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Do the Cognacy Characteristics of Loanwords Make Them More Easily
Learned than Noncognates?

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Abstract

This study investigates the effects of cognacy on vocabulary learning. The research expands on earlier designs by measuring learning of English–Japanese cognates with both decontextualized and contextualized tests, scoring responses at two levels of sensitivity, and examining learning in a more ecologically valid setting. The results indicated that Japanese learners could successfully recall the L2 forms of more cognates than noncognates, supporting earlier findings. However, when scoring was sensitive to partial knowledge of written form, the results indicated that greater knowledge of noncognates was gained. Because there was greater potential for learning noncognates due to the higher pretest scores for cognates, relative gains were also examined. The relative gains were greater for cognates than noncognates on a form recall test. The results of a cloze test contrasted with those of the form recall test. Gains were significantly larger for noncognates than cognates immediately after the treatment although no statistically significant difference existed 1 week after learning. Taken together, the research indicates that although the L2 forms of cognates may be more easily learned, it may be more challenging for second language learners to use cognates than noncognates, at least shortly after learning.

Keywords: Cognates, loanwords, vocabulary learning

I Introduction

Various definitions have been used for the term *cognate*, with discussion continuing today about what the definitions should include (Helms-Park & Dronjic, 2012). Traditionally, cognates are defined as being two words that share a source and are orthographically or phonologically similar across two languages (Duñabeitia, Perea, & Carreiras, 2010). In the present study, cognates will be defined as word pairs that are shared across languages that are similar or the same in form and semantics regardless of the absence or presence of a common ancestor (De Groot, Borgwaldt, Bos, & Van den Eijnden, 2002; Dijkstra, Miwa, Brummelhuis, Sappelli, & Baayen, 2010; Yudes, Macizo, & Bajo, 2010), the rationale being that such a definition opens up the discussion to historically unrelated languages that share words through borrowing. Thus, terms such as borrowed words or loanwords that are associated with a vocabulary that has a semantic and formal overlap between languages, but does not have an etymological relationship, will be included under this definition of cognates.

Many languages have cognates in English. For example, Montelongo, Hernandez, Herter, and Hernandez (2010) estimate that there are over 20,000 cognates between Spanish and English. Seguin and Treville (1992) estimate that there are 17,000 cognates between

English and French. Banta (1981) reports that there are thousands of German–English cognates. Research has also shown that there are a large number of English loanwords in Japanese and that many of these are for high-frequency words. Oshima (2002) found that 16.6% of a Japanese dictionary’s entries were derived mostly from English. Daulton found that 38.0% of the most frequent 2,000 (Daulton, 1998) and 45.5% of the most frequent 3,000 English word families (Daulton, 2003) had corresponding Japanese forms.

Justification for prioritizing the teaching of cognates over noncognates is that the former constitute a far lower learning burden than the latter (Nation, 1990) because the overlap in L1–L2 form and meaning reduces the amount of knowledge required to learn those aspects of knowledge, thus accelerating the learning process. For example, the following English–Spanish cognates have only minor differences in spoken and written form and convey the same meanings (*dialect/dialect, emotion/emoción*). This overlap is not restricted to languages with the same orthography. Although Japanese and English employ different orthographies, Japanese katakana script is a phonologically based system that allows sound spelling correspondence between cognates. For example, the similarity between the Japanese and English spoken forms and the meanings of cognates such as *cable/ケーブル* (keeburu), *sandwich/サンドイッチ* (sandoicchi), and *cup/*

カップ (kappu) makes the forms and meanings of the L2 words easier to learn in comparison to noncognates such as *friend*/友達 (tomodachi), *father*/父 (chichi), and *dog*/犬 (inu). De Groot and Keijzer (2000) also suggest that form overlap provides stronger cues for retrieval. Higa (1973) found 80.8% of cognates in Japanese to be transparent in form and meaning. Ishikawa and Rubrecht (2008) also found similar results. Because of this, many researchers in Japan advocate utilizing cognates to aid English language learning (Rebuck, 2002; Uchida, 2007; Van Benthuisen, 2004). Researchers have also pointed to the value in focusing on learning cognates in other languages (Arêas Da Luz Fontes & Schwartz, 2010; Proctor & Mo, 2009).

Despite research demonstrating pedagogically significant numbers of cognates shared between languages, and researchers advocating teaching cognates to speed up vocabulary learning (Arêas Da Luz Fontes & Schwartz, 2010; Banta, 1981; Granger, 1993; Lee, 1958; Proctor & Mo, 2009), there is little focus on formal and semantic similarity between languages in teaching materials. One reason for this may be that in English as a second language contexts, teaching cognates may not be practical. Because cognates vary between students with different L1s, teaching cognates for one L1 may be of little value to learners with a different language background (Meara, 1993). It is in the English as a

foreign language (EFL) context, however, where teaching cognates may have the greatest value. In EFL classrooms, teachers are likely to be aware of a large number of cognates and have the linguistic knowledge to teach them.

A second reason for the lack of focus on cognates in teaching materials is that there may be an erroneous assumption made by teachers and materials writers that cognates will be easily recognized by language learners (Moss, 1992). However, research suggests that learners may often fail to recognize cognates in context (García, 1991; Nagy, 1988; Nagy, García, Durgunoglu, & Hancin-Bhatt, 1993). In fact, Banta (1981) reports that even the most closely related cognates are often not recognized by language learners. The fact that learners may not recognize cognates and that these items are not explicitly addressed in teaching materials would suggest that research examining their relative learnability is warranted.

II Comparing the learning of cognates and noncognates

There has been very little research examining the learnability of cognates versus non-cognates. Hall (2002) investigated the extent to which Spanish native speakers studying the English language may derive knowledge of unknown cognates in comparison to unknown noncognates. The participants were presented with 30 pseudowords,

half of which were pseudocognates (pseudowords that shared at least two-thirds of the L1 word form). The other half were pseudowords that did not share any formal features with L1 words. The participants were instructed to indicate whether they recognized the word and, if they did, to guess its L1 meaning. The results showed that the participants claimed to recognize more pseudocognates than noncognates, assigned fewer different L1 meanings to the pseudocognates, and provided translations that had more formal similarities to the L1 items for the pseudocognates. The results led Hall to suggest that learners are sensitive to formal similarities between L1 and L2 words and will assign meaning to L2 items based on overlap in form. This in turn suggests that a teaching approach that involves raising awareness of cognates may be an effective method of vocabulary learning.

Three studies have compared the learning of cognates and noncognates (De Groot & Keijzer, 2000; Lotto & De Groot, 1998; Tonzar, Lotto, & Job, 2009). Lotto and De Groot (1998) examined L2 form recall of high- and low-frequency cognates and noncognates as well as the time taken to type in responses. The participants were Dutch native speakers who had no knowledge of the target L2 (Italian). Only responses without any misspellings were scored as correct on the posttest. Lotto and De Groot found that after three encounters with Dutch–Italian cognate and noncognate pairs, participants could

successfully recall 21.43% more high-frequency cognates and 19.64% more low-frequency cognates than noncognates at the corresponding word frequency levels. Response times were also significantly faster for cognates. Lotto and De Groot concluded that the cognates were easier to learn than noncognates.

The results of Lotto and De Groot (1998) were supported by a carefully controlled follow-up study conducted by De Groot and Keijzer (2000), in which cognates again had better recall scores and faster response times in comparison to noncognates. In the latter study, pseudocognates were carefully created, ensuring that first letters always matched, length only differed by a maximum of one letter, and that overlap was between 40–75% of L1 items. Dutch-speaking university students with considerable English language training were trained and tested with 60 words both receptively and productively for recall. Data was also collected regarding reaction times and retention between training sessions. The results indicated that recall of cognates was 19.28% higher in comparison to noncognates and that response times were 51.80% longer for noncognates. Recall of L2 form was 21.12% higher for cognates than noncognates. Similarly, meaning recall was 17.44% higher for cognates. Retention was also better for cognates. Participants could recall 20.91% more of the L2 forms and 23.09% more of the meanings of cognates than noncognates.

Tonzar et al. (2009) investigated the learning of Italian–German and Italian–English cognates and noncognates by 9- and 13-year old native speakers of Italian. Their findings showed that after three encounters with target word pairs, the children in both age groups could recall the L2 forms of a greater number of cognates than noncognates and that the effect was larger for the less familiar language (German). They hypothesized that because there was less to learn with cognates than noncognates, greater knowledge of the target language reduced the effects of cognate status.

Taken together, the research findings indicate that cognates may be more easily learned than noncognates. However, there are four reasons why there remains a significant need for further research examining the effects of cognacy on vocabulary learning. First, in the earlier studies, the tests assessing learning were always decontextualized translation tests (De Groot & Keijzer, 2000; Lotto & De Groot, 1998; Tonzar et al., 2009). Although these tests are useful, they do not indicate whether learners may be able to successfully use cognates. One potential criticism of an approach that prioritizes learning cognates is that the degree of correspondence between L1–L2 meanings can vary and that this may make using cognates challenging. For example, Daulton (2008) reports that the L2 meanings of some cognates may be restricted to certain contexts, while others may

expand on their L1 meanings. This variation between meanings may not affect comprehension, but it may inhibit use. Because learners may make incorrect assumptions about the meanings of cognates, they may avoid using them and instead use words that are more semantically transparent. Thus, it may be useful to measure the effects of cognacy with tests that require participants to use words in context.

A second reason why further research is needed is that earlier studies evaluated learning using strict scoring protocols that required learners to correctly spell target words (De Groot & Keijzer, 2000; Lotto & De Groot, 1998; Tonzar et al., 2009). However, it is also useful to score responses for partial knowledge of written form because this will provide a more accurate assessment of the effects of learning (Nation & Webb, 2011). This is particularly true when investigating cognates because if the L1 forms of the target words are recognized as cognates, the participants may be able to demonstrate partial knowledge of the L2 forms on pretests.

A third reason why further investigation is useful is that research has been limited to languages with related L1 orthographic background such as Dutch and Italian. It would also be useful to examine the learning of cognates and noncognates in languages with unrelated orthographies such as Japanese and English. A fourth reason why more research is needed is that the learning conditions in the earlier studies

(De Groot & Keijzer, 2000; Lotto & De Groot, 1998; Tonzar et al., 2009) lacked ecological validity in several ways. For example, the paired-associate learning conditions in the earlier studies involved three encounters with word pairs followed by testing. However, paired-associate learning software typically involves one encounter with word pairs followed by a number of retrieval trials (Nakata, 2011). Also, to ensure that the target items were unknown in the earlier studies, the majority of participants were not learners of the target language. Although this is a useful approach to eliminating the possibility of prior knowledge, the results may not reflect those of more advanced learners.

The present study followed-up on the earlier studies that compared the learning of cognates and noncognates. It expanded upon earlier methodologies by measuring learning in both contextualized and decontextualized tests, measuring knowledge at two levels of sensitivity, and investigating learning in a more ecologically valid computer-assisted L2 classroom setting. Specifically, this study was designed to determine the relative efficacy of learning English–Japanese loanwords and noncognates.

III Research questions

The following two research questions were addressed in this study:

1. What effect do the cognacy characteristics of loanwords have on the L2 form recall for Japanese learners of L2 English who

- have completed a paired-associate learning task?
- 2 What effect do the cognacy characteristics of loanwords have on the ability to use words in context for Japanese learners of L2 English who have completed a paired-associate learning task?

IV Method

1 Participants

The participants were 30 Japanese native speakers from two second-year EFL classes at a university in Japan. All of the participants had received formal English instruction for at least 7 years. The participants were assigned to the classes according to their General Test of English Communication scores, which identified them as being at an intermediate proficiency level (Benesse Corporation, 2004).

2 Target words

A total of 22 target words were selected for the study. The target words and their translations are shown in Table 1. The target words were made up of sets of 11 loanwords and 11 noncognates.¹ Research indicates that a part of speech (Ellis & Beaton, 1993a), word length (Ellis & Beaton, 1993b), word frequency (Lotto & De Groot, 1998), pronounce-

Table 1. Target items.

Loanwords		Noncognates	
Beige	ベージュ	Mauve	ふじ色
Bouquet	ブーケ	Diploma	卒業証書
Bracelet	ブレスレット	Mosquito	蚊 (か)
Brassiere	ブラジャー	Artillery	大砲
Canoe	カヌー	Attic	屋根裏
Hyphen	ハイフン	Bandit	盗賊 (とうぞく)
Knob	ノブ	Twig	小枝
Muffler	マフラー	Bayonet	銃剣 (じゅうけん)
Pamphlet	パンフレット	Daffodil	ラッパズイセン
Syrup	シロップ	Crumb	パンくず
Veil	ベール	Beak	くちばし

ability (Ellis & Beaton, 1993b), and imageability (De Groot & Keijzer, 2000; Ellis & Beaton, 1993a) may affect vocabulary learning. Each word in one set, therefore, was matched with another word in the other set for these five variables. L1 frequency was not controlled in the present study because reliable word frequency lists of Japanese items that correspond to the criteria used for creating Nation's (2006) British National Corpus lists are yet to be developed.

The procedure for selecting the loanwords involved measuring L2 form recall of items by students with a similar language learning profile as the participants in this study to find loanwords that were likely to be unknown. Noncognates were then selected according to the five vocabulary difficulty factors described above. Noncognates had the same number of letters ($M = 6.18$, $SD = 1.64$ for both sets) and were at or within one 1000-word level of Nation's (2006) British National Corpus word lists as the corresponding items in the other set. All items were low-frequency words at the 4,000-word level or lower.

Pronounceability scores were calculated for both sets of words with 15 students with a similar language learning background as the participants. There was no statistically significant difference between the two sets, $t(14) = 0.46$, $p = .65$, $r = .12$. Imageability scores were calculated for the two sets of words with 15 advanced non- native speakers and native speakers of English. No statistically significant difference was found between the sets, $t(14) = 0.70$, $p = .50$, $r = .18$.

3 *Filler items*

Three filler items (*pear*, *rooster*, and *volcano*) were included in the treatment to prevent the possibility of primacy and recency effects. A primacy effect is the positive result that may be gained from learning the initial items in a learning condition, whereas a recency effect is the positive result that may be gained from learning the final items in a learning condition (Murdock, 1962). The same three filler items were therefore encountered at the beginning and the end of the treatment to reduce the possibility of primacy and recency effects on target items. To ensure that the filler items would be treated in the same way as the target items, these words were selected according to the same criteria as the target words, and the participants were not told about any differences between items. All three filler items were noncognates.

4 *Dependent measures*

Two dependent measures were administered to the participants in the same order prior to, immediately following, and 1 week after the treatment. Research has indicated that the use of multiple measures of vocabulary knowledge can provide a more accurate assessment of vocabulary learning than a single test (Nagy, Herman, & Anderson, 1985; Waring & Takaki, 2003; Webb, 2005, 2007, 2008a, 2009). In order to familiarize participants with each test, the first three items on the tests were the filler items. Responses for the filler items were not included in the pretest and posttest data. The item order was determined so that the loanwords and noncognates would be distributed roughly equally across the test to prevent the possibility of an order effect.

The first test was designed to measure learners' ability to use words in context and had a cloze format. Sentences that had originally contained the target words appeared on the screen one at a time. The target words were replaced with one blank for each letter in the word. To eliminate the possibility that participants might fill in a word that was different from the target but still appropriate for a sentence, a single letter was inserted into one of the blanks. This letter was never the first or last letter in the word and was always the most common letter in the target words at that position. For example, the test items for *canoe*, *veil*, *beak*, and *twig* were as follows:

We can travel down the river in a small boat or _ _ _ o _.

He could see part of her face under the _ e _ _.

A large orange bird had a fish in its _ _ a _ and flew away.

The students were asked to bring in one _ _ i _ from the tree which they were drawing.

One sentence appeared for each target word in the test. The sentences were based on contexts from the British National Corpus. Small modifications were made to some of the sentences to ensure that there was sufficient information within the sentences to infer the missing words. Low-frequency words in the original sentences that were likely to be unknown to the participants were replaced with high-frequency words that were expected to be known. Advanced language learners and 17 native speakers rated all of the sentences on the level of information that could be used to infer the missing words on a 7-point scale (1: least informative and 7: most informative) to ensure that the sentences for one set of words were not more informative than the other set. The average ratings on the 7-point scale were 5.26 (0.84) for the loan- words and 5.11 (0.79) for the noncognates (*SDs* in parentheses). There was no statistically significant difference between the two sets of sentences, $t(16) = 1.36$, $p = .19$, $r = .32$. The participants had as much time as they needed to complete each item on the cloze test.

The second test was intended to measure form recall and employed a translation test format. In this test, the L1 meaning of one target word appeared on the screen, and the participants had to type in

the L2 form. To eliminate the possibility that participants might type a synonym for the target word (e.g., *bill* for *beak*), one letter in the target word and the number of letters in the word were provided as a hint (e.g., _ e _ _ for *beak*). The letter was chosen in the same way as in the cloze test. When participants were finished with an item, they pressed a button and the next L1 meaning appeared. The following examples are for the test items *canoe* and *beak*:

[カヌー] _ a _ _ _ (the answer is *canoe*)

[くちばし] _ e _ _ (the answer is *beak*)

The letters that were inserted in the translation and cloze tests were different for a few items. This is because these letters were provided for different reasons. In the translation test, the letters were provided to prevent participants from providing synonyms for a target word (e.g., *robber* for *bandit*). In the cloze test, hints were provided to prevent participants from providing not only synonyms but also all other words that might also make sense in the cloze sentence (e.g., *yacht* and *kayak* for *canoe*). However, because the comparisons were between the different types of words (loanwords versus noncognates) rather than the two tests, inserting different letters in the tests should not have had any impact on the findings.

5 *Scoring of responses*

Responses on both dependent measures were scored twice: once for partial knowledge of written form (sensitive scoring), and once for full knowledge of written form (strict scoring). Research has shown that scoring responses at two levels of sensitivity can provide a more accurate measurement of learning than a single scoring protocol because one method of scoring may not be sensitive to varying degrees of gains in partial knowledge (Barcroft, 2004; Webb, 2008b; Webb & Kagimoto, 2009). Responses needed to be spelled correctly in the strict scoring protocol. The sensitive scoring protocol was based on Barcroft's (2004) lexical production scoring protocol at the 0.75 level. If 50% or more of the letters in the response were placed in the same position as in the target word or 75% or more of the letters in the target word were found in the response regardless of the position, the response was scored as correct along with the correctly written responses. For example, in the sensitive scoring protocol, *maffler*, *maflrer*, and *mofuler* and *mosqiete*, *mosqueat*, and *moskeate* were scored as correct for *muffler* and *mosquito*, respectively. On the cloze pretest, there were six responses that were different from the target word but made sense in the sentences. These responses were scored as correct. On the form recall pretest, participants did not provide synonyms for a target word.

6 Procedure

The pretest, treatment, and immediate and delayed posttests were completed using a computer program developed by one of the authors with Microsoft Visual Basic for Excel Version 7.0. All phases of the study were conducted in computer-assisted language learning classrooms where each student had access to a computer. The participants were given as much time as they needed to complete the treatment and tests. Prior to each phase of the study, the participants received instruction and examples in Japanese.

In the treatment, there were four cycles of 25 items (22 target items and three filler items). In the first cycle, the target English and Japanese words were presented simultaneously for 8 seconds per word pair. In the second, third, and fourth cycles, the items were practiced in a L2 form recall format. This consisted of the appearance of a single L1 meaning and a prompt for the participants to type in the corresponding L2 form. Unlike in the pretest and posttest, the number of letters in the target words and the inserted letters (e.g., _ e _ _ for *beak*) were not provided during the treatment. Instead a blank textbox was provided as the place for the participants to type in their answers. The participants had as much time as they needed to type in their responses. After each response was entered, feedback indicated whether the response was correct, and the correct answer and its L1 translation were shown to the

participants for 5 seconds.

The item order was determined so that the loanwords and noncognates would be distributed roughly equally across the treatment to ensure that the item order did not affect learning. Immediately following the completion of the treatment, participants answered 10 two-digit additions (e.g., $53 + 49 = ?$, $47 + 32 = ?$, $34 + 63 = ?$) as a filler task. One week following the treatment, the delayed posttests were administered to participants under the same conditions with the same computer program. The participants were unaware that there would be further testing so it was unlikely that they reviewed the target items between the immediate and delayed posttests. The retention interval of 1 week was chosen for the delayed posttest for two reasons. First, studies have shown that most forgetting occurs immediately after learning (e.g., Bahrick, 1984; Seibert, 1927, 1930). Scores on a 1-week delayed posttest, therefore, may be a good indication of retention over time. Second, in pilot studies, no floor effect was observed on the 1-week delayed posttest scores.

V Results

1 Study time

Because the treatment in this study was self-paced by participants (i.e., participants were allowed to take as much time as they needed to type a

response), the study time for the loanwords and noncognates might not have been comparable. The study time, therefore, was analysed in order to examine whether it was roughly equivalent between the two word types. On average, the participants spent 9.00 (1.14) and 8.44 (1.33) minutes (*SDs* in parentheses) studying the loanwords and noncognates, respectively. The difference was statistically significant, $t(29) = 2.90$, $p = .007$, $r = .47$. However, the 95% confidence intervals of difference were rather narrow: [0.16, 0.96]. The study time was slightly shorter for the noncognates probably because, during retrieval practice, participants were more likely to leave the answer blank for the noncognates.

Research

2 Posttest performance

The descriptive statistics for the dependent measures are shown in Table 2. First, let us examine whether the pretest scores for the loanwords and noncognates were comparable. Because the distributions of the pretest scores were found to be significantly different from the normal distribution, the pretest scores were compared with non-parametric Wilcoxon signed-rank tests. The analysis indicated that no statistically significant difference existed between the two item sets on the cloze test regardless of the scoring procedure, strict scoring: $Z = -1.31$, $p = .190$, $r = .24$ and sensitive

scoring: $Z = -0.80$, $p = .423$, $r = .15$. However, the difference was statistically significant for the form recall test for both scoring protocols, strict scoring: $Z = -2.50$, $p = .012$, $r = .46$ and sensitive scoring: $Z = -4.80$, $p < .001$, $r = .88$. The results indicate that the participants could demonstrate greater knowledge of loanwords than noncognates when given the L1 translations at the outset of the experiment.

In order to correct for differences in the pretest scores, gains from the pretest to the posttest were calculated. For instance, Table 2 shows that for L2 form recall, the average pretest scores for sensitive scoring were 6.80 for loanwords and 1.17 for noncognates. Because the loanwords had less room for improvement ($11 - 6.80 = 4.20$) compared with the noncognates ($11 - 1.17 = 9.83$), comparing the raw gains (posttest score – pretest score) may be somewhat misleading, and relative gains may provide a more accurate indication of learning (Horst, Cobb, & Meara, 1998; Shefelbine, 1990). Relative gains (%) were calculated by the following formula: $(\text{posttest score} - \text{pretest score}) / (\text{number of test items} - \text{pretest score}) \times 100$. Table 3 summarizes the relative gains.

The relative gains were analysed by four separate two-way repeated measures 2 (word type: loanwords/noncognates) \times 2 (retention interval: immediate/delayed) ANOVAs. As shown by Tables 4 and 5, the

ANOVAs revealed a significant main effect of retention interval on both tests with both scoring protocols. The main effect of word type was significant with strict and sensitive scoring on the form recall test and with strict scoring on the cloze test, but not with sensitive scoring on the cloze test. The interaction between word type and retention interval was significant on the cloze test with both scoring protocols, but not on the form recall test regardless of the scoring protocols.

The Bonferroni method of multiple comparisons was used to examine where the significant differences lay at each retention interval. Table 6 presents the results of the multiple comparisons. The multiple comparisons show that the participants made significantly greater relative gains for the loanwords on the immediate and delayed form recall tests with both strict and sensitive scoring. However, the relative gains were significantly larger for the noncognates on the immediate cloze test with strict and sensitive scoring. No statistically significant difference was detected on the delayed cloze test regardless of the scoring protocols.

VI Discussion

In answer to the first research question, the results of the form recall test indicated that greater learning occurred for loanwords than noncognates. The increase in L2 form recall scores was 6.77 for

loanwords and 5.43 for noncognates immediately after the treatment using the strict scoring protocol. Gains were also greater for loanwords (4.97) than noncognates (3.10) 1 week later. Using sensitive scoring, form recall scores increased by 3.87 for loanwords and 6.47 for noncognates on the immediate posttest and 2.60 for loanwords and 3.80 for noncognates on the delayed posttest. However, the raw gains may be somewhat misleading because the overlap in L1–L2 form led to much higher pretest scores for loanwords than noncognates. In order to correct for differences in the pretest scores, relative gains were analysed. Relative gains were 92.5% ($3.87/4.20$) for loanwords and 66.2% relative gains indicated significantly greater learning of loanwords, supporting the findings of earlier studies (De Groot & Keijzer, 2000; Lotto & De Groot, 1998; Tonzar et al., 2009). In answer to the second research question, the results of the cloze test indicated that greater learning occurred for noncognates than loanwords using both the strict and sensitive scoring protocols on the immediate posttest. Mean raw gains on the immediate posttest were 2.47 for loanwords and 3.60 for noncognates using strict scoring and 2.87 for loanwords and 4.17 for noncognates using sensitive scoring.

Table 2. Average pretest and posttest scores on the form recall and cloze tests.

Retention interval	Form recall				Cloze			
	Strict scoring		Sensitive scoring		Strict scoring		Sensitive scoring	
	Loanwords	Noncognates	Loanwords	Noncognates	Loanwords	Noncognates	Loanwords	Noncognates
Pretest	0.80	0.33	6.80	1.17	0.37	0.17	0.73	0.60
	<i>1.19</i>	<i>0.66</i>	<i>1.75</i>	<i>1.15</i>	<i>0.76</i>	<i>0.46</i>	<i>0.94</i>	<i>0.77</i>
Immediate	7.57	5.77	10.67	7.63	2.83	3.77	3.60	4.77
	<i>2.27</i>	<i>2.08</i>	<i>0.61</i>	<i>2.06</i>	<i>1.80</i>	<i>1.68</i>	<i>1.87</i>	<i>1.87</i>
Delayed	5.77	3.43	9.40	4.97	2.10	2.23	3.10	2.93
	<i>2.40</i>	<i>2.11</i>	<i>1.71</i>	<i>2.17</i>	<i>1.99</i>	<i>1.91</i>	<i>2.22</i>	<i>2.10</i>

Note: Standard deviations in italics. The maximum score is 11 for each cell. $n = 30$.

Table 3. Average relative gains on the form recall and cloze tests.

Retention interval	Form recall				Cloze			
	Strict scoring		Sensitive scoring		Strict scoring		Sensitive scoring	
	Loanwords	Noncognates	Loanwords	Noncognates	Loanwords	Noncognates	Loanwords	Noncognates
Immediate	66.6%	51.1%	92.5%	66.2%	22.8%	33.2%	27.1%	40.0%
	<i>21.3%</i>	<i>19.2%</i>	<i>13.9%</i>	<i>21.0%</i>	<i>17.8%</i>	<i>15.4%</i>	<i>20.1%</i>	<i>17.6%</i>
Delayed	48.2%	28.9%	60.0%	38.8%	16.3%	19.0%	22.8%	22.8%
	<i>23.2%</i>	<i>19.9%</i>	<i>43.3%</i>	<i>20.6%</i>	<i>18.2%</i>	<i>17.5%</i>	<i>21.1%</i>	<i>18.1%</i>

Note: Standard deviations in italics. $n = 30$.

Table 4. Results of two-way ANOVAs for the form recall test (relative gains).

	Strict scoring				Sensitive scoring			
	<i>df</i>	<i>F</i>	<i>p</i>	partial η^2	<i>df</i>	<i>F</i>	<i>p</i>	partial η^2
Retention interval	1, 29	29.76	.000	.51	1, 29	35.86	.000	.56
Word type	1, 29	19.48	.000	.40	1, 29	38.43	.000	.58
Word type \times RI	1, 29	1.24	.275	.04	1, 29	0.48	.494	.02

RI: retention interval.

Table 5. Results of two-way ANOVAs for the cloze test (relative gains).

	Strict scoring				Sensitive scoring			
	<i>df</i>	<i>F</i>	<i>p</i>	partial η^2	<i>df</i>	<i>F</i>	<i>p</i>	partial η^2
Retention interval	1, 29	14.58	.001	.33	1, 29	12.64	.001	.30
Word type	1, 29	5.25	.029	.15	1, 29	3.53	.070	.11
Word type \times RI	1, 29	4.29	.047	.13	1, 29	12.90	.001	.31

RI: retention interval.

Table 6. Results of the Bonferroni method of multiple comparisons (relative gains).

Posttest	Scoring	Retention interval	<i>p</i>	Δ
Form recall	Strict	Immediate	.000	0.81
		Delayed	.000	0.97
	Sensitive	Immediate	.000	1.33
		Delayed	.004	1.01
Cloze	Strict	Immediate	.006	0.58
		Delayed	.425	0.15
	Sensitive	Immediate	.004	0.65
		Delayed	.988	0.00

Analysis of the relative gains indicated significantly greater learning for the noncognates than the cognates on the immediate cloze test.

However, there was no significant difference in the relative gains

between the two word types on the delayed cloze test. This suggests

that knowledge of noncognates may decay faster than that of

loanwords, which in turn suggests that knowledge of cognates might be

more durable than that of noncognates.

One explanation for the superiority of the noncognates on the immediate cloze post-test may be that perhaps the participants were more cautious with their use. The paired-associate learning condition used in this study did not provide any information about how words are used. Participants simply learned to link form to meaning. Research indicates that false cognates (L1–L2 words that have similar forms but different meanings) are problematic for language learners (Meara, 1993). If learners are aware that there may be variation between the degree of overlap in L1–L2 meaning for words that have similar forms, they may lack confidence when initially using these words in context. Another possible explanation for the inconsistent results is that perhaps the test items for the loan-words in the cloze test were more challenging than those for the noncognates. Although no statistically significant difference existed in the pretest scores of the two sets of items, and no statistically significant difference existed in the ratings of informativeness by advanced language learners and native speakers, it is possible that lower-level learners may have found the loanword items more difficult.

Another possible explanation for why smaller gains were found for the loanwords on the cloze test is that perhaps the L1 frequency of the items affected the findings. In the present study, L2 frequency was

controlled while L1 frequency was not. As a result, the L1 translations of loanwords might have been of lower frequency than those of noncognates. With lower frequency words, there is likely to be some degree of synonymy or overlap in meaning between other L1 words. Although this is likely to affect both loanwords and noncognates, it may be more common for borrowed words because they may often represent concepts that are widely known as L1 synonyms. If the L1 form is less frequent, then the meaning of the item might be less clearly defined or more ambiguous than higher frequency items. This would in turn make it harder to successfully complete the cloze test because, in this test format, test takers need to demonstrate their knowledge of the conceptual meaning of items to score successfully. The form recall test does not measure knowledge of conceptual meaning. It simply measures whether test takers can link form to meaning.

It is important to note that scores for both word types were relatively low on the immediate cloze posttest. Relative gains were 22.8% and 27.1% for loanwords and 33.2% and 40.0% for noncognates using the strict and sensitive scoring protocols, respectively. The low scores can be attributed in part to the difference between the treatment and the test. Transfer-appropriate processing theory suggests that the similarity between learning and testing conditions is likely to have a positive effect on test performance

(Morris, Bransford, & Franks, 1977). This provides support for why the decontextualized learning condition contributed to relatively high scores on the decontextualized form recall test and lower scores on the cloze test. There is some evidence suggesting that decontextualized flashcard learning can facilitate comprehension and use of L2 words (Webb, 2009). However, researchers tend to be in agreement that developing depth of vocabulary knowledge requires repeated encounters in novel contexts (Nation, 2001; Schmitt, 2008; Webb & Chang, 2012). The lower scores on the cloze test in relation to the form recall test indicate that there are likely to be benefits to combining flashcard learning with other meaning-focused learning conditions.

It is also important to note that retention 1 week after the treatment was relatively high for a rather minimal exposure to the target words (9.00 minutes for the loanwords and 8.44 minutes for the noncognates). Using the sensitive-scoring protocol, the results revealed that on the delayed form recall test, the participants were able to recall the L2 forms of 60.0% and 38.8% of loanwords and noncognates, respectively. They also had scores of 21.1% and 18.1% for the loanwords and noncognates, respectively, on the delayed cloze test using the sensitive scoring system. These scores indicate that computerized engagement in the paired-associate learning condition was a useful tool in learning both word types.

The results of the form recall test, as well as those of earlier studies

(De Groot & Keijzer, 2000; Lotto & De Groot, 1998; Tonzar et al., 2009), suggest that it may be beneficial to teach cognates prior to noncognates when the words have the same value to learners. Because learners are able to link an L2 form to the L1 meaning more easily for cognates, raising awareness of which words are cognates during teaching might be one way to effectively boost vocabulary size. It is recommended that vocabulary is taught according to its frequency; teaching the most frequent words first provides the greatest value to learners because these items are most commonly encountered and used (Nation, 1990, 2001; Schmitt, 2000; Webb & Chang, 2012). However, there has been little discussion about how best to teach words within a frequency level. Perhaps vocabulary teaching should start with the high-frequency cognates because a beginning vocabulary made up of cognates may quickly provide lexical scaffolding for the subsequent learning of high-frequency noncognates. In the Japanese EFL context, there is a sound basis for this approach because of the large number of high-frequency loanwords (Daulton, 1998, 2003, 2008).

However, there are two caveats to this approach. First, although there may be many high-frequency cognates, the relative value of these items in comparison to noncognates is not clear. It may be that there is greater pedagogic value to first teaching noncognates or a combination of the two word types. Second, the results of the cloze test indicate that

learners may have trouble using cognates. This suggests that any teaching approach that prioritized the learning of cognates should place emphasis on providing repeated opportunities to encounter and use them in context. Researchers agree that developing depth of lexical knowledge requires learning in meaning-focused input and meaning-focused output (Nation, 2001; Schmitt, 2008; Webb & Chang, 2012). The findings suggest that this may be particularly important when teaching cognates.

Several possible directions for future research are suggested by the present study. First, investigating the effects of cognacy using a similar experimental design, but with a longer retention interval than the 1-week interval used in this study, would provide a better indication of durable learning. Second, it would be useful to compare teaching larger sets of cognates and noncognates over a longer period of time with learners at different proficiency levels to provide a more accurate assessment of the pedagogical significance of teaching these word types. One limitation of the research to date has been relatively small samples of cognates that are taught in essentially one way, paired-associate learning. Examining learning conditions that involve both decontextualized and contextualized learning would expand on earlier designs and may shed further light on how cognacy affects learning.

Third, it would be useful to investigate how the degree of overlap in sound-spelling correspondence affects learning cognates. Cognates

with a high sound-spelling correspondence tended to be identified as known during piloting and excluded from this study because learners could successfully spell these items on the form recall pretest. Because the target cognates in this study tended to have only partial overlap in sound-spelling correspondence (e.g., *beige*, *bouquet*, and *brassiere*), their L2 forms may have been more difficult to learn than many others that have a higher degree of overlap. Thus, the results may have underestimated the effects of cognacy to some degree. Similarly, it should also be noted that the research did not examine the learnability of false cognates. Words with similar forms but differing L1–L2 meanings are much more difficult to learn. Thus, the findings in this study may reflect one type of cognate but should not be generalized to all words with a high degree of L1–L2 form overlap. However, the type of semantically direct or nearly direct cognates examined in this study do represent the vast majority of loanwords in Japanese (Ishikawa & Rubrecht, 2008). Research examining a wider range of cognates may provide further evidence of the value of teaching cognates.

A fourth direction for further research is investigating the extent to which loanwords are recognized in context by Japanese learners. Partial justification for this study was based on the fact that earlier research indicated that cognates may not be recognized by language

learners (García, 1991; Nagy et al., 1993). If loanwords are not recognized, then explicitly teaching those items that are at high-frequency levels makes good sense. However, the degree to which loanwords are recognized in context by Japanese learners has yet to be examined.

Future research can also build upon and extend the present research insights by investigating the effects of cognacy using a broad range of measures. In particular, it might be beneficial to look at how the two word types might compare on other productive measures such as picture description or sentence production tests. Productive tests that involve context provide challenges for researchers so their results need to be interpreted carefully. For example, sentence production tasks, while ecologically valid, can require learners to demonstrate background knowledge as well as knowledge of other words to score successfully. However, the fact that the participants in this study had difficulty in successfully completing a cloze test suggests that measuring productive knowledge with other contextualized tests would be useful.

VII Conclusions

The results of the present study provide partial support for earlier findings indicating that cognates may be more easily learned than

noncognates. The difference between the pretest scores demonstrated the benefit of explicitly teaching cognates; there is relatively little to teach about their L2 forms in comparison to noncognates. Taken together, the findings suggest that although it may be easier to learn the form-meaning connection for cognates, it may be more difficult to use them in context than it is for noncognates. Further research investigating the relative value of cognates for teaching is clearly warranted.

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Note

1. パン in パンくず is a loanword from Portuguese and ラッパ in ラッパズイセン is a loanword from Dutch, Chinese, or Sanskrit (ズイセン is a Japanese word). These items were included as noncognate target words, because they do not meet our definition of cognate (there is no overlap in L1–L2 form).

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