The Effects of Semantic Clustering on EFL Young Learners’ Vocabulary Learning

Hee-Jin Jang
(International Graduate School of English)


Presenting semantically related L2 words is a popular method in EFL coursebooks, but the research results on this issue remain inconclusive. Therefore, this study aims to investigate the effects of semantic clustering on Korean young learners’ English vocabulary learning. The study was conducted with 174 primary school students. The subjects were divided into two groups: a semantically related words group (SR) and a semantically unrelated words group (SU). For the six weeks of treatment, the two comparison groups were taught the same 40 vocabulary items in different clusters. The vocabulary test results showed that both vocabulary presentation methods had a positive effect on vocabulary learning. However, the SU group significantly outperformed the SR group. These findings indicate that presenting new L2 words in semantically unrelated sets might be more effective than semantically related sets.

Key words: vocabulary presentation method, semantic clustering, interference theory, distinctiveness hypothesis

1. INTRODUCTION

Many second language learners devote a great deal of time to studying L2 words because they mostly believe that vocabulary learning can determine the success of second language acquisition. Wilkins (1972) noted that “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (p. 111). As he pointed out, the importance of vocabulary is central in language use, and second language vocabulary acquisition has become a key topic of interest in recent years in the field of second language learning (Carter & McCarthy, 1988; Coady & Huckin, 1997; Folse, 2004; Read, 2000; Schmitt, 2000).

Regarding the popular issues in this field, Schmitt (2000) pointed out the three main
areas of L2 vocabulary learning studies: “the nature of lexis, its employment in language use, and the best ways of facilitating its acquisition” (p. 3). Of the many dimensions of L2 vocabulary learning studies, one current strand of research concerns effective approaches and methods in vocabulary teaching (Schmitt, 2000). The assumptions behind such studies might be the views that the learning process of L1 vocabulary and L2 vocabulary is different, and that in the classroom L2 vocabulary needs to be taught according to principles which are supported by empirical evidence.

In the same vein, this study focuses on the English vocabulary learning of Korean young learners. Considering that high correlations were discovered between vocabulary size and measures of language proficiency, such as reading, listening, and writing (Schmitt, 2010), vocabulary teaching in the initial stages of L2 learning can be valuable for learners. When their vocabulary size increases, they might be able to produce more advanced language.

One issue of concern in teaching L2 vocabulary is how to effectively present L2 vocabulary. Many second language learners study English with coursebooks in a language classroom. As a result, their language acquisition can be largely affected by their coursebooks and teacher’s teaching method. For this reason, there have been many studies which have investigated the effectiveness of vocabulary presentation. Addressing these controversial issues, the main focus of this study is whether grouping and presenting new English words in semantically related sets is effective for Korean young learners whose English proficiency is mostly low.

Words in semantically related sets share a common superordinate term such as “food” or “jobs” (Waring, 1997). Presenting semantically related L2 words seems to be a traditional and popular method in EFL classrooms and coursebooks, but the research results on this issue remain inconclusive (e.g., Baleghizadeh & Naeim, 2011; Bolger & Zapata, 2011; Chin, 2002; Erten & Tekin, 2008; Finkbeiner & Nicol, 2003; Hashemi & Gowdasiaei, 2005; Jullian, 2000; Tinkham, 1993; Waring, 1997). The researchers (e.g., Gairns & Redman, 1986; Hashemi & Gowdasiaei, 2005; Jullian, 2000) who have advocated presenting words in semantically related sets have suggested that this method of vocabulary presentation helps vocabulary learning. However, other researchers (e.g., Erten & Tekin, 2008; Finkbeiner & Nicol, 2003; Higa, 1963; Tinkham, 1993, 1997; Waring, 1997) have pointed out the negative effects of presenting words in semantically related sets, arguing that when semantically related words are learned together, learners might become confused because of the similarity between vocabulary items.

Korea’s primary school English textbooks also organize and present vocabulary in groups of semantically related words. Since textbooks are largely influenced by the communicative approach, the textbooks present new words related to certain topics
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(e.g., food, weather, jobs). As a result, it might seem natural that words are presented in semantically related sets (Bolger & Zapata, 2011; Tinkham, 1997). However, the contrasting views on this argument suggest a need for further research. How semantic clustering affects EFL learners needs to be determined in order to make decisions about whether this vocabulary presentation method is beneficial for them. Thus, the present study aims to investigate the effects of semantic clustering for Korean EFL young learners in an attempt to provide some empirical evidence regarding their vocabulary learning.

2. LITERATURE REVIEW

It appears that many of the current L2 coursebooks tend to present new vocabulary items in sets of words sharing common semantic characteristics (Erten & Tekin, 2008; Tinkham, 1993). Such sets of words are referred to as “lexical sets” (Gairns & Redman, 1986), “semantic sets” (Waring, 1997), or “semantic clusters” (Tinkham, 1993). Tinkham (1993) pointed out that these clusters “fall under a common superordinate or covering term and as such share with each other certain syntactic and semantic properties” (p. 371). For example, one popular coursebook Let’s Go 1 (Nakata & Frazier, 1992, p. 17) presents color words together at the beginning of a lesson (e.g., red, blue, purple, pink). Likewise, the 3rd grade English textbook in Korean elementary schools follows the same principle: the words in each lesson fall under the same superordinate concept, such as weather, feelings, or clothing. However, in spite of its popularity, results have been inconclusive on whether new words should be presented in semantically related sets (Baleghizadeh & Naeim, 2011; Bolger & Zapata, 2011; Chin, 2002; Erten & Tekin, 2008; Finkbeiner & Nicol, 2003; Hashemi & Gowdasiaei, 2005; Jullian, 2000; Tinkham, 1993; Waring, 1997). In the following section, this controversial issue and the arguments about semantic clustering are discussed in more detail.

2.1. Research Supporting Semantic Clustering

Several researchers have attempted to examine the efficacy of presenting new L2 words in semantic clusters. The arguments in favor of presenting vocabulary in semantic sets are summarized by Papathanasiou (2009) under three main points: 1) presenting semantically related words facilitates learning, as learners notice how words are related and are different from other words in the sets, 2) presentation of semantically related words is useful and effective in classroom activities, as teachers
can easily organize the activities, and 3) presentation of semantically related words in EFL coursebooks corresponds to learners’ communicative needs by helping them in situations where learners need to find vocabulary for communication. Of the three points, the first one appears to be most cited by other researchers. For example, Seal (1991) noted that learning words in semantic sets is effective because the items in the same semantic sets can mutually reinforce learning. Gairns and Redman (1986) also argued that grouping words by their semantic features can “provide greater precision in guiding students towards meaning and in helping them to define the boundaries that separate lexical items” (p. 32).

Jullian (2000) investigated the effects of semantically related words with upper intermediate or advanced L2 learners. The participants were Spanish speakers who were taking a one-semester English course. The aim of the course was to help them increase word-meaning awareness, and the activities consisted of studying semantic features and the relations of the words in lexical sets. Jullian (2000) noted that these activities facilitated learners’ better understanding of the meaning of words. She pointed out that “it helps them to understand the full semantic content of related words, and so to detect what makes them similar and different from each other” (p. 37). This interpretation is in accordance with Carter and McCarthy’s argument (1988) that understanding how semantically-close words are related to and different from one another results in better acquisition of the words.

The arguments for presenting words in semantically related sets are likely to be mainly based on L1 vocabulary acquisition studies (Finkbeiner & Nicol, 2003; Hashemi & Gowdasiae, 2005). Some first language research has suggested the existence of semantic fields or networks in the human brain (Aitchison, 2003; Carter & McCarthy, 1988; McCarthy, 1990; Wolter, 2001, 2006). Aitchison (2003) argued that humans create their own mental lexicon in which native speakers organize similar words. As a result, when vocabulary items are clustered in semantic sets, it might be easier to recall the interrelated words in the human brain (Aitchison, 2003). Schmitt (1997) also noted that grouping semantically related words enhances native speakers’ recall of words. Furthermore, several L1 memory studies showed that semantically clustered L1 words played a positive role in a later recall or recognition task (Cofer, 1966; Cohen, 1963; Lewis, 1971; Tulving & Pearlstone, 1966).

This notion of presenting new words in semantic sets has been advocated by some SLA researchers. For instance, Clark (1995) argued that children learning their first language build up and expand lexical sets, and they pick up words more easily when the words are in the same lexical domain. Likewise, L2 learners might be more prepared to acquire vocabulary when they begin to build up a lexical set rather than sporadically learning words. Schmitt (2010) also argued that it could be hypothesized
that L2 learners might be able to benefit from grouping semantically related words, as done by L1 learners.

Khosravizadeh and Mollaei (2011) investigated how Iranian learners with different levels of academic education retained new English words. In the treatment, they learned 24 words which belonged to four different semantic fields: Iranian culture, academic terminology, American culture, and traveling. The results showed significant differences between groups in all semantic fields except for Iranian culture. The researchers concluded that the subjects had underlying knowledge about their own culture, so the words in that field were subsumed well by their cognitive system and were retained longer regardless of academic education level. This notion derives from Ausubel’s (1963) subsumption theory, which claims that relating new items to already existing knowledge or cognitive structures enhances the learning process (as cited in Khosravizadeh & Mollaei, 2011).

Hashemi and Gowdasiaei (2005) also invoked Ausubel’s (1963) theory of meaningful learning to interpret their research results. They compared the effectiveness of semantically related word sets and semantically unrelated word sets in intermediate EFL learners’ vocabulary acquisition. They discovered that vocabulary knowledge gains were greater in a group learning with semantically related word sets than in a group learning with semantically unrelated word sets. From the notion of meaningful learning, Hashemi and Gowdasiaei (2005) concluded that presenting words in semantic sets might be beneficial for the process of word learning. They further argued that semantically related vocabulary should be presented together in order to be able to process it at a deeper cognitive level. This argument comes from Craik and Lockhart’s (1972) levels-of-processing theory, which argues that semantic processing occurs at a deeper level. Therefore, learners retain words longer when they attempt to differentiate words in the same semantic set (Erten & Tekin, 2008; Morin & Goebel, 2001).

2.2. Research Against Semantic Clustering

Some researchers (Bolger & Zapata, 2011; Erten & Tekin, 2008; Finkbeiner & Nicol, 2003; Folse, 2004; Higa, 1963; Nation, 2000; Tinkham, 1993, 1997; Waring, 1997) have argued that semantic clustering might interfere with vocabulary acquisition. They have commonly pointed out that there is very little empirical evidence to support the idea that presenting words in semantic sets would be beneficial for L2 learners. For instance, Tinkham (1993) argued that semantic clustering appears to fit nicely into learners’ communicative needs with situations or tasks, but in fact such an approach might be based on “writers dedication to methodology or syllabus” (p. 371) rather than
on research. According to Folse (2004), the reason that grouping semantically related words is popular might be because it just seems to be an easy and logical principle of organizing words for teachers and materials writers.

There have been several attempts to provide some empirical support for presenting words in semantically unrelated sets. Tinkham (1993) compared learning semantically related words and semantically unrelated words in English native speakers and advanced non-native English learners. The results showed that semantically related words were learned more slowly than semantically unrelated words. This indicated that semantic clusters might inhibit vocabulary gains. In replication of Tinkham’s (1993) study, Waring (1997) conducted an experiment with Japanese native speakers and advanced non-native Japanese learners learning artificial Japanese words. The results were consistent with Tinkham’s (1993) research, and it was concluded that presenting semantically close words all at once might prove a hindrance to vocabulary acquisition (Tinkham, 1993; Waring, 1997).

Similar findings were presented by other researchers. Finkbeiner and Nicol (2003) examined English native speakers’ learning of 32 novel words created by the researchers in translation tasks. The researchers discovered that the participants who learned semantically related word sets were significantly slower than those who learned randomly ordered word sets in translation times. Erten and Tekin (2008) also investigated the effects of semantic clustering with Turkish young learners who were mostly beginners in English. The unknown vocabulary items were taught in semantically related sets and semantically unrelated sets. The results showed that semantically unrelated words were learned faster.

More recently, Bak (2012) examined Korean primary school students’ vocabulary recall and retention in semantically related sets and semantically unrelated sets. Subjects were fifth grade Korean elementary school students. They were divided into two groups and learned 40 English words in different clusters (semantically related words vs. semantically unrelated words) over 4 weeks. Bak (2012) discovered that both groups had significant improvement from pre-test to post-test. However, the group learning with semantically unrelated words showed greater progress than the group learning with semantically related words. She concluded that learning semantically unrelated words was more effective than semantically related words for her subjects. These findings, overall, suggest that semantic clustering might impede L2 vocabulary learning to some extent, especially for beginners of L2 learners.

Papathanasiou (2009), however, argued that the proficiency level of L2 learners seems to affect the effects of semantic clustering. She compared the effects of semantic clustering between intermediate L2 learners and beginner L2 learners. Interestingly, it was shown that only beginner learners performed significantly better
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on the semantically unrelated vocabulary test than on the semantically related vocabulary test. She assumed that intermediate learners knew more words than beginner learners, and considered it possible that intermediate learners had already built up their own concept of semantic clustering. As a result, they simply added new words to an existing store, and they might have had to make less effort to create new semantic concepts (Papathanasiou, 2009).

Given that the research findings have varied, the effects of semantic clustering on vocabulary acquisition remain inconclusive. This study specifically focuses on young learners, because the beginning stage of learning L2 might affect and determine later learning processes. Furthermore, there is little empirical research in the Korean learning context. It would be meaningful for EFL learners, teachers, and materials writers to study the effects of semantic clustering, because they might gain insight into the best approach and method for learning and teaching vocabulary. Thus, this study aims to examine the efficacy of semantic clustering for Korean young learners’ learning of new English words. The research question is as follows: Which type of vocabulary presentation is more effective in enhancing young learners’ L2 vocabulary learning?

3. METHOD

3.1. Participants

The study was conducted at an elementary school in Gyeonggi province. The school had 42 classes in total, and class size averaged 30 students. The subjects were 192 third-grade students from six classes. However, due to absences and transfers to other schools, a total of 174 students, 90 boys and 84 girls, completed the study. Subjects had two English classes per week with a Korean teacher. All the subjects were native speakers of Korean, so the teacher used both English and Korean in the class.

For the treatment, six classes with the same English teacher were selected. Three classes were randomly assigned to a group for learning with semantically related sets (SR, henceforth), and the other three were assigned to a group for learning with semantically unrelated sets (SU, henceforth). Eighteen subjects who were absent from one of two classes were excluded from the data analysis. In the end, data were collected from 82 subjects in SR and 92 subjects in SU.

In order to investigate subjects’ learning experiences and attitudes toward English vocabulary learning, a brief survey was administered before starting the test and treatment of the 174 subjects. According to the survey results, 30 respondents were
learning English only at school: 13 in SR and 17 in SU. The remaining 144 respondents were engaged in extra-curricular English learning in addition to attending regular classes at school; 69 in SR and 75 in SU. For those who were learning outside of regular class, the average amount of time spent studying English per week was 164 minutes in SR and 149 minutes in SU. These results were analyzed by performing a t-test, and no significant difference was found between the extra-curricular hours of study of the two groups. Therefore, it was not considered as a factor influencing their English proficiency.

Given that the third grade is the first year that they learn English at school, the subjects might not have had much prior exposure to English. Therefore, the subjects were considered beginners in terms of English proficiency. However, many subjects had experience with English vocabulary learning, because 72% of them replied they had studied English words.

The teacher, a Korean woman 29 years old at the time, conducted the test and treatment for the study. She holds a B.A. in elementary education and had lived in the United States for one year after graduating from her university. She had been teaching elementary students for four years, and was in her second year of teaching English at school.

3.2. Procedures

To select the target vocabulary items, the subordinate concepts which determine the target words were selected from elementary school English textbooks that the participants’ school employed. From third to sixth grade textbooks, the five most common categories of semantic sets were extracted: words about animals, movement, personality, human body parts, and describing people. For selecting vocabulary items, ten words from each category were first selected from dictionaries. For variety, one part of speech (noun, adjective, and verb) was assigned to each semantic set (e.g., nouns for animals and human body parts, verbs for movement, and adjectives for personality and describing people). Next, three elementary school teachers, including the teacher who conducted the treatment, examined the word list considering semantic relations (Tinkham, 1993, 1997; Waring, 1997), length (Ellis & Beaton, 1993), concreteness (Erten & Tekin, 2008), and familiarity. The specific criteria used for vocabulary selection were as follows:

1) Each word had to fall under one of the five superordinate concepts.
2) No word could contain more than three syllables.
3) All words had to be concrete rather than abstract.
4) Words could not have irregular or unconventional pronunciations.
5) All words had to be easily understood through L1 equivalents.
6) All words had to be able to be clearly paired with corresponding pictures without confusion.
7) All words were likely to be familiar to the subjects in their L1, but might not be familiar as L2 words.

Only words with less than three syllables were chosen, because subjects were expected to have greater difficulty with longer words. In terms of length, syllables were prioritized over letters, because the third-graders were expected to learn new words through spoken forms rather than written forms. Thus, during the class and the tests, voice recordings of all words were provided together with the written texts.

Next, only concrete vocabulary items were chosen for the study, because abstract words were thought to be inappropriate for the target age group. In addition, an attempt to avoid L2 words that might be familiar and known to the subjects was made. The intention to include only unknown words was to decrease the possibility that they might interfere with the investigation of the effects of semantic clustering. It was impossible to sort out unknown words from the subjects in advance, so they were presumed from the pilot group students who were in the same grade and school, but who did not participate in the study.

In the process of vocabulary selection, five words were substituted with new words which better satisfied the criteria. After choosing 40 target words, 32 students from the pilot group took a survey with the selected words as a pilot test of the pre-test. Words that were already known by more than five out of the 32 students were excluded, and five new words were added. Finally, the 40 selected words were organized into both semantically related clusters and semantically unrelated clusters.

The subjects had two periods of English classes per week, and during the six weeks of the treatment they had twelve sessions for vocabulary learning. Ten sessions were for presentation and practice of new words, and the other two sessions were only for reviewing. Because the treatment lasted six weeks, subjects might have forgotten the target words that they learned several weeks prior. Therefore, the sixth session and twelfth session were designed only for reviewing the previously learned vocabulary items.

Table 1 is the vocabulary list which was organized into semantically related sets and semantically unrelated sets. Two comparison groups (SR and SU) learned the same vocabulary items, but the order and organization of words were different. For the treatment, the subjects learned eight words per week. Since they had two periods of English classes a week, four words were taught in each period.
TABLE 1

Organization of Vocabulary Items

<table>
<thead>
<tr>
<th>Group</th>
<th>Week</th>
<th>Vocabulary Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR</td>
<td>1</td>
<td>bald, curly, skinny, sturdy, slender, blond, plump, bearded</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>wrist, mole, calf, armpit, palm, dimple, nostril, heel</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>skip, bend, march, crawl, leap, crouch, stroll, tumble</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>paw, hoof, claw, horn, hump, whisker, beak, trunk</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>mean, daring, timid, cheerful, polite, greedy, caring, clever</td>
</tr>
<tr>
<td>SU</td>
<td>1</td>
<td>paw, mean, bend, heel, horn, skip, curly, skinny</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>blond, daring, mole, claw, timid, palm, hump, leap</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>plump, dimple, trunk, crouch, bald, caring, whisker, stroll</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>greedy, armpit, beak, tumble, slender, clever, hoof, wrist</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>bearded, polite, calf, crawl, sturdy, cheerful, nostril, march</td>
</tr>
</tbody>
</table>

Each session lasted 20 minutes: 15 minutes for whole class learning with PowerPoint materials and 5 minutes for individual study with worksheets. At the beginning of every session, four new vocabulary items were presented via PowerPoint. To minimize the effect of the teacher’s influence, the role of the teacher was to provide materials and lead the subjects to learn from them. Each PowerPoint slide had one target English word together with its spoken form, a corresponding picture, and an L1 translation of the target word. The same pictures for the target vocabulary words were used at all stages of the study to avoid confusion. After presenting all the new words, simple vocabulary game activities were used to practice them. To help with the recall and retention of the target words, the activities included new words and the words that the subjects learned in the previous session. Next, for five minutes worksheets containing vocabulary exercises were provided to the subjects. They required subjects to learn individually by doing matching or puzzle type activities. To reduce the possibility that some participants might spend more time at home with their materials, the instructional materials were not allowed to be taken outside the class. In the two review sessions, the same PowerPoint materials were used, but the activity types were varied in order not to lose the subjects’ attention.

3.3. Data Collection and Data Analysis

The test was implemented as a pre-test and a post-test to subjects. In each test, 36 words out of 40 words were randomly chosen. The two different groups (SR and SU) took the tests with the same test materials containing 36 vocabulary items for 20 minutes. A pre-test was administered before treatment, and a post-test was administered after treatment. It was explained to the subjects that the test was to investigate their level of vocabulary size rather than to assess them.

The task of the pre-test and post-test was to match vocabulary items correctly with
their corresponding L1 equivalents. A total of 36 vocabulary items were grouped into nine sets, so each set included four English words. In terms of their counterparts, there were six pictures with Korean equivalents in each set, meaning that two extra items were included as distracters. Before taking the pre-test, subjects were given a brief introduction to the test by the teacher about how the test would proceed. The instructions and examples of correct answers were also given at the top of the test sheet. For each item, the subjects first heard the English word twice followed by a two-second pause. They were required to find the correct Korean word among six options during this two-second pause.

Given that the subjects were young learners who were generally not used to L2 written words, pictures were provided together with L1 words to help clarify understanding and to avoid any possible difficulties in comprehension. Except for the target L2 words, all the instructions during the test and instructional sessions were given in Korean for clear understanding of the target vocabulary items. As in the stages of instruction, voice recordings of all the vocabulary items in the test were provided for the subjects. The post-test, which was given after six weeks of treatment, was administered with the same format and procedure as the pre-test. One point was given for each correct item, but no points were given for incorrect answers. Thus, the possible total scores ranged from zero to 36 points on each test.

The effects of two different types of vocabulary presentation (semantically related clusters or unrelated clusters) were investigated by quantitatively analyzing pre-test and post-test results, using SPSS 20.0 for all data analysis.

For data analysis, descriptive statistics (means and standard deviations) were first computed, followed by an analysis of variance (ANOVA) with repeated measures to analyze the test scores. The factor Time (pre-test and post-test) was a within-subjects variable, and the between-subjects variable was Group (SR and SU). The dependent variable was the scores of the pre-test and post-test.

4. RESULTS

To examine the effects of semantic clustering, data were collected from 174 subjects through vocabulary pre-tests and post-tests. Table 2 presents descriptive statistics of the vocabulary test scores, which shows considerable differences among the vocabulary test scores across Time (pre-test vs. post-test) and Group (SR vs. SU); the mean for SR was 3.60 in pre-test and 14.50 in post-test, and the mean for SU was 3.11 in pre-test and 22.85 in post-test.
Table 2 presents the results of the main effect according to a repeated measures ANOVA; the results show a significant main effect for Time and Group. The table shows that the test scores from the pre-test and post-test were significantly different, that is, the mean of test scores significantly increased from pre-test to post-test. Likewise, a significant difference between SR and SU was found. In order to identify where the differences lay, pairwise comparisons for the interaction were performed.

Table 3 shows that for both groups the scores significantly increased from pre-test to post-test. No significant difference was found in the pre-test results between SR and SU, indicating that the mean difference between SR and SU was not significantly different for the pre-test. However, a significant difference was found between SR and SU on the post-test. This difference revealed that SU outperformed SR on the post-test, and the scores for SU increased at a higher rate from the pre-test to the post-test compared to the scores for SR. This suggests that the SU treatment was more effective than the SR treatment.

 TABLE 2
 Descriptive Statistics of Vocabulary Test Scores

<table>
<thead>
<tr>
<th>Time</th>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>SR</td>
<td>82</td>
<td>3.60</td>
<td>5.011</td>
</tr>
<tr>
<td></td>
<td>SU</td>
<td>92</td>
<td>3.11</td>
<td>5.520</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>174</td>
<td>3.34</td>
<td>5.277</td>
</tr>
<tr>
<td>Post-test</td>
<td>SR</td>
<td>82</td>
<td>14.50</td>
<td>10.845</td>
</tr>
<tr>
<td></td>
<td>SU</td>
<td>92</td>
<td>22.85</td>
<td>11.414</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>174</td>
<td>18.91</td>
<td>11.877</td>
</tr>
</tbody>
</table>

 TABLE 3
 ANOVA With Repeated Measures for Vocabulary Test Scores by Time and Group

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
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<tbody>
<tr>
<td>Within Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>20353.751</td>
<td>1</td>
<td>20353.751</td>
<td>411.841</td>
<td>.000*</td>
</tr>
<tr>
<td>Time x Group</td>
<td>1692.785</td>
<td>1</td>
<td>1692.785</td>
<td>34.252</td>
<td>.000*</td>
</tr>
<tr>
<td>Error</td>
<td>8500.479</td>
<td>172</td>
<td>49.421</td>
<td></td>
<td></td>
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<tr>
<td>Between Subjects</td>
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<td></td>
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</tr>
<tr>
<td>Intercept</td>
<td>42072.155</td>
<td>1</td>
<td>42072.155</td>
<td>409.102</td>
<td>.000*</td>
</tr>
<tr>
<td>Group</td>
<td>1338.914</td>
<td>1</td>
<td>1338.914</td>
<td>13.019</td>
<td>.000*</td>
</tr>
<tr>
<td>Error</td>
<td>17688.523</td>
<td>172</td>
<td>102.840</td>
<td></td>
<td></td>
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</table>

*p < .05
### Table 4

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR</td>
<td>3.11</td>
<td>14.50</td>
<td>-11.39</td>
</tr>
<tr>
<td>SU</td>
<td>3.60</td>
<td>22.85</td>
<td>-19.25</td>
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<tr>
<td>Mean Difference</td>
<td>-.49</td>
<td>-8.35</td>
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</table>

### 5. Discussion

The research questions aimed to investigate the effectiveness of presenting new semantically related L2 words and presenting new semantically unrelated L2 words. It was shown that they both had a positive effect on learning; there was significant improvement in both SR and SU groups from pre-test to post-test. This result indicates that both methods of presentation might facilitate young beginner learners’ L2 vocabulary learning. However, it was shown that presenting semantically unrelated vocabulary was more effective than semantically related vocabulary. This result is compatible with the results of previous research (Bak, 2012; Erten & Tekin, 2008; Finkbeiner & Nicol, 2003; Higa, 1963; Papathanasiou, 2009; Tinkham, 1993, 1997; Waring, 1997). Therefore, it could be concluded that new L2 words might be better learned when presented in semantically unrelated sets rather than semantically related sets.

One possible interpretation of the effect of semantic clustering might be explained by the concept of interference in memory (Altarriba & Mathis, 1997; Erten & Tekin, 2008; Finkbeiner & Nicol, 2003; Higa, 1963; Nation, 2000; Papathanasiou, 2009; Tinkham, 1993, 1997; Waring, 1997). Interference occurs when we fail to remember information because other information hinders the process of remembering (Slavin, 2003). According to Nation (2000), interference arises as similar items are learned at the same time, and such that the similar features of the items interfere with each other. Waring (1997) as well noted that presenting new words in semantic sets requires more effort from learners than semantically unrelated sets, increasing the confusion of distinguishing between similar words. In presenting semantically related clusters, the learners might have had to keep discriminating between similar semantic features of the words, so they might have been confused (Erten & Tekin, 2008; Higa, 1963, Tinkham, 1993, 1997; Waring, 1997). For example, in the tenth session, the target words for SR were polite, greedy, caring, and clever. These four words share the common features of representing peoples’ personality. When the words were presented together, the learners might have easily understood that they all were related to personality. However, it is assumed that they might have also tried to distinguish the
words to correctly remember them by means of L1 equivalents. Moreover, when they recalled the target words, some might have become confused about the L2 words and the corresponding L1 words.

Conversely, the negative effects of semantic clustering can also be explained by the distinctiveness hypothesis (Papathanasiou, 2009; Tinkham, 1993, 1997). This notion hypothesizes that the dissimilarity of words enhances the recall of words by encouraging learners to encode items which do not share similar features or background (Hunt & Mitchell, 1982). For this reason, SU seemed to benefit from the distinctiveness between the target words. In the tenth session, the target words for SU were *march, nostril, study*, and *cheerful*. The words are all from different semantic categories, so learners might have not had difficulty distinguishing between the dissimilar words. As a result, SU learners might have recalled the target words more effectively without confusion on the pre-test compared to SR.

Another possible reason for the positive effects of semantically unrelated vocabulary presentation comes from the nature of L2 learning. When we learn new words, we need to connect the new forms with the concepts already established in our cognitive systems (Collins & Loftus, 1975). However, in the beginning stages of L2 vocabulary learning, the connections between new L2 forms and concepts might be weaker than the connections for L1 forms and concepts, so the L2 form is likely to be linked to its L1 form first (Kroll & Stewart, 1994; Talamas, Kroll, & Dufour, 1999, as cited in Finkbeiner & Nicol, 2003). Consequently, it is possible that when the subjects were exposed to the semantic information of the L2 words, SR learners might have had to access L1 forms to establish the concepts and cluster target words under the superordinate concept. In contrast, SU learners might have directly linked L2 forms and L1 forms without extra processes. Likewise, when the subjects had to recall the target words on the pre-test, more time and effort could have been required under the SR condition than the SU condition.

However, in spite of the effects of semantic clustering, SR significantly improved on the post-test. This might be explained by two possible reasons. First, the target words were all real English words. Previous studies (Higa, 1963; Tinkham, 1993, 1997; Waring, 1997) which showed a clear negative effect of semantic clustering used artificial words. The real English words might have affected the results of this study, because some words could have been already known by several learners. Second, the target words were continuously reviewed by the subjects. Even though the words were presented in semantic sets in review, it is possible that the connection between L2 form and concept might have become stronger and more stable. Moreover, interference effects might have decreased, because the review of target words might have provided SR with practice differentiating between similar words. Thus, it could be concluded
from the major findings of this study that for beginner EFL young learners, presenting new words in semantically unrelated sets might be more effective than in semantically related sets.

6. CONCLUSION

The major findings of this study support the argument that presenting new L2 words in a different semantic category might be more effective than presenting them in the same semantic category to EFL beginner young learners. Therefore, this study suggests the need to reconsider current vocabulary presentation methods and approaches to second language teachers, materials developers, and curriculum designers. As Richards (2006) noted, teaching materials should be based upon research findings. It is important for course designers and materials developers to consider what actually happens to learners in the second language classroom, as many teachers and learners might be affected by courses and the materials that they use. Given that many previous studies and this study have provided evidence of the greater positive effect of semantically unrelated vocabulary presentation, a new principle and approach in vocabulary presentation might be required.

Moreover, the findings of this study indicate that an alternative method of semantic clustering in vocabulary presentation is necessary. The negative effect of semantic clustering of L2 words seems to be strong when the words are first learned. Therefore, semantic sets can be used in reviewing activities, but should be avoided in initial learning. Some previous studies suggested thematic clustering as an alternative method of presenting new L2 words in semantic sets (Bolger & Zapata, 2011; Erten & Tekin, 2008; Folse, 2004; Tinkham, 1993, 1997; Waring, 1997). According to Tinkham (1997), words in a thematic cluster share a common thematic concept (e.g., frog), but they are from different parts of speech and semantic fields (e.g., hop, pond, swim, green, and slippery). In this method of vocabulary presentation, less interference might occur because the semantic relations are weak (Bolger & Zapata, 2011; Tinkham, 1997). Another method might involve using texts, topics, or tasks instead of functions, situations, or grammatical features in organizing units in curricula or materials (Nation, 2000). As Tinkham (1997) noted, semantically related sets are likely to be presented together in a structural approach (using grammatical features) and a communicative approach (using functions or situations). If the units in curricula and materials are based on texts, topics, or tasks, the words in the units might not be all semantically related or similar, so the possibility of interference is likely to be reduced.

From the perspective of teachers, however, it might be difficult to completely avoid
potential interference from related vocabulary items in the most current EFL curriculum and materials. Therefore, teachers need to minimize the possible negative effect of semantically related clustered vocabulary items. Even with textbooks presenting semantically related items together, teachers can introduce them separately at different times. In this case, word frequency can be another criterion for organizing and presenting new L2 words (Folse, 2004; Nation, 2000). As Nation (2000) suggested, high-frequency words in a semantic set can be presented first, and after the previous item was well established by learners, the next item could be presented at a later time. In addition, teachers can provide different contexts for each item in the same semantic sets. Using a different context or visual aid for different words might help to loosen the association between semantically similar items and reduce the interference effect (Nation, 2000).

Furthermore, learners also need to understand the effects of learning new words in semantic sets. Bak (2012) studied Korean young learners’ preference for vocabulary presentation methods, and she noted that many of them tended to prefer learning semantically related vocabulary items together. This preference for semantic clustering seems to suggest that teachers should help learners to understand the nature of learning semantically related words together. For example, teachers can inform learners that when they study new words in semantically related groups at the same time, they might be confused because the process of distinguishing similar items can interfere with their learning. Through this instruction, learners might be able to better understand the importance of vocabulary learning methods and guide their own vocabulary learning.

In order to generalize the findings of the present study, some suggestions for study need to be addressed. First, this study focused only on the receptive aspect of vocabulary knowledge. Tests and tasks were all related to recognition of vocabulary. Therefore, for further studies, other aspects of vocabulary knowledge need to be considered. Next, the target words should be carefully selected because they might affect the results of the study. Although the test scores significantly improved from pre-test to post-test, the target words in this study could be difficult for 3rd grade elementary school students. In addition, one category included eight unfamiliar words which were very tightly related, and they could have caused significant confusion to beginning learners. It is necessary to study how the levels and types of target words affect the results of the study.

Finally, the findings of this study cannot be generalized to all learners, since the study focused only on beginning learners. As Papathanasiou (2009) showed in her study, learners’ proficiency levels might affect the results of studies on vocabulary presentation methods. More proficient learners need to be studied to determine
whether SU has more positive effects than SR as with beginning learners. Therefore, learners of various proficiency levels need to be covered in future studies. In addition, the long-term retention of vocabulary needs to be examined. The treatment in this study lasted six weeks. To further validate the findings of this study, a longer treatment will be required for future studies.

REFERENCES


## APPENDIX
### Vocabulary Test

1. 1. wrist  2. caring  3. tumble  4. claw

| 손목 | 난변한 | 동물, 새의 발톱 | 굴러 밀어지다 | 새의 부리 | 날음 젖 보살펴주는 |

2. 1. curly  2. trunk  3. slender  4. mole

| 뭐어오르다 | 뭐의 바른 | 급습 머리의 | 코끼리의 코 | 피부의 젖 | 날산만 |

3. 1. plump  2. mean  3. stroll  4. armpit

| 낙타의 촛 | 통통한 | 자신감없는, 소심한 | 거드랑이 | 산책하다 | 심술궂은, 성질이 나쁜 |
4. ① hoof  ② sturdy  ③ palm  ④ polite

5. ① blond  ② timid  ③ march  ④ dimple

6. ① crouch  ② bearded  ③ clever  ④ hump
7. 1. bond  2. paw  3. nostril  4. groogy

- 옥심이 많은  - 롱구멍  - 심술곳은,  - 성질이 나쁜
- 통통한  - 몸을 굽히다  - 동물의 발

8. 1. bald  2. cheerful  3. beak  4. crawl

- 염드러 기다  - 대머리의  - 헛발한,  - 명량한
- 빛이 부리  - 몸을 굽히나  - 보조개

9. 1. leap  2. whisker  3. daring  4. calf

- 용기 있는  - 길','=어리의  - 옥심이 많은  - 위아오르다
- 고양이,  - 휘의 수염  - 족아리

- 수고하셨습니다.
Applicable levels: Primary

Hee-Jin Jang
Department of ELT Materials Development
International Graduate School of English
17 Yangjae-daero 81-gil, Gangdong-gu
Seoul 134-847, Korea
Phone: 02-6744-5114
Cell: 010-7311-5602
Email: bbasha02@igse.ac.kr

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