

Issues related to the presence of Japanese loanwords of English origin in vocabulary size tests

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This paper outlines a small-scale study investigating whether the presence of Japanese loanwords of English origin in a vocabulary size test results in higher test scores for Japanese students. A vocabulary test featuring 20 loanwords and 20 non-loanwords from different frequency levels was administered to 111 students of English in a private university in Japan. Aggregate test scores and a paired samples t-test suggest that students are more likely to answer questions correctly when test items focus on vocabulary used as loanwords in Japanese. The results of a Rasch analysis also suggest that item difficulty is dictated by both word frequency and status as a loanword. The results have positive implications for language teachers in that loanwords can be viewed as a useful pedagogical tool.

Keywords: loanwords; vocabulary; language testing; English as a lingua franca; Japan

Introduction

It has been estimated that foreign loanwords (called *gairaigo* in Japanese, and sometimes described as nativised words of English origin, but referred to throughout this paper simply as loanwords) constitute around 10% of written and spoken Japanese (Daulton, 2011). Stanlaw (2004) estimates that over 80% of common use loanwords in Japanese are originally from English. This paper investigates how students' test performance is affected by loanwords in a vocabulary size test, and then, how intelligible the original source words are to Japanese students. This last point has ramifications for whether loanwords should be used as a pedagogical tool by language teachers.

Key concepts

Foreign loanwords in Japan

When entering the Japanese lexicon, loanwords undergo modifications, of which Kay (1995) outlines five: orthographical, phonological, morphological, semantic, and syntactic. Due to such changes, the view of loanwords as a potential learning tool by teachers and learners is often negative (Harris, 2013), with some fearing that pronunciation and meaning shift will render the words unrecognizable from the original English source words (Ogasawara, 2008; Shepard, 1996; Simon-Maeda, 1995). Such changes (see Table 1 for examples) are often used to support the argument that loanwords should be considered as completely nativised, and as such, an impediment for students acquiring the English equivalents (Shepard, 1996).

Table 1. Examples of changes between loanwords and the source words

Type of change	Loanwords	Meaning
Addition of vowel sounds between consonant clusters	<i>sutandaado</i>	standard
Addition of vowel sounds after final consonants	<i>raido</i>	ride
Consonant differences	<i>burabou</i>	bravo
Reduction / Clipped compounds	<i>terebi</i>	television
Loanblends (of two or more languages)	<i>haburashi</i>	toothbrush (Japanese <i>ha</i> meaning tooth + brush)
Syntactic change	<i>sutairisshu-na</i>	Stylish + Japanese <i>-na</i> adjectival ending
Semantic shift / False cognate	<i>Peepaa doraibaa</i>	paper driver -a person who has a driver's license, but who does not drive

However, Daulton's work regarding loanwords and their use in teaching English (2008, 2011) suggests that when brought into Japanese, many of these words remain close enough to their English origins in meaning and phonological structure that students can use them as a strong base for learning English. In other words, differences between the loanwords and the source words are generally small enough that the source words are intelligible to students when they encounter them in English. Moreover, the fact that many loanwords match frequently used English vocabulary means that loanwords constitute a huge resource for students of English in Japan. Daulton (2003) estimates that over half of the 3000 most frequent word families in English also commonly appear in Japanese as loanwords. With such a large potential vocabulary (Palmberg, 1987), it is important that the links between loanwords and their effect on vocabulary acquisition be empirically investigated (Nakao, 2016).

The aim of this study is to discover how likely it is that Japanese students will correctly answer questions in a vocabulary size test that features commonly used loanwords from a range of frequency levels, compared with questions that do not, and therefore whether results of such tests will be distorted by an over-representation (or under-representation) of loanwords as test items. The study also seeks to discover how intelligible such words are to students when presented as part of a written test item.

Vocabulary size tests

Vocabulary size tests are a useful tool employed to: a) assess student proficiency for level placement; b) assess student progress in acquiring language; c) decide which vocabulary should be included in syllabi; and d) conduct language learning research. Such tests are created using vocabulary frequency lists, ranging from general lists like the *General Service List* (West, 1953) and its recently updated versions (Brezina & Gablasova, 2015; Browne, Culligan, & Phillips, 2013) through to specialized lists like the *Academic Word List* (Coxhead, 2000), or context specific lists such as the *JACET 8000* (Aizawa, Ishikawa, & Murata, 2005).

A popular example is the 14,000-word *Vocabulary Size Test* (VST) created by Nation and Beglar (2007), which now has a number of bilingual versions, including a Japanese-English test, highlighting its popularity as a pedagogical tool in Japan. The VST takes 10 words to represent each 1000-word frequency band up to the 14,000-word level to create a 140-item test. As a universal vocabulary test, it does not take into consideration the use of English loanwords in diverse contexts. However, it does contain a large number of words that are loanwords in Japanese, and consequently, it provides a concise and practical way of comparing Japanese students' understanding of English words that are also Japanese loanwords to those that are not. Laufer and McLean (2016) note that if a test over-represents or under-represents loanwords, the results may not accurately reflect a learner's vocabulary size. At the same time, they also make the point that loanwords should not be excluded from tests, as they do make up part of learners' L2 knowledge. Therefore, it is important to make sure that the ratio of loanwords in a vocabulary size test closely matches the rate of loanwords in that language.

Loanwords on the VST

For the purpose of this paper, a word is considered a loanword if it appears in the *Sanseido Concise Dictionary of Katakana Words* (2010), a well-known *katakana* dictionary. *Katakana* dictionaries define words of non-Japanese origin. The first 100 words of the VST were analysed to discover how many are also loanwords, and whether the meaning of each has remained the same on adoption into Japanese (see Appendix). Out of those 100 words, 57 appear as loanwords in the dictionary. All of those words have retained at least one of the main meanings from the original English, except *erratic*, which has come into Japanese from the noun meaning a transposed rock, very rare in English (see Table 2 for an outline of the number of loanwords across each frequency band). There are also instances of the target word appearing as part of a compound or related loanword, but not as the actual word. For example, while the word *bacteria* does not appear in the dictionary, its singular form *bacterium*, does. Therefore, learners may still comprehend the meaning of the word, and *bacteria* does in fact appear as a loanword in other sources. A further eight words are related to, or used as, part of another compound (only one of which has a different meaning; the word *malign* has entered into Japanese as part of the technical compound *malign neglect*), bringing the total to 65 words. While it is argued that semantic shifts result in many loanwords having meanings far removed from the original English source words (Stanlaw, 2004), 63 of the 65 loanwords in the first 100 words from the VST retain at least one of the common meanings in Japanese as the original English (see Table 2). It should also be noted that even some words not appearing in the dictionary could still be considered loanwords due to their common use. For example, the word *dinosaur* has recently become a popular loanword in Japan, despite the existence of a Japanese word for dinosaur (*kyouryuu*).

Not every word in a loanword dictionary is known to every Japanese speaker, with differences in comprehension across generations and occupations. In fact, more difficult loanwords in modern Japanese speech and writing are sometimes used to appear more worldly or educated, or even to obfuscate (Otake, 2007).

Table 2. Number of loanwords present in each set of 10 test words from the first 10 x 1000-word families of the VST

Frequency level	Loanword*	Related to, or part of a compound*	Total
1000	9	0	9
2000	5	1	6
3000	8	0	8
4000	5	1	6
5000	5	2	7
6000	5	1	6
7000	7	0	7
8000	7	0	7
9000	4	0	4
10000	2	3	5
TOTAL	57	8	65

*As listed in the *Sanseido Concise Dictionary of Katakana Words*

Literature review

The VST has been used for research purposes in a variety of language contexts. Beglar (2010) administered the test to a range of subjects, including Japanese learners of English, and a group of native speakers. He concludes that the test displays psychometric unidimensionality and is transferable to other learners. He also comments on the presence of loanwords in the test influencing results. For example, he mentions one loanword at the 8000-word level, *kindergarten*, as being an easy item for students, and therefore distorting the 8000-word level results, as well as the many loanwords in the 2000- to 4000-word levels equalizing the results for those levels. In fact, as mentioned earlier, the number of loanwords across the test from the 1000-word level to the 8000-word level is consistently high (see Table 2), but in his study, this does not seem to have affected the results.

In another Japan-based study comparing the differences in students' scores between monolingual (English) and bilingual (Japanese and English) versions of the VST administered to 154 Japanese students, Stewart (2009) found that especially for students with low-level proficiency, the bilingual version resulted in higher scores. He concluded from this that the bilingual version aids students more and provides a more accurate measurement of language proficiency. However, Stewart did not investigate whether the presence of loanwords in answer choices aided some students in answering correctly.

Laufer and McLean (2016) investigated loanwords in the VST as they are used in two languages, Hebrew and Japanese. Rather than using the VST in its original form, they treated it as a base from which to construct three different tests which evaluated word form recall, word meaning recall, and word form recognition. They created two versions of the test, one with loanwords intact, and another with loanwords taken out (and substituted with non-loanwords from the same frequency levels). Paired samples *t* tests on results showed that both native Hebrew-speaking and native Japanese-speaking students performed better on tests with more loanwords. They note that beginner learners

seemed to benefit more from the presence of loanwords than advanced learners. The authors do not describe the criteria they used for classifying loanwords which also occurs in some other studies of loanwords, perhaps highlighting the difficulties of classification.

Jordan (2012) explains how classification is difficult, while also meticulously detailing the process of determining the loanwords that he used for his study. Using an internet corpus, he found a set of the most frequent loanwords as used in modern Japanese and matched them against English frequency lists. Even then though, Jordan points out that in the test (which was translation-based), some students used *katakana* to write a corresponding loanword as an answer to a supposed non-loanword item, leading Jordan to conclude that one of the main issues with studies of loanwords is ‘a lack of reliable data on which words are, in fact, cognate with L2’ (Jordan, 2012, p. 14).

As well as issues for testing, if loanwords do prove to be easier test items for Japanese students, this suggests that in general, the source English words are recognized by Japanese students, even after modifications, and therefore loanwords can confidently be viewed as a useful tool for learners developing their English proficiency (as suggested by Daulton, 2008; Kawaguchi, 2004). Proponents of this idea argue that Japanese loanwords should be viewed as latent potential vocabulary (Palmberg, 1987), providing a head start in knowledge about the L2 before even beginning to study it.

While there have been a number of studies on intelligibility of Japanese English (Kashiwagi & Snyder, 2008; Nishi, 2001; Smith & Rafiqzad, 1979), there appears to be little research into that of Japanese loanwords, or the intelligibility of the source English words to Japanese speakers. Matsuura, Rilling, Chiba, Kim, and Rini (2017) investigated the intelligibility of loanwords (which they call nativised words of English origin) among listeners from four countries (Indonesia, the Philippines, South Korea, and the United States). They found that while changes of a semantic or morphologic nature could pose problems for the listener, phonological modifications of most words did not hinder intelligibility.

Viewed through an English as a lingua franca framework, it can also be argued that even nativized Japanese loanwords should have legitimacy of their own in international communicative encounters, especially if the words are generally intelligible to the participants. In fact, phonological changes such as the addition of vowel sounds between consonant clusters (see Table 1) might actually enhance intelligibility in such encounters (Jenkins, 2000; Walker, 2010), supporting the idea that loanwords should be seen as a valuable ready-made vocabulary resource for Japanese students of English.

An investigation of the intelligibility of loanwords when heard by non-Japanese speaking people from eight different countries (Harris, 2013) used 20 words taken from a textbook unit for elementary school students highlighting pronunciation differences between loanwords and the original English words. The textbook unit was intended to bring about awareness in students of the existence of loanwords in Japanese, and how they differ from the original words (and in the textbook, it was implicitly suggested that these differences would cause communication issues). However, results showed that 15 of the words were understood by more than 90% of the listeners when heard as part of a non-defining example sentence, adding evidence to the argument that loanwords may be highly intelligible in many international communicative situations.

There appear to be no studies using the VST in its original form to test for the effect of loanwords. However, with the importance of the VST to teachers and researchers, and its widespread use in Japan for a range of pedagogical purposes, it is essential to understand the impact of loanwords on estimations of students’ vocabulary sizes. At the same time, if students do indeed perform better on loanword-related questions, this has positive implications for the use of loanwords as a pedagogical tool.

Research questions

This study aimed to address the following research questions:

1. Are students able to attain higher scores on the VST with vocabulary questions that feature loanwords as test items, as opposed to questions focusing on vocabulary not used as loanwords?
2. Is the difficulty of individual items on the VST influenced by whether or not they are loanwords?

Research method

Research instrument

An online vocabulary test was created using words from the VST. Two words that are not presently used as loanwords and two commonly used loanwords were chosen from each 1000-word level, up to the 10,000-word level; a total of 40 words. The last four x 1000-word levels were not included to prevent the test becoming too long, and because a 10,000-word vocabulary is commonly thought to be the threshold providing 95% comprehension of most texts (O'Keeffe, McCarthy, & Carter, 2007), and therefore is the upper limit for most language teaching purposes in Japan. The criterion for identifying loanwords was their inclusion in the *Sanseido Concise Dictionary of Katakana Words*.

The original VST test questions for each of the selected items were used to create a 40-question test. The prevalence of loanwords within these 100 words caused one small issue related to test design. Of the 10 words in the first 1000-word level band of the VST, nine are loanwords, so it was impossible to select two non-loanwords from this set. In order to be consistent and to have two non-loanwords from each band represented, a different non-loanword from the 1000-word level (*awful*) was chosen for which a model sentence and multiple-choice options were created using the criteria set out by Nation and Beglar (2007). This was only necessary for the 1000-level words, although elsewhere the large number of loanwords left only a few non-loanword choices, particularly the 3000-level which had only two non-loanword options (*dinosaur* and *lonesome*).

The popularity of the VST means that it has been translated into many languages, including Japanese, and therefore the Japanese language version was used for this study. In the translated version, each multiple-choice question on the test consists of an English sentence with the target word used in a non-defining context, followed by four answer choices in Japanese.

The test was turned into an online survey featuring the 40 vocabulary items. There was no time limit for the test, which allowed students to complete all questions in the amount of time that they required. Students were supervised during the test and they were told that it was for research purposes only, and therefore to not use a dictionary or other sources to find answers.

Participants

The participants in this study were 111 non-English major students at a private university in Kansai, Japan with an intermediate level of proficiency in English (TOEIC IP score group average = 501).

Analyses

The test results were analysed in three ways. First, aggregate test scores were compared to see if there was a general difference in difficulty between the questions that used loanwords and those that did not. Then, a paired samples *t* test compared mean scores of

the loanword and non-loanword questions to determine statistical significance in the difference in difficulty of the words. Finally, a Rasch analysis determined the relative difficulty of each test item. If students are unable to answer loanword questions any more easily than non-loanword questions, then the order of difficulty for each word in the test could be expected to closely follow the order of frequency (e.g. 2000-level words should be answered correctly more often than 5000-level words).

Results and discussion

Students' test performance

Table 3 shows the results for the non-loanword and loanword questions as an aggregate score for all 111 students. Non-loanword questions were answered correctly 46.4% of the time, while loanword questions were answered correctly 82% of the time. Aggregate test scores were 35.55% higher for loanword questions than for non-loanword questions. Clearly, students could correctly answer the questions featuring loanwords more easily.

Table 3. Aggregate vocabulary test results

Word level	Non-loanword	Correct (%)	Level average	Loanword	Correct (%)	Level average	Average difference
1000	basis awful	84% 77%	81%	drive jump	96% 100%	98%	+ 17%
2000	patience drawer	93% 96%	95%	pub pro	95% 92%	94%	-1%
3000	rove dinosaur	52% 93%	73%	strap dash	82% 92%	87%	+14%
4000	tummy allege	14% 35%	25%	quiz vocabulary	98% 100%	99%	+74%
5000	nun fracture	27% 35%	31%	cube miniature	95% 82%	89%	+58%
6000	devious veer	18% 20%	19%	accessory butler	84% 59%	72%	+53%
7000	shudder bristle	60% 33%	47%	olive quilt	97% 70%	84%	+37%
8000	mumble locust	31% 40%	36%	cabaret palette	74% 86%	80%	+44%
9000	perturb weir	15% 19%	17%	octopus monologue	97% 44%	71%	+54%
10000	awe lectern	56% 30%	43%	upbeat crowbar	46% 50%	48%	+5%
Average		46.4%			82%		+35.6%

The higher rate of correct answers for loanword questions occurred not only on items from high frequency levels. For example, the majority of students selected the correct answer for the questions testing the loanwords from the 6000-word level, *accessory* and

butler. Out of the 111 students, 84% correctly answered the question for the word *accessory*, while 59% correctly answered the question for the word *butler*. This contrasts markedly with the non-loanwords from the same level, *devious* and *veer*. Only 18% of students correctly answered the question for the word *devious*, and 20% correctly answered the question for the word *veer*. It is clear that students were more easily able to answer questions which used loanwords compared to those that did not.

In addition to aggregate scores, a paired samples *t* test was used to compare the means on the loanwords and non-loanwords. The difference was significant $t(110) = -20.75$, $p < .05$ (see Table 4). This result shows that there is a significant difference in the difficulty of loanwords and non-loanwords for Japanese students which further supports the finding that loanword questions were easier for the students in this study.

The findings show that the presence of loanwords on a VST will result in higher scores for language learners in Japan, even if those words are of lower frequency (RQ1).

Table 4. Results of paired samples *t* test of loanwords and non-loanwords

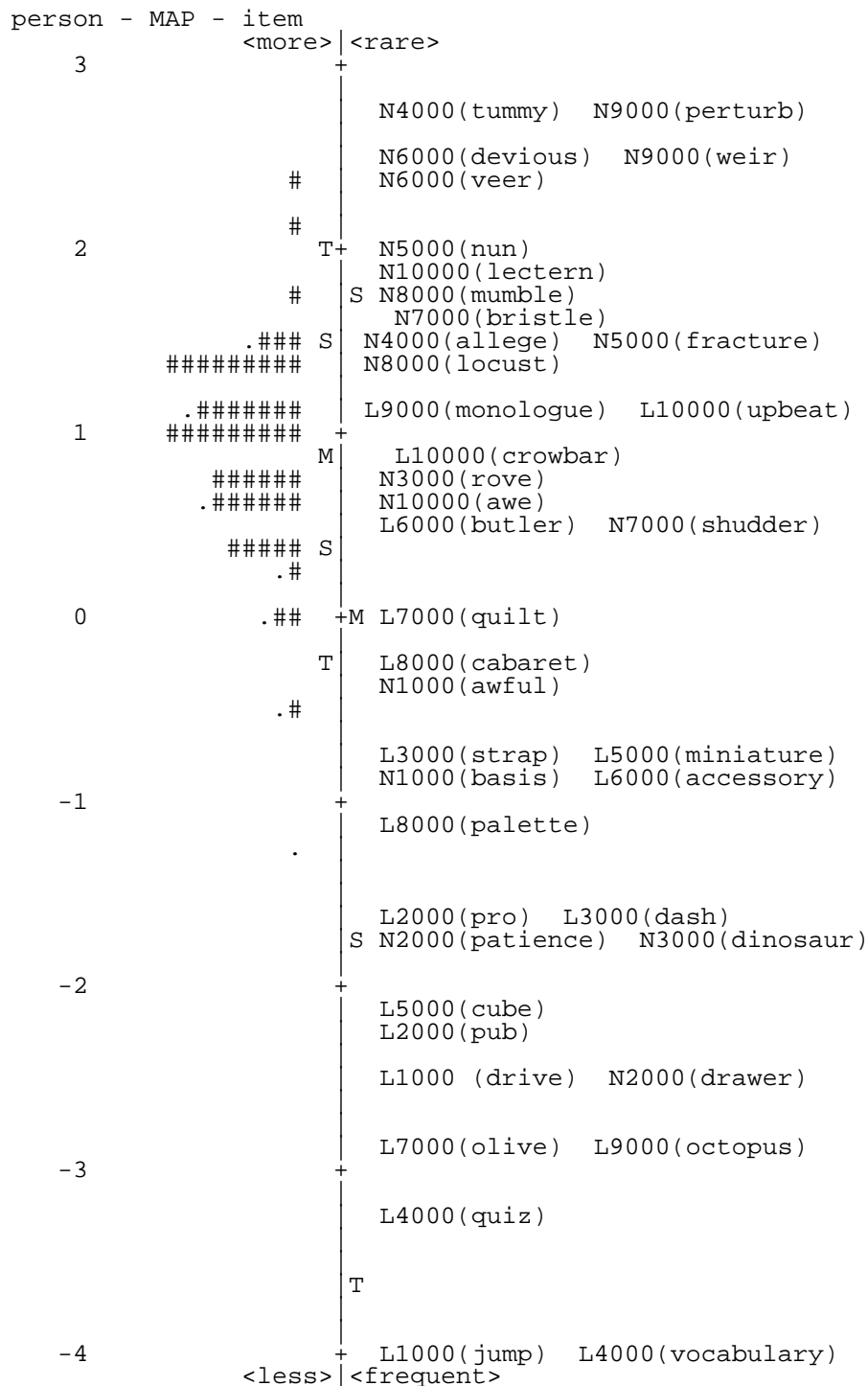
		Paired Differences							
				Std. Error	95% confidence of the difference				Sig. (2-tailed)
		Mean	Std. Dev	Mean	Lower	Upper	t	df	
Pair 1	SCORE – SCORE	-2.23	1.13	.11	-2.44	-2.01	-20.75	110	.000

Analysis of individual test items

A Rasch analysis was performed on each word in the test. A detailed description of the Rasch model is beyond the scope of this paper but see Bond and Fox (2007) for a comprehensive introduction. The Rasch analysis shows the relative difficulty of individual items as determined by responses from the test takers. It assigns each item a logit score, ranging from negative (easy) to positive (difficult) values. The resulting Wright map (Figure 1) provides a visual representation of the difficulty of items, with easy items appearing at the bottom, and more difficult items at the top. If the test items on the VST are performing as intended by the test's authors (Nation & Beglar, 2007), then higher frequency items should be less difficult, while lower frequency items should be more difficult, leading to higher logit scores. Figure 1 shows that overall, questions featuring loanwords were easier for students to answer than non-loanword questions.

The 12 most difficult items on the test were all non-loanwords (clustered at the top of Figure 1). Conversely, eight out of the nine easiest items on the test were loanwords (see the cluster at the bottom of Figure 1). This uneven spread of items across difficulty levels on the Wright map is most probably due to the presence of loanwords on the test. For example, both of the 4000-level non-loanwords, *tummy* and *allege*, proved to be among the most difficult words in the test, more difficult than any of the loanwords. At the same time, the 7000-level loanword *olive* and the 9000-level loanword *octopus* were among the easiest words on the test. It is also noteworthy that the words *basis* (a non-loanword from the 1000-level) and *accessory* (a loanword from the 6000-level) are at the same difficulty level on the Wright map, rather than being completely separated as would be expected if loanword status had no impact. This adds support to the arguments by other researchers (Jordan, 2012; Laufer & McLean, 2016) that if the number of loanwords on a given vocabulary test are over-represented (or under-represented), test results can be

distorted. This finding suggests that to an extent, the difficulty of an individual item on a VST is dictated by its presence in Japanese as a loanword (RQ2).



Notes: N = non-loanword; L = loanword. The number = the frequency level. The parentheses contain the vocabulary item. The most difficult items for students to answer are at the top of the map and the easiest are at the bottom.

Figure 1. Wright map of the Rasch output of vocabulary test items

One further implication of the results is that loanwords may aid students in building their vocabulary. As students performed far better on low frequency words that should theoretically have been outside their performance range, it can be argued that the loanwords have helped them, and therefore loanwords should be considered a valuable resource for English learners in Japan.

Limitations and future directions

In order to keep the test short, this study used only 40% of the words from the first 100 test items of the VST. Future studies could include all 10 words from each 1000-word level, although that may create problems in clearly defining which items are loanwords. The advantage of the smaller set of items used in this study is that clearly demarcated words were used and an equal balance of loanwords and non-loanwords could be maintained.

Conclusion

The study reported here is based on a vocabulary size test using forty words from the VST which were spread evenly across frequency levels and which contained an even balance of loanwords and non-loanwords. Results show that Japanese university students who took the test were able to select the correct answer more easily when a question used a common loanword, regardless of its frequency. This study provides a clear example of the effects of loanwords on VSTs in the Japanese context, suggesting that there may be discrepancies in test results when vocabulary size tests are used with Japanese students if there are too many (or too few) loanwords in the test.

Teachers utilizing such tests should be aware that the final scores of students may be affected if there is a heavy presence of loanwords in a test. This is certainly true in Japan given that 65 of the 100 words used in the VST up to the 10,000-word level are also used as loanwords and it is likely to be true elsewhere, although the effect will vary geographically depending on the frequency of loanwords in the local native language. Uniquely, the results of this study also provide empirical support for the idea that loanwords should be seen as a valuable resource for students studying English in Japan. While there has been reluctance in the past to use this latent vocabulary, the results of this study suggest that students can benefit from their knowledge of loanwords, and that they can be a valuable pedagogical resource.

About the author

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Appendix: List of the first 100 words from Nation and Beglar's (2007) 14,000 Vocabulary Size Test

First 1000				Second 1000			
English word	Loanword?	Related word?	Meaning?	English word	Loanword?	Related word?	Meaning?
see	Yes		Yes	maintain	No	Yes	Yes
time	Yes		Yes	stone	Yes		Yes
period	Yes		Yes	upset	No	No	
figure	Yes		Yes	drawer	No	No	
poor	Yes		Yes	patience	No	No	
drive	Yes		Yes	nil	No	No	
jump	Yes		Yes	pub	Yes		Yes
shoe	Yes		Yes	circle	Yes		Yes
standard	Yes		Yes	microphone	Yes		Yes
basis	No	No		pro	Yes		Yes
Third 1000				Fourth 1000			
English word	Loanword?	Related word?	Meaning?	English word	Loanword?	Related word?	Meaning?
soldier	Yes		Yes	compound	Yes		Yes
restore	Yes		Yes	latter	No	No	
jug	Yes		Yes	candid	Yes		Yes
scrub	Yes		Yes	tummy	No	No	
dinosaur	No	No		quiz	Yes		Yes
strap	Yes		Yes	input	Yes		Yes
pave	Yes		Yes	crab	No	No	
dash	Yes		Yes	vocabulary	Yes		Yes
rove	No	No		remedy	No	Yes	Yes
lonesome	Yes		Yes	allege	No	No	
Fifth 1000				Sixth 1000			
English word	Loanword?	Related word?	Meaning?	English word	Loanword?	Related word?	Meaning?
deficit	Yes		Yes	devious	No	No	
weep	No	Yes	Yes	premier	Yes		Yes
nun	No	No		butler	Yes		Yes
haunt	No	No		accessory	Yes		Yes
compost	Yes		Yes	threshold	No	No	
cube	Yes		Yes	thesis	Yes		Yes
miniature	Yes		Yes	strangle	No	No	
peel	Yes		Yes	cavalier	Yes		Yes
fracture	No	No		malign	No	Yes	No
bacterium	No	Yes	Yes	veer	No	No	
Seventh 1000				Eighth 1000			
English word	Loanword?	Related word?	Meaning?	English word	Loanword?	Related word?	Meaning?
olive	Yes		Yes	erratic	Yes		No
quilt	Yes		Yes	palette	Yes		Yes
stealth	Yes		Yes	null	Yes		Yes
shudder	No	No		kindergarten	Yes		Yes
bristle	No	No		eclipse	Yes		Yes
bloc	Yes		Yes	marrow	No	No	
demography	No	No		locust	No	No	
gimmick	Yes		Yes	authentic	Yes		Yes
azalea	Yes		Yes	cabaret	Yes		Yes
yoghurt	Yes		Yes	mumble	No	No	
Ninth 1000				Tenth 1000			
English word	Loanword?	Related word?	Meaning?	English word	Loanword?	Related word?	Meaning?
hallmark	Yes		Yes	awe	No	No	

puritan	Yes		Yes	peasantry	No	Yes	Yes
monologue	Yes		Yes	egalitarian	No	No	
weir	No	No		mystique	No	Yes	Yes
whim	No	No		upbeat	Yes		Yes
perturb	No	No		cranny	No	No	
regent	No	No		pigtail	No	No	
octopus	Yes		Yes	crowbar	No	Yes	Yes
fen	No	No		ruck	Yes		Yes
lintel	No	No		lectern	No	No	