Which Cues, Adjectives or Verbs, Provide Most Assistance for Remembering New Nouns?

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Abstract

Kasahara (2010; 2011) showed that learning a known-and-unknown word combination was superior in terms of retention and retrieval of meaning to learning a single unknown word. However, these studies examined only one type of combination: adjective (known) + noun (unknown). The present study examined the effectiveness of known verbs as cues to remember unknown nouns. This study compared verb (known) + noun (unknown) combinations with adjective (known) + noun (unknown) combinations, employing two groups with the same vocabulary size. The participants in each group were asked to remember 20 two-word combinations consisting of different known cues (adjectives or verbs) and the same unknown target nouns. The experiment gave the participants a five-minute encoding phase and two immediate recall tests: Test 1 asked them to write down the L1 meanings of the targets; Test 2 asked them to write down the L1 meanings of the combinations. They took the same two tests one week later. The results showed that verbs helped the participants to retain and retrieve the meanings of the target nouns as effectively as adjectives.

1. Introduction

1.1 Reevaluation of Intentional Vocabulary Learning or Decontextualizing

It is well known that there are two types of vocabulary learning: intentional and incidental learning (Hatch & Brown, 1995; Nation, 2001; 2013). Intentional learning regards vocabulary learning as the main purpose of learning activities. It often takes the form of decontextualizing, i.e. presenting target vocabulary items out of context. A typical method is paired-associate learning, in which L1 equivalents are attached to L2 target items, using word lists or word cards. Learners try to connect the forms and meanings of the target items through intentional effort. Incidental learning sees vocabulary learning as a side effect of understanding messages in listening or reading input. It usually takes the form of contextualizing, where vocabulary items are presented in context. Learners happen to gain some vocabulary knowledge while focusing on understanding the message of the input.
Intentional vocabulary learning, or decontextualizing, was severely criticized during the heyday of communicative language teaching (CLT) in the 1980s. The goal of CLT is to "enable students to communicate in the target language" (Larsen-Freeman & Anderson, 2011, p. 122) and it emphasizes the importance of natural meaningful contexts. CLT advocates insisted that intentional learning, which presents vocabulary items in isolation cannot help learners to understand the items' communicative functions. One of the most influential supporters of this idea was Stephen Krashen, who argued that intentionally learned knowledge cannot be turned into acquired knowledge, which is useful in real communication (Krashen, 1982; 1985).

Recently, however, it has been argued that incidental meaning-focused vocabulary learning is not sufficient and should be supplemented by intentional form-focused vocabulary learning (Cobb & Horst, 2004; Laufer, 2005). The two types of learning are thought to be "complementary activities, each one enhancing the learning that comes from the other" (Nation, 2013, p. 348). Each of them takes a different role: intentional learning is mainly helpful for establishing form-and-meaning connections; incidental learning shows how to use words in context. Novice L2 learners need to know thousands of frequent words in the target language, which increases the possibility for them to guess the meanings of unknown words successfully in context. In second language acquisition, intentional learning of the most frequent words in a short period is crucial because it can trigger incidental learning of less frequent words afterwards. This is especially the case with EFL situations, where incidental input is not abundant outside English classrooms.

In fact, intentional vocabulary learning is an efficient and effective way of vocabulary learning. Nation (2013) introduces early studies that showed the efficiency of learning vocabulary through word cards (Thormdie, 1908; Webb, 1962). These studies revealed that the learners remembered the meanings of a large number of words in a short period and retained the gained knowledge for a long time. In terms of establishing form-and-meaning connections, several studies have shown that learning words in isolation is more effective than learning them in context (Laufer & Shumueli, 1997; Prince, 1996; Webb, 2007). In addition, Elgort (2010) has given us evidence that deliberately learned word knowledge, or explicit word knowledge, can be turned into implicit word knowledge, which is available for unconscious instant use. She had the participants remember the meanings of 48 pseudowords through word cards. After a week of learning sessions, she conducted three priming experiments by using the 48 pseudowords as the primes. These experiments showed that the deliberately gained knowledge of the pseudowords was accessed automatically and incorporated into the network of the existing vocabulary items. Considering the results of the vocabulary studies above, L2 learners have no reason to deny the importance of intentional vocabulary learning. They should take advantage of decontextualized learning such as word lists or word cards especially at an early stage of L2 acquisition, with the supplementary help of incidental vocabulary learning.

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1.2 Learning Words in Known-and-Unknown Word Combinations

Mastering the most frequent 1,000 or 2,000 words in the target language can pave the way to the next stage of intentional vocabulary learning: making use of “old” or known knowledge when you try to remember and take in “new” or unknown knowledge, which means making links between known words and unknown words (Barcroft, 2002; Pierson, 1989; Sökmen, 1997). Schmitt (2010) explains why attaching old words to new words can help learners to remember and retain the new items:

Since the ‘old’ words are already fixed in the mind, relating the new words to them provides a ‘hook’ to remember them by so they will not be forgotten. New words which do not have this connection are much more prone to forgetting (p. 35).

Kasahara (2010) examined whether learning combinations of known-and-unknown words was more effective in terms of retention and retrieval of meaning than learning a single unknown word. The study employed 39 Japanese high school learners of English, who were asked to remember the Japanese meanings of 10 new single words and 10 two-word combinations. Each of the combinations was a collocation consisting of a known adjective (or a known noun that worked as an adjective) and an unknown noun, such as beautiful damsel. After the five-minute encoding phase, two kinds of recall test were conducted. In both of the tests, the participants had to write down the meanings of the 10 single words. In terms of the combinations, Test 1 asked the participants to write down the meanings of the target words only (without the cue condition), whereas in Test 2 they had to write down the meanings of the combinations (with the cue condition). The same tests were conducted again after a one-week interval. The results showed that the known-and-unknown combinations yielded better retention of meaning than the single words, and that the combinations produced better scores with the cues both in the immediate and delayed tests, but not without the cues. Under the cue condition in the retrieval phase, the study proved that attaching an old word to a new one was an effective learning approach.

The problem in Kasahara (2010) was that the 10 new words in the two-word combinations were different from the 10 single words. The difference in quality between these target words might have brought about the better results of the combinations. Therefore, Kasahara (2011) conducted a replication of Kasahara (2010) by using the same target words in the single-word condition and the known-and-unknown two-word condition. The study employed two groups of participants with the same vocabulary size. Group 1 (G1) remembered the meanings of 20 known adjectives + 20 target unknown nouns; Group 2 (G2) remembered the meanings of the same 20 target nouns only. They were given an immediate and a delayed recall test, where G1 had to write down the meanings of the two-word combinations and G2 had to write down the 20 single target words. The results revealed that the known-and-unknown combinations were more effective for retention and retrieval of the target meanings than the single words.
The two studies above have proven the superiority of old-and-new word combination learning to single word learning in order to retain and retrieve the meaning of the new target word. However, these studies mainly dealt with one type of combinations: a known adjective and an unknown noun. It is reasonable for studies to use nouns as targets because they are basic components of longer phrases and sentences. Nouns are so essential that they are learned earlier than verbs (Tomasello, 2003), and adjective-and-noun combinations are typical and frequent collocations in any language. Another typical and frequent two-word combination including a noun is a verb-and-noun combination (Lewis, 1997). Barfield (2009) suggests that L2 learners frequently produce adjective + noun collocations and then move on to verb + noun collocations. Mastering these two types of typical collocations is crucial in L2 acquisition. Attaching a known verb to a new target noun seems to be another beneficial way of learning the target noun. It is worthwhile to investigate whether verb + noun combinations are as effective as adjective + noun combinations. The purpose of the present study is to compare the effectiveness of the two different cues for target nouns.

1.3 Purpose and Hypotheses

The present study has two research questions. The first question is whether known verb + unknown noun combination learning is better for the retention and retrieval of the target nouns than single unknown word learning. The second question is which known cues in two-word combinations, adjectives or verbs, are more effective for retaining and retrieving the meanings of target nouns. Considering the results of Kasahara (2010; 2011), this study assumed that learning verb (known) and noun (unknown) two-word combinations would be more effective for the retention and retrieval of the target words than learning the single targets only. Therefore, the present study built the first two hypotheses by assuming the superiority of the verb-and-noun combination learning over single word learning. However, there are no previous studies to show which type of combination is superior as far as the author knows. This study set two null hypotheses predicting that there would be no difference between the two types of combinations.

(H1) Learning an unknown noun with a known verb will improve the noun’s retention better than learning the target noun itself.

(H2) Learning an unknown noun with a known verb will improve the noun’s retrieval better than learning the target noun itself.

(H3) Known verb + unknown noun combinations are as effective for the retention of the target nouns as known adjective + unknown noun combinations.

(H4) Known verb + unknown noun combinations are as effective for the retrieval of the target nouns as known adjective + unknown noun combinations.

Retention is defined as how well learners keep the meanings of target words after a certain period of time. In this study, retention was measured by the difference between the immediate and
delayed recall tests. Retrieval means how exactly learners recall the meanings of the target words. It was measured by the score of the immediate and delayed recall tests respectively.

2. Method

2.1 Participants

The participants were 62 Japanese university students, each of whom had learned English for six or more years. At first, there were 97 students who joined the experiment. In order to divide the participants into two groups with the same vocabulary size, the author had them take the 2000 and 3000 word levels of the Vocabulary Levels Test (Nation, 1990; 2001; 2008). The reason for its adoption was its high reliability as a vocabulary size test (Schmitt, Schmitt & Clapham, 2001) and its less time-consuming nature. According to the results of the tests, the participants were assigned to Group 1 (n = 49) or Group 2 (n = 48). The experiment was conducted over three weeks in part of the students’ weekly regular university classes, and there were 35 students in Group 1 and 27 students in Group 2 who completed the whole procedure, thus there were 62 participants in this study. The author compared the results of the Vocabulary Levels Test between the groups again, and confirmed that there was no significant difference in vocabulary size between them, t(60) = -.90, p = .37, r = .11.

2.2 Materials

This study adopted 20 pseudowords as the target words for all the participants to remember. It excluded the possibility that they already had some knowledge of the targets. All the target words were taken from the website called the AKC Nonword Database, which automatically produces pseudowords according to orthographical rules in English (Rastle, Harrington, & Coltheart, 2002). The length of each word was set between five to seven letters. Each pseudoword was supposed to replace one real English word such as *plique* for money, or *queale* for problem.

Then, 20 known adjectives and 20 verbs that were able to collocate with the target words were selected. All these cue words belonged to the 1000 word-level or 2000 word-level of the JACET 8000 (JACET, 2003), and were thought to be already known to university learners of English (Kasahara, 2005). The existence of each two-word combination consisting of one cue and one target was confirmed in the British National Corpus, Genius English-Japanese Dictionary (Konishi & Minamide, 2006) or The Wisdom English-Japanese Dictionary (Inoue, Akano, 2008). All the 20 target words, the 20 adjective + target combinations, and the 20 verb + target combinations are shown in Table 1.

Next, two types of learning list were made. Both lists included two types of presentation: single-word presentation and two-word combination presentation. The reason these lists had the two kinds of presentation (the targets + their translations and the combinations + their translations) was to confirm the superiority of combination learning over single-word learning. The order of the
target words was the same between the two lists. List 1 was made for Group 1, with the 20 target nouns and their Japanese equivalents on the left and the 20 adjective + target combinations and their Japanese equivalents on the right. List 2 was made for Group 2, with the 20 target nouns and their Japanese equivalents on the left and the 20 verb + target combinations and their Japanese equivalents on the right. Appendix A shows the items in List 1 and Appendix B shows the items in List 2.

Finally, two types of test were produced. Test 1, which was given to both of the groups, had the 20 target nouns and asked the participants to write down their meanings in Japanese. Test 2 had the participant write down the Japanese meanings of the 20 two-word combinations that they had learned. Group 1 participants had to write down the meanings of the 20 adjective + noun combinations, while their Group 2 counterparts wrote the meanings of the 20 verb + noun combinations. To avoid the learning order effect, all the targets and the combinations were shown in a different order to the order in the lists. The details of the tests are shown in Table 2.

Table 1
The 20 Target Words and the Two Types of Combination

<table>
<thead>
<tr>
<th>Target</th>
<th>Replaced Word</th>
<th>Adjective + Target (G1)</th>
<th>Verb + Target (G2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>plique</td>
<td>money</td>
<td>much plique</td>
<td>waste plique</td>
</tr>
<tr>
<td>queale</td>
<td>problem</td>
<td>a difficult queale</td>
<td>cause a queale</td>
</tr>
<tr>
<td>krirk</td>
<td>letter</td>
<td>a long krirk</td>
<td>write a krirk</td>
</tr>
<tr>
<td>chaumb</td>
<td>milk</td>
<td>white chaumb</td>
<td>drink chaumb</td>
</tr>
<tr>
<td>zighnd</td>
<td>grass</td>
<td>green zighnd</td>
<td>cut zighnd</td>
</tr>
<tr>
<td>rouve</td>
<td>door</td>
<td>a back rouve</td>
<td>open a rouve</td>
</tr>
<tr>
<td>tauff</td>
<td>shower</td>
<td>a hot tauff</td>
<td>take a tauff</td>
</tr>
<tr>
<td>stitch</td>
<td>whale</td>
<td>a big stitch</td>
<td>catch a stitch</td>
</tr>
<tr>
<td>wellbb</td>
<td>song</td>
<td>a new wellbb</td>
<td>sing a wellbb</td>
</tr>
<tr>
<td>urnth</td>
<td>river</td>
<td>a deep urnth</td>
<td>cross an urnth</td>
</tr>
<tr>
<td>dwoughk</td>
<td>company</td>
<td>an international dwoughk</td>
<td>start a dwoughk</td>
</tr>
<tr>
<td>jyled</td>
<td>dish</td>
<td>a dirty jyled</td>
<td>wash a jyled</td>
</tr>
<tr>
<td>crell</td>
<td>hand</td>
<td>a left crell</td>
<td>wave a crell</td>
</tr>
<tr>
<td>woadge</td>
<td>love</td>
<td>true woadge</td>
<td>need woadge</td>
</tr>
<tr>
<td>dryzz</td>
<td>man</td>
<td>a famous dryzz</td>
<td>meet a dryzz</td>
</tr>
<tr>
<td>spleth</td>
<td>meal</td>
<td>a cold spleth</td>
<td>eat a spleth</td>
</tr>
<tr>
<td>yeabb</td>
<td>room</td>
<td>a private yeabb</td>
<td>clean a yeabb</td>
</tr>
<tr>
<td>blife</td>
<td>car</td>
<td>a foreign blife</td>
<td>drive a blife</td>
</tr>
<tr>
<td>gnalp</td>
<td>meeting</td>
<td>a special gnalp</td>
<td>attend a gnalp</td>
</tr>
<tr>
<td>fighd</td>
<td>tower</td>
<td>a tall fighd</td>
<td>build a fighd</td>
</tr>
</tbody>
</table>
Table 2

<table>
<thead>
<tr>
<th>Test Items</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>3 minutes</td>
</tr>
<tr>
<td>Test 2 for G1</td>
<td>4 minutes</td>
</tr>
<tr>
<td>Test 2 for G2</td>
<td>4 minutes</td>
</tr>
</tbody>
</table>

Note. Test 1 was common to both groups. G1 = Group 1; G2 = Group 2.

2.3 Pilot Study

A pilot study was carried out to predict how many minutes would be needed for the encoding and decoding phases. The study employed 20 university students who were majoring in English education, and found that the experiment would need five minutes for the learning session, three minutes for Test 1 and four minutes for Test 2.

2.4 Procedure

This study had three sessions held in weekly English lessons. In the first session, the participants in each group took the 2000 word-level and the 3000 word-level of the Vocabulary Levels Test. The second session included an encoding phase and immediate recall tests. Each participant in Group 1 was given List 1 (the adjective + noun combinations), whereas each participant in Group 2 was given List 2 (the verb + noun combinations). They were instructed to remember the meanings of the target nouns and the combinations for five minutes. They were also told that they would have to write down the meanings of the targets in Test 1 and the meanings of the combinations in Test 2 after the learning session. After the lists were collected, the participants took Test 1 for three minutes and then Test 2 for four minutes. In the third session, a week later, they took the same recall tests again without any advance notice.

2.5 Scoring

One point was given for each correct answer and zero for a wrong one. In the case of Test 1, the participants got one point if they wrote down the exact Japanese equivalent to the word in the list; otherwise they got zero points. In the case of Test 2, only the target nouns were subject to the scoring. They got a point if they produced the correct translation for the target. They got zero if they produced the correct translation for the known cue but a wrong translation for the target.

2.6 Data analysis

In order to test Hypothesis 1, a two-way ANOVA (Learning Condition × Time) was conducted for the test scores of Group 2. This would reveal the difference in declining pattern between the single-word learning condition (Test 1) and the known verb and the unknown noun
combination learning condition (Test 2). To resolve Hypothesis 2, a paired-sample t test was conducted between the two immediate tests and the two delayed tests.

In order to examine Hypothesis 3, a three-way ANOVA (Cue Type × Learning Condition × Time) was conducted for the test scores of the two groups. It would reveal the difference in declining score patterns of the single learning condition and the combination learning condition between the groups. In other words, it would show which cues, the known adjectives or the known verbs, could help the participants retain the meanings of the targets better over the period from the immediate tests to the delayed tests. In order to examine Hypothesis 4, the author checked whether there was a significant difference between the groups in each test. Necessary post hoc tests were carried out according to the result of the three-way ANOVA.

3. Results

Table 3 shows the means and the standard deviations of each group in the immediate Test 1 and Test 2 as well as in the delayed Test 1 and Test 2. Figure 1 shows the declining patterns in scores between the immediate tests and the delayed tests in terms of each group. First, a two-way ANOVA was conducted on the test results of Group 2. There was a significant interaction between the two factors, Learning Condition and Time, $F(1, 26) = 23.15, p = .045, \eta^2 = .15$. This means that the verb + noun combination learning showed better retention than the single word learning. The results of the post hoc paired-sample t tests showed that the combination learning yielded significantly higher scores than the single word learning not only in the immediate tests, $t(26) = -8.46, p = .0001, r = .86$, but also in the delayed tests, $t(26) = -14.45, p = .0001, r = .94$.

Then, the author went on to check whether there was any difference in score decline patterns between the groups. Table 3 shows there was no great difference in each test score between them. The declining patterns in the scores of Test 1 and Test 2 shown in Figure 1 seem identical between the groups. The result of the three-way ANOVA showed that there was no significant three-way interaction, $F(1, 60) = .001, p = .98, \eta^2 = .00$. This means that there was no significant difference in declining score patterns between the groups.

Having found that there was no significant difference in retention (Time) between the groups, the scores of the immediate and delayed tests of each group were combined in order to see if there was a significant two-way interaction between the cue types and the learning conditions. Table 4 shows the means and the standard deviations of each group’s Test 1 and Test 2 after the immediate test scores were added to the delayed test scores. Figure 2 shows the scores for Test 1 and Test 2 between the groups. A two-way ANOVA (Cue Type × Learning Condition) was conducted and there was no significant two-way interaction, $F(1, 60) = 71.87, p = .002, \eta^2 = .15$. Post Hoc paired-sample t tests revealed that there was no significant difference between the groups in terms of Test 1, $t(60) = .07, p = .95, r = .01$, and in terms of Test 2, $t(60) = -1.47, p = .15, r = .26$. 
Table 3
Means and Standard Deviations of the Two Groups in the Immediate and Delayed Test 1 and 2
(Full Mark = 20)

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (Adjective + Noun, n = 35)</th>
<th>Group 2 (Verb + Noun, n = 27)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Immediate test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test 1</td>
<td>8.03</td>
<td>5.06</td>
</tr>
<tr>
<td>Test 2</td>
<td>14.14</td>
<td>4.27</td>
</tr>
<tr>
<td>Delayed test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test 1</td>
<td>3.29</td>
<td>3.58</td>
</tr>
<tr>
<td>Test 2</td>
<td>11.29</td>
<td>5.15</td>
</tr>
</tbody>
</table>

Figure 1. Means of the two groups in the immediate Test 1 & 2 and the delayed Test 1 & 2

Table 4
Means and Standard Deviations of the Two Groups in Test 1 and 2 (the immediate and delayed test scores combined)
(Full Mark = 20)

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (Adjective + Noun, n = 35)</th>
<th>Group 2 (Verb + Noun, n = 27)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Test 1 (Single)</td>
<td>11.31</td>
<td>7.98</td>
</tr>
<tr>
<td>Test 2 (Combination)</td>
<td>25.43</td>
<td>9.08</td>
</tr>
</tbody>
</table>
4. Discussion

Hypothesis 1 posits that learning a new noun with a known verb will improve retention of the noun better than learning the target noun itself. This was supported because there was a significant interaction between Learning Condition and Time in Group 2. The result is consistent with Kasahara (2010; 2011). The known verbs seemed to help the participants keep the meanings of the target nouns locked in their mental lexicons.

Hypothesis 2 postulates that learning a new noun with a known verb will improve its retrieval better than learning the target noun itself. This was also confirmed because the scores of the combination learning (Test 2) were significantly higher than those of the single word learning (Test 1). This result corresponds with the findings of previous studies (Kasahara, 2010; 2011). The known verbs seemed to be useful in helping the participants to limit the scope of searching when trying to find the meaning of the targets.

Hypothesis 3 assumes that known verb + unknown noun combinations are as effective in retention of the target nouns as known adjective + unknown noun combinations. This null hypothesis was not rejected because the three-way ANOVA did not show any difference in score decline over a week between the two types of combinations. At the same time, the effectiveness of known verb + unknown noun combinations in retention was proved through examining Hypothesis 1 above, whereas the effectiveness of known adjective + unknown noun combinations in retention was proved in previous studies (Kasahara, 2010; 2011). Known verbs can function as cues to retain the meanings of new nouns as effectively as known adjectives.

Verb-and-noun collocations as well as adjective-and-noun collocations are so frequent in the target language and so familiar to learners that these verb + noun combinations can be easy for L2 learners to retain in their mental lexicons. In addition, attaching a verb to a target noun can help learners to create a specific image of the combination. For example, imagine the case where a learner adds the verb write to the target noun kirik (= letter), and obtains a combination, write a kirik. This combination can evoke a specific image of someone writing something in a letter on a
desk. This specific image can help L2 learners retain the meaning of the new target word, *krirk*. Attaching a known verb to a target noun means providing some action related to the target noun. This can create a more informative and more specific image than an image that learners can get from a target noun itself. The abundance of information can lead to better retention of the target word.

The other null hypothesis, Hypothesis 4, predicts that known verb + unknown noun combinations are as effective in retrieval of the target nouns as known adjective + unknown noun combinations. This was not discarded either, because the paired-sample *t*-tests revealed that there was no significant difference between the two types of combinations in the total scores of either Test 1 or Test 2. Again, the retrieval superiority of both combinations over singles was proved in the examination of Hypothesis 2 and the previous studies (Kasahara, 2010; 2011). Known verbs can serve as cues to retrieve the meanings of target nouns as effectively as known adjectives.

Kasahara (2010; 2011) explains this superiority in retrieval lies in the fact that learners can take advantage of the newly established link between a cue and a target. In the encoding phase, learners try to connect the new target word to the known cue which already exists in their mental lexicons. Then a link between them is formed. Seeing the same two-word combination again in the decoding phase, they recall the meaning of the cue first, which activates the link to the target. Finally, the link leads them to the meaning of the target in their mental lexicons.

This process could also be explained by the Complementary Learning System account of learning and memory (Davis & Gaskell, 2009; Lindsay & Gaskell, 2010; McCleland, McNaughton & O’Reilly, 1995). According to this theory, new and old information are dealt with in separate places in the brain. New information is processed in a rapid learning system in the hippocampus, and gradually moves into a slow learning network in the neocortex. New words are thought to be encoded in a short time in the hippocampus, and then, via offline consolidation like sleep, they are transferred to a stable long-term memory in the neocortex. A connection established between a known cue and a new target can help facilitate this transfer process.

Another possible reason for the combinations’ superiority in retrieval over singles is that a known verb in a combination can narrow the scope of the meaning search of a following target noun. For instance, if you see the verb *wash* before the target word *jyled*, you can guess that *jyled* is something dirty. An action represented by a verb can limit the meaning of a following noun, which can increase the possibility of successful retrieval.

There are two limitations to be mentioned in this study. The small number of the participants may make it hard to generalize the results. Replication studies with a larger population are needed. The other limitation is that the present study used the 20 pseudowords which replaced high frequency English words. This means that the participants learned the combinations of two high frequency words. The original intention of the study was to find a way to learn low frequency words with the help of known words. In this respect, this study did not reflect a real learning situation. It did not guarantee ecological validity (Nation & Webb, 2010).
5. Conclusion

This study has shown that known verbs can be as effective cues as known adjectives for learning new nouns. Attaching a known verb to a new noun can be useful for helping L2 learners to retain and retrieve the meaning of the noun. Moreover, remembering verb-and-noun combinations will help them improve their productive skills because a verb-and-noun combination is a core part of an English sentence. If L2 learners have already learned frequent verbs in the target language, they can be encouraged to use these verbs as cues in the known-and-unknown combinations in order to master new nouns.

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**Appendix A: List 1 (For Group1, Adjective + Noun)**

- *plique* = お金
  - much *plique* = たくさんのお金
- *queale* = 問題
  - a difficult *queale* = 難しい問題
- *krirk* = 手紙
  - a long *krirk* = 長い手紙
- *chaumb* = 牛乳
  - white *chaumb* = 白い牛乳
- *zighnd* = 草
  - green *zighnd* = 緑の草
- *rourve* = 戸
  - a back *rourve* = 裏の戸
- *tauff* = シャワー
  - a hot *tauff* = 熱いシャワー
- *stilch* = クジラ
  - a big *stilch* = 大きなクジラ
- *weibb* = 歌
  - a new *weibb* = 新しい歌
- *urnth* = 川
  - a deep *urnth* = 深い川
Appendix B: List 2 (For Group 2, Verb + Noun)

plique = お金
waste plique = お金を無駄にする
queale = 問題
cause a queale = 問題を引き起こす
krirk = 手紙
write a krirk = 手紙を書く
chaumb = 牛乳
drink chaumb = 牛乳を飲む
zighdn = 草
cut zighdn = 草を刈る
rourve = 戸
open a rourve = 戸を開ける
tauff = シャワー
take a tauff = シャワーを浴びる
stitch = クジラ
catch a stitch = クジラを捕まえる
<table>
<thead>
<tr>
<th>英語</th>
<th>意味</th>
</tr>
</thead>
<tbody>
<tr>
<td>weibb</td>
<td>歌を歌う</td>
</tr>
<tr>
<td>umth</td>
<td>川を渡る</td>
</tr>
<tr>
<td>dwoughk</td>
<td>会社を始める</td>
</tr>
<tr>
<td>jyled</td>
<td>皿を洗う</td>
</tr>
<tr>
<td>crell</td>
<td>手をふる</td>
</tr>
<tr>
<td>woadge</td>
<td>愛を必要とする</td>
</tr>
<tr>
<td>dryzz</td>
<td>人に会う</td>
</tr>
<tr>
<td>spleth</td>
<td>食事をとる</td>
</tr>
<tr>
<td>yeabb</td>
<td>部屋を掃除する</td>
</tr>
<tr>
<td>blife</td>
<td>自動車を運転する</td>
</tr>
<tr>
<td>gnalp</td>
<td>会議に出る</td>
</tr>
<tr>
<td>fighd</td>
<td>塔を建てる</td>
</tr>
</tbody>
</table>