加することに同意することを意味します。参加を希望しない場合、記入せずに用紙を裏返してください。個人情報は厳守され、回答は個人の特定には利用されません。この用紙の記入の有無により、成績に影響はありません。

To maximize pairings of the yes-no and translation tests, participants were given the yes-no test at the beginning of one class in July or August, 2012, and received the translation test toward the end of that same class. Yes-no test forms were then marked by running them through an optical scanner and the resulting data was converted into an Excel file for analysis. The translation test forms were hand-marked by three markers: one of the authors and two 3rd-year students. To check interrater reliability, 30 translation test forms were copied three times and marked by each marker in addition to the other forms they marked. These 30 forms were then culled from the data pool for separate analysis. Interrater agreement between these three markers on these 30 forms was 92% on the correct and incorrect responces (test questions left blank by the participants were excluded from this analysis). The 30 test forms (10 from each rater, selected randomly) were then replaced in the data pool.

Participants

Students from 21 classes in three Japanese universities ($N = 408$), with TOEIC scores ranging from about 200 through 450, participated in this study.

Results and Discussion

Similar to the pilot study, the yes-no test mean was nearly double that of the translation test (48.3 and 25.7 of the 96 words, respectively). Standard deviations (*SD*) were 17.6 and 11.6, respectively, with scores ranging from 5-87 on the yes-no test and 0-56 on the translation test. Test reliabilities (Cronbach's alpha) were high at .96 and .92, respectively.

Table 1. Descriptive Statistics for Yes-No and Translation Tests ($N = 408$, $k = 96$)

Test	Mean	*SD*	Range	Low–High	Reliability
Yes/no	48.3 (50.35%)	17.6	82	5–87	.96
Translation	25.7 (28.60%)	11.6	53	3–56	.92

Note. k = number of words tested

Table 2 breaks the test results down by university, which are listed from the highest English ability level through the lowest level (U1-U3). Both test means had a direct relationship with proficiency level. Additionally, the amount of variance or the standard deviation (*SD*) as well as the differences between yes-no means to the translation means both had an inverse relationship with proficiency level, similar to the findings of Stubbe (2012). As ability level increased so too did test scores, while variance as well as the gap between recall and recognition knowledge decreased. This decrease in the gap between recall ability and recognition ability as proficiency levels increased was also found in Hu and Nation (2000), who observed that students comprehending 90% of the words in a text had a smaller recall versus recognition knowledge gap than students at an 80% comprehension level. Differences between the yes-no test means for the three universities were all statistically significant, as were the differences between the translation test means. A one-way ANOVAs confirmed that the differences between the university means were significant (F (2, 405) = 185.7 and 85.4, p < .0001, for the yes-no and translation tests, respectively). Post hoc analysis (Turkey HSD) revealed that the differences between all university pairings (U1 and U2; U1 and U3; and U2 and U3) were statistically significantly (alpha was set at p = .0167, using a partial Bonferroni adjustment for three comparisons).

Table 2. Descriptive Statistics by University for Yes-No (YN) and Translation Tests ($k = 96$)

University	*n*	YN Means	Tr. Means	YN SDs	Tr. SDs	YN *M* / Tr. *M*
1	159	59.5 (62.0%)	35.2 (36.7%)	10.1	6.9	1.69
2	53	49.5 (51.6%)	25.9 (27.0%)	12.9	8.0	1.91
3	196	38.9 (40.5%)	17.9 (18.6%)	18.1	9.5	2.17
Overall	408	48.3 (50.3%)	25.7 (28.6%)	17.6	11.6	1.88

Note. k = number of words tested

Table 3 breaks down yes-no and translation test results by loanword status (48 LWs and 48 NLWs). On the yes-no test the LWs had 57.4% more reports than the NLWs. On the translation test, however, the LWs were known practically three times often more than the NLWs. Also, similar to the pilot to this study (Stubbe & Yokomitsu, 2012), the yes-no NLWs mean is almost the same as the translation LWs mean. In fact, post hoc analysis

(Turkey HSD) revealed that only the difference between this pairing (yes-no NLWs and translation LWs) was not statistically significant. This may suggest that the relative difficulty of recognizing NLWs versus LWs on a yes-no test is comparable to the increase in difficulty when moving from passively recognizing LWs on a yes-no test to translating LWs into Japanese on a translation test.

Table 3. Descriptive Statistics by J8000 Level for Yes-No (YN) and Translation Tests (*N* = 408, *k* = 48)

Test	Mean (%)	*SD*	Range	Low–High
YN LWs	29.6 (61.7%)	9.5	43	3–46
YN NLWs	18.8 (39.2%)	8.8	41	0–41
Tr LWs	19.2 (40.0%)	7.6	32	3–35
Tr NLWs	6.5 (13.5%)	4.8	26	0–23

Note. k = number of words tested

Figure 1 breaks down the data presented in Table 3 by J8000 frequency level (1K through 8K). With the exception of the jumps at 6K and 8K, the translation NLW results best follow the pattern predicted by word frequency level (Milton, 2009). It can be noticed that the 8K jump was common to both LWs and NLWs on both tests, and replicates findings observed in Aizawa (2006) as well as Stubbe and Yokomitsu (2012). Also contrary to frequency level expectations, LWs on both tests jumped considerably from 3K to 4K, possibly because one of the 4K LWs *helicopter* had a high score relative to the other words at those two frequency levels.

A comparison of LW results at the 7K level with NLW results at higher levels reveals that on the yes-no test 7K LW scores were higher than 4K NLW scores. On the translation test 7K LW scores were higher than 3K NLW scores. LW scores at the 8K level surpassed NLW scores at the 3K level on both tests. It is possible that loanword status may be as important as or even more important than frequency level when considering the learning difficulty of new vocabulary for Japanese learners.

This trend of LWs scores exceeding NLWs was not universal however. At the 1K level the difference between yes-no LWs and NLWs was slight and actually reversed at the 3K level. A closer look at the yes-no LWs and NLWs results by university (Table 4) revealed that at the 1K level, U1 had a slightly higher NLW mean (5.75 versus 5.90, LWs and NLWs respectively), but at the 3K level the difference was substantial (3.88 versus 4.44). On the other hand, for the mid-level university (U2), the LW and NLW means on the yes-no test were 5.21 and 5.58 respectively at the 1K level, while at the 3K level they were nearly even at 5.15 and 5.17, respectively. It appears that the LWs exceeding NLWs trend was significantly reversed for U2 at the 1K level and at the 3K level for U1. This could be due to these higher level students having a progressively better grasp of NLWs at the 1K and 3K levels. Why this reversal did not appear at the 2K level warrants further investigation. With the lowest level university (U3), LW means exceeded NLW means at all eight J8000 levels on both tests, possibly reflecting their general lack of knowledge of NLWs as suggested in Stubbe (2010).
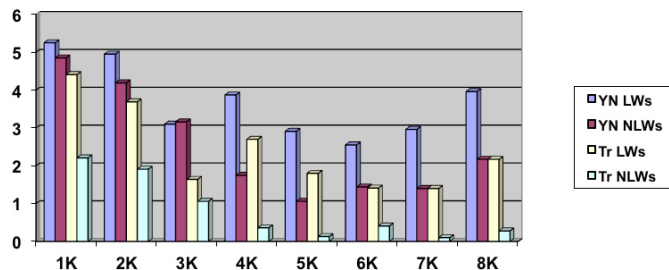
Figure 1. LW and NLW Results for Yes-No and Translation Tests

Note: The Y axis represents the mean score (maximum of 6), and the X axis represents the eight frequency levels of the J8000.

Table 4. Yes-No LW and NLW Test Results by University and J8000 Frequency Level

J8000 level	U1 LWs	U1 NLWs	U2 LWs	U2 NLWs	U3 LWs	U3 NLWs
1K	5.75	5.90	5.21	5.58	4.85	3.80
2K	5.74	5.38	5.21	4.42	4.23	3.16
3K	3.88	4.44	3.15	3.17	2.45	2.12
4K	4.64	2.58	3.74	1.60	3.29	1.13
5K	3.61	1.33	2.96	0.89	2.33	0.89
6K	3.58	1.52	2.62	1.72	1.68	1.30
7K	3.42	1.39	3.04	0.92	2.57	0.82
8K	4.55	1.81	4.23	1.02	3.42	0.89
Overall	4.40	3.04	3.77	2.42	3.10	1.76

Note. k = six words per level

Table 5. Translation LW and NLW Test Results by University and J8000 Frequency Levels

J8000 level	U1 LWs	U1 NLWs	U2 LWs	U2 NLWs	U3 LWs	U3 NLWs
1K	5.23	3.58	4.26	2.58	3.79	1.01
2K	4.47	2.85	3.68	1.85	3.06	1.16
3K	2.36	1.75	1.64	1.02	1.06	0.52
4K	3.35	0.72	2.58	0.26	2.19	0.09
5K	2.76	0.27	1.83	0.09	1.02	0.02
6K	2.16	0.65	1.51	0.51	0.78	0.19
7K	1.63	0.16	1.42	0.09	1.22	0.06
8K	2.69	0.54	2.40	0.21	1.68	0.08
Overall	3.08	1.32	2.42	0.83	1.85	0.39

Note. k = six words per level

Item Analysis

An item (or word) analysis also revealed the strength of the students' ability to recognize and translate LWs over NLWs. Only five words on the translation test scored zero: *captive, casualty, cripple, exacerbate,* and *relentless* (from the J8000 frequency levels: 7, 4, 7, 7, and 8, respectively). All of these are NLWs. Meanwhile, the top scoring words were all LWs: *park, cup, drama, corner,* and *helicopter* (from the J8000 frequency levels: 1, 1, 2, 1, and 4; with scores of 370, 369, 345, 335 and 330 of the total 408 participants, respectively). These results may explain the 4K LW and 8K jumps mentioned above and displayed in Figure 1.

A high-low item analysis, in which the 96 words were sorted according to translation score then split into two groups of 48, was also performed. Results revealed that 77% of the words in the high group were LWs, with 23% being NLWs. Naturally these percentages were reversed for the low group. Both of these

item analyses support the predominance of LWs over NLWs in students' second language lexicons.

Finally, the 28 nouns found in the 48 NLWs were compared to the 20 non-noun NLWs. Perhaps surprisingly, the non-nouns were better known (had higher mean scores) on both tests, before and after accounting for differences in J8000 level. Hence, it appears that not considering *word class* during item selection may not have unfairly biased the results reported above.

Conclusion

This study was an investigation into the recognition and recall of English loanwords in Japanese versus NLWs across all levels of the J8000 frequency listing. At the lower frequency levels (beyond 3K) on the yes-no test and at all levels on the translation test, LW knowledge was significantly greater than NLW knowledge. However, at the 1K and 3K levels on the yes-no test, the higher level university students recognized more NLWs than LWs. This result may suggest that although Japanese university students' know and recognize more LWs than NLWs, the difference diminishes at the higher word frequency levels with higher level students, whose overall vocabulary sizes are larger.

This study does suffer from a number of limitations. Although translation tests do check for student knowledge of a word's basic meaning, they do not guarantee the students can use the word appropriately. Some qualitative research, such as interviewing some of the students, could have provided a means of checking for such appropriate usage ability. As well, possible reasons behind unexpected results such as *helicopter* could be uncovered. The 92% interrater reliability amongst the three translation test markers was also a little weak. A *Facet Analysis* (Linacre, 2012) is needed to show which items were most adversely affected on the translation test. These items then could be deleted from the analysis to determine whether the results

and conclusions remain valid. The selection of only six LWs and six NLWs from each J8000 could be considered too small to capture a truly representative sampling, and thus allowed for the skewing of the results. The LW jump at the 4K level, for example, was likely due to the influence of the single word *helicopter*. Sampling a greater number of words from fewer J8000 levels could help alleviate this weakness.

Despite these weaknesses, these results may have implications for both vocabulary teachers and testers. Even at the lower word frequency levels (4K through 8K) LW status does seem to have a strong influence on which words students are familiar with. Knowing which words are LWs out of a list of vocabulary to be taught or used in a classroom could help teachers better assist students in their lexical development. The LWs in a list could be reviewed first, focusing on potential variances with native-English usages, before teaching the likely more difficult NLWs. For vocabulary testers (who often rely on word frequency lists like the J8000), knowing which items are LWs while developing a test should help to better predict item performance. Not knowing which items in a test are LWs could lead to some startling results.

Acknowledgements

Bio Data

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