

A Study on the Effects of Chinese EFL Learners' English Proficiency and Involvement Load on Incidental Vocabulary Acquisition

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Abstract

The effects of EFL learners' English proficiency and involvement load induced by tasks on incidental vocabulary acquisition are observed in this study. 163 students of non-English majors in a local university of China were divided into two groups of different English proficiency according to their scores of College English Test Band 4 (CET-4). The students in each group were randomly assigned one of three tasks (reading-for-comprehension, blank-filling, and writing) involving 10 target words. Fifteen minutes after they finished the task, they were required to take an immediate vocabulary test about the target words. Two weeks later, they were asked to take the same kind of vocabulary test to examine their delayed memory of the target words. All of the students did not know about the vocabulary tests beforehand. The results show that: in the process of immediate incidental vocabulary acquisition, both learners' English proficiency and involvement load have a main effect on immediate memory, but the interactive effect of these two factors on incidental vocabulary acquisition is not significant; in the vocabulary retention test, learners' English proficiency does not have a significant main effect on delayed memory, but the main effect of involvement load is still significant; at the same time, the interactive effect of these two factors is still not significant.

Keywords: EFL, English proficiency, involvement load, incidental vocabulary acquisition

1. Introduction

Many linguists have pointed out that grammar, vocabulary, and speech sounds are three essential elements that constitute the complicated process of second language acquisition (Ellis, 1999). As to their importance, however, one may find that vocabulary holds a pivotal status in second language teaching and learning since it is a precondition and basis of acquiring a second language. General learners may master the phonetic system of a second language within several weeks, and they could learn its basic grammatical rules in a few months or years. No one, however, could master the whole vocabulary of a language, as vocabulary learning is a lifelong cognitive process that should be repeated throughout the whole process of second language acquisition (Nation, 1993). As an important component of second language acquisition, vocabulary acquisition, to some extent, even determines the final result of second language acquisition. Therefore, many researchers have been attempting to find out how vocabulary could be acquired effectively.

Generally speaking, the methods of vocabulary acquisition of a second language can be classified into two categories, namely intentional learning and incidental learning. Admittedly, intentional learning of English vocabulary through memorizing word lists or doing vocabulary exercises can help learners acquire a certain amount of vocabulary. However, intentional vocabulary acquisition is not the most commonly used method for learners. On the contrary, taking vocabulary learning as a by-product in the learning process of other skills (Laufer & Hulstijn, 2001), like listening, speaking, reading, and writing is the most general way of vocabulary input for second language learners. Many scholars have indicated that in addition to the several thousands of primary-level vocabulary that learners acquired intentionally, a considerable proportion of vocabulary is acquired through incidental acquisition (Nation, 2001). In other words, second language learners usually pick up many new words without a clear intention of vocabulary acquisition, which corresponds to the *Incidental Vocabulary Acquisition Hypothesis* proposed by Nagy in 1985.

Recently, many researchers have conducted various studies on incidental English vocabulary acquisition in China. According to the author's current literature review, most of the studies are conducted to analyze the

incidental English vocabulary acquisition during the process of reading for comprehension (Li & Tian, 2005; Gai & Wen, 2013). Some studies are related to the English listening and writing process (Chen & Wang, 2006; Chang & Li, 2009; Yan, 2018). Some researchers thoroughly analyzed the factors that may influence English learners' incidental vocabulary acquisition (Wang, 2009). Besides, some linguists aimed to clarify the definition of incidental vocabulary acquisition in their studies (Dai, 2000). Most of the previous studies on incidental English vocabulary acquisition focused on the explicit processes and external factors, but there are few studies related to the learners' internal factors and their effects. Therefore, the researcher attempts to do a study on both the language proficiency and the involvement load of Chinese EFL learners in incidental English vocabulary acquisition during the process of reading-for-comprehension tasks.

2. Key Concept and Literature Review

2.1 Key Concept: Incidental Vocabulary Acquisition

The concept of *Incidental Vocabulary Acquisition* was proposed by Nagy et al. (1985) based on their study on children's vocabulary acquisition of their first language (L1). They argued that most L1 vocabularies are acquired without a clear intention of vocabulary learning, and they put forward the term *Incidental Vocabulary Acquisition* as a counterpart to *Intentional Vocabulary Acquisition*. Incidental vocabulary acquisition refers to the phenomenon that language learners acquire vocabulary by finishing other tasks. The distinction between incidental vocabulary acquisition and intentional vocabulary acquisition lies in whether learners are told before the learning tasks to take vocabulary tests after the tasks. In incidental learning, vocabulary acquisition is a by-product that is necessary to ensure the completion of the learning task.

As to today's college English classes in China, it is comparatively rare to teach vocabulary directly in class. Even though there may be direct or explicit teaching of new English words and expressions, students' acquisition of English vocabulary in this way is rather limited in quantity. Most vocabularies acquired by learners are learned unintentionally or incidentally by completing other learning activities, such as listening, speaking, reading, and writing. According to previous studies, most researchers believe that second language (L2) vocabulary can be acquired effectively through various learning tasks, especially through reading-for-comprehension tasks of the L2.

2.2 Literature Review: Language Proficiency and Incidental Vocabulary Acquisition

When it comes to incidental vocabulary acquisition, language proficiency is always regarded as a primary factor that influences the results of L2 learners' vocabulary acquisition. Many researchers have investigated the effects of L2 learners' language proficiency, especially their reading proficiency, on vocabulary acquisition.

According to Sternberg and Powell (1983), readers with higher L2 proficiency could achieve a higher degree of completion in reading tasks than readers with lower L2 proficiency. According to McKeown et al. (1987), high-level readers could learn more words than low-level readers, and the gap between them will become larger and larger as time goes on. Knight (1994) pointed out that low-level readers are more likely to ignore important and clear reading content information, which usually plays an important role in inferring the meaning of new words. Wang Gaiyan (2009) found that learners' comprehensive level of L2 and vocabulary knowledge are positively correlated with incidental vocabulary acquisition in the second language reading under the context of Chinese colleges and universities.

2.3 Literature Review: Involvement Load and Incidental Vocabulary Acquisition

In addition to language proficiency, learners' involvement load in certain tasks is also an important factor. The Involvement Load Hypothesis was proposed by Laufer and Hulstijn (2001) to explain and define the effects of incidental vocabulary acquisition in various learning tasks. Laufer and Hulstijn believed that the effectiveness of vocabulary acquisition is related to the involvement load of the learners. The hypothesis holds that, with the same conditions, the higher the learners' involvement load in the task, the better the effect of the task in promoting vocabulary acquisition, and the better the effect of vocabulary retention.

According to the hypothesis, the involvement load consists of three elements, namely need, search, and evaluation. Need comes from learners' motivation, which can be divided into zero-need, the external need, and the internal need. If learners do not need it at all, the involvement load index is 0, and there will be no acquisition of the vocabulary. External need, such as the requirements from teachers or learning tasks, is relatively low in motivation, and it is represented by index 1. Internal need, however, comes from the learners' expectation for expressing, and it is represented by a higher index 2. Search refers to the process of searching for the meaning of new words by consulting dictionaries or other people. If there is no search, the index is 0. Otherwise, the index is 1. Evaluation refers to the process of comparing new words with other words to determine whether they conform

to the context. If there is no evaluation, the index is 0. If the evaluation is limited to finding out the specific meaning of a word in the context, which is different from other words, it is an intermediate evaluation, and it can be represented by index 1. If the evaluation requires learners to use target words to make sentences or to write a passage, it is regarded as an advanced evaluation with an index 2. Accordingly, the involvement load induced by learning tasks could be marked by specific indexes. The sum of the three components' indexes is the value of the involvement load of the task. When processing words in a specific task, the value of involvement load ranges from 0 to 5.

In recent years, many researchers have carried out empirical researches on this hypothesis in China. Hou Dongmei (2004) studied the effects of involvement load on senior high school students' vocabulary retention. Wu Jianshe, Lang Jianguo, and Dang Qun (2007) researched the relationship between task-induced involvement load and incidental vocabulary acquisition through reading comprehension and blank-filling activities. Li Yajuan and Zheng Shuyun (2008) made an empirical study on the incidental acquisition of English idioms by non-English major college students through English reading, and they claimed that their study has partially verified the Involvement Load Hypothesis. Qi Lizhen (2009) investigated the influence of different types of English reading tasks on middle school students' incidental vocabulary acquisition. According to the studies above, the author found that few studies fully confirm the Involvement Load Hypothesis. Even if some studies claim to confirm the hypothesis, there are still defects in statistical methods or a lack of credibility in statistical data. Moreover, few studies researched and discussed the effect of multiple factors, such as English proficiency and involvement load, on the efficacy of incidental vocabulary acquisition.

3. Objectives and Research Questions

Given the deficiencies in the researches above, this study intends to investigate the effects of Chinese EFL learners' English proficiency and task-induced involvement load on incidental vocabulary acquisition. The current research attempts to figure out whether both of the two factors have a significant effect on Chinese EFL learners' incidental learning of new words and whether these two factors have an interactive effect on incidental vocabulary acquisition. The purpose of this study is to explore the effectiveness of incidental vocabulary acquisition from the perspective of empirical research and to answer the following three questions:

- (1) Does English proficiency have a main effect on EFL learners' incidental vocabulary acquisition?
- (2) Does involvement load have a main effect on EFL learners' incidental vocabulary acquisition?
- (3) Do English proficiency and involvement load have an interactive effect on EFL learners' incidental vocabulary acquisition?

4. Research Method

4.1 Participants

A total of 163 participants were randomly selected from a comprehensive university in Shandong Province, China. These participants are Grade 2 undergraduate students. They are not English majors, and they are learning English as a foreign language. According to the scores of College English Test Band 4 (CET-4) in July 2020, subjects were divided into two groups. Group A is composed of students with higher scores. The lowest score in Group A is 492, with an average score of 522.63, and the standard deviation is 8.808. In Group B, the highest score is 476, with an average score of 429.22, and the standard deviation was 11.403. Levene's Test for Homogeneity of Variance showed that $F = 7.096$, $P = 0.009 < 0.05$, indicating that there was a significant difference between the two groups in English proficiency. 80 participants in Group A and 83 participants in Group B were classified according to tasks, as shown in the following table.

Table 1. Arrangement of participants in different groups and tasks

Task	Group A	Group B	Total
Reading Comprehension	26	28	54
Blank Filling	29	26	55
Writing	25	29	54
Total	80	83	163

To ensure that high-level and low-level subjects were randomly assigned to complete different tasks, a one-way ANOVA test was carried out on each group respectively. There was no significant difference in the mean value among the high-level groups ($F = 0.074$, $P = 0.929 > 0.05$) and the low-level groups ($F = 1.123$, $P = 0.330 >$

0.05), indicating that English proficiency among the three groups with different tasks was similar, which proved that the subjects were randomly assigned to complete different tasks.

4.2 Data Collection

The author chose the text *The Confusing Pursuit of Beauty* in *New Horizon College English IV* published by Foreign Language Teaching and Research Press. After adaptation, there are altogether 10 new words (target words) in the text, and each word appears only once in the text to avoid the influence of frequency on memory.

The task of reading-for-comprehension requires participants to read the whole text and complete 15 multiple-choice questions related to the content of the text. The Chinese translation of each target word is given directly in the parenthesis next to the corresponding word. The blank-filling group is required to read the same text, but the target words are replaced by 10 blanks in the text. 10 target words are placed at the end of the text together with 10 other words, and the Chinese translation of each word is also given directly. The students are asked to fill in the blanks to complete the meaning of the text. Students in the writing group are asked to write a short passage titled *The Confusing Pursuit of Beauty*, correctly using the 10 target words given on their worksheets, and the Chinese translation of each word is given on the worksheets as well. The specific index of each task's involvement load is shown in Table 2. To avoid the influence of time on vocabulary acquisition, all the participants in the six groups are required to complete the tasks within 40 minutes.

Table 2. The involvement load index of each task

Involvement Load \ Task	Reading Comprehension	Blank Filling	Writing
Need	1	1	1
Search	0	0	0
Evaluation	0	1	2
Total	1	2	3

To ensure the effect of incidental vocabulary acquisition, the participants did not know that there would be a test for the target words after finishing the above tasks. After the tasks were completed, the participants take a 15-minute rest and then take a 15-minute test for the target words. They were asked to write the Chinese translation of each word. Each target word takes 1 point in this test and its total score equals 10 points. Two weeks later, the participants were tested for the retention of these target words. The delayed test was designed in the same format as the immediate test, and the participants were also required to write the Chinese translation of each target word within 15 minutes, with a total score of 10 points.

5. Results Analysis and Discussion

The results of the immediate incidental vocabulary acquisition and the retention tests of 10 target words are shown in Table 3.

Table 3. Descriptive statistics of the immediate and delayed tests' scores

Group	Task	N	Immediate test		Delayed test	
			M	SD	M	SD
A	Reading-for-comprehension	26	3.42	1.858	1.50	1.208
	Blank-filling	29	5.59	2.130	1.72	1.251
	Writing	25	8.00	1.915	2.68	2.231
	Total	80	5.64	2.683	1.95	1.668
B	Reading-for-comprehension	28	2.54	1.666	1.43	.997
	Blank-filling	26	3.19	2.173	1.96	1.562
	Writing	29	5.76	2.459	2.41	1.680
	Total	83	3.87	2.536	1.94	1.484

5.1 Results of the Immediate and Delayed Test

It can be seen from Table 3 that, with the increase of involvement load, the score of the immediate test is gradually increased, that is, the effect of the reading-for-comprehension group is the worst, while that of the writing group is the best. However, in the case of the same task (i.e., the same involvement load), the subjects with higher English proficiency have better immediate incidental vocabulary acquisition than those with lower

proficiency. Whether the difference is statistically significant should be further tested by two-way ANOVAs.

As is shown in Table 4 below, the results of two-way ANOVA indicated that the main effect of language proficiency ($F = 32.557$, $P = 0.000 < 0.05$, Partial $\eta^2 = 0.172$) and the main effect of involvement load ($F = 49.639$, $P = 0.000 < 0.05$, Partial $\eta^2 = 0.387$) are significant, but the interactive effect of them is not significant ($F = 2.200$, $P = 0.114 > 0.05$, Partial $\eta^2 = 0.027$). The results of post event multiple comparison test showed that there are significant differences in immediate memory among the groups due to the different amount of involvement load ($P < 0.05$).

Table 4. Results of two-way ANOVA of immediate test scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Group	137.632	1	137.632	32.557	.000	.172
Task	419.682	2	209.841	49.639	.000	.387
Group * Task	18.603	2	9.302	2.200	.114	.027

Table 3 shows that the scores of the delayed test are lower than that of the immediate test. The results showed that the greater amount of involvement load, the better the effect of incidental vocabulary acquisition on delayed memory; the comparison between groups with the same amount of involvement load showed that in the blank-filling task, the mean score of group A ($M = 1.72$) was lower than that of group B ($M = 1.96$), while the mean score of the reading-for-comprehension task and the writing task showed that the delayed memory of target words was better in the higher L2 proficiency group.

However, the results of two-way ANOVA (see Table 5 below) showed that the main effect of L2 proficiency was not significant ($F = 0.019$, $P = 0.889 > 0.05$, Partial $\eta^2 = 0.000$). That is to say, there was no significant difference in the delayed memory of incidental vocabulary acquisition between groups of higher and lower L2 proficiency within the same task. The main effect of task-induced involvement load was significant ($F = 6.956$, $P = 0.001 < 0.05$, Partial $\eta^2 = 0.081$). However, there was no significant interactive effect of L2 proficiency and involvement load ($F = 0.375$, $P = 0.688 > 0.05$, Partial $\eta^2 = 0.005$) on the delayed memory of incidental vocabulary acquisition.

Table 5. Results of two-way ANOVA of delayed test scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Group	.045	1	.045	.019	.889	.000
Task	32.486	2	16.243	6.956	.001	.081
Group * Task	1.752	2	.876	.375	.688	.005

5.2 Discussion

According to the results of the immediate test, under the condition of the same involvement load, language proficiency has a significant effect on incidental vocabulary acquisition, that is, the higher the language level, the better the effect of incidental vocabulary acquisition on immediate memory; in the case of the same language level, the amount of involvement load in different tasks has a significant effect on incidental vocabulary acquisition, that is, the greater the amount of involvement load, the better the effect of incidental vocabulary acquisition on immediate memory.

However, the results of the delayed test show some differences compared with the previous studies. Under the condition of the same involvement load, language proficiency does not have a significant effect on incidental vocabulary acquisition, that is, students with higher English proficiency do not show significantly better performance than the lower-level students; in the case of the same language level, the amount of involvement load in different tasks still has a significant effect on incidental vocabulary acquisition, that is, the greater the amount of involvement load, the better the effect of incidental vocabulary acquisition on learners' delayed memory. For vocabulary retention, language proficiency is not that important, which violates people's common sense and some findings of the previous studies. However, this finding implies that students with different L2 proficiency can incidentally acquire some new words to an equal degree, which will be beneficial for the design of classroom activities.

To put it in a nutshell, both the results of the immediate test and delayed test for incidental vocabulary

acquisition verified the *Involvement Load Hypothesis*. In other words, the greater the indexes of the involvement load, the better the efficacy of incidental vocabulary acquisition. In the case of the same index of involvement load, L2 proficiency has a significant effect on the immediate incidental vocabulary acquisition, that is, the higher the language proficiency, the better the efficacy of immediate incidental vocabulary acquisition; in the test of vocabulary retention, from the perspective of descriptive statistics, the retention of the 10 target words of all the six groups is not satisfying. For the two groups that completed the blank filling task, the subjects with higher L2 proficiency scored lower than that of the lower-level group in terms of the delayed memory of the target words, and the subjects with high L2 proficiency who completed reading and writing tasks did not show a significant advantage in memorizing target words for a long term compared with subjects in the lower-level group.

6. Conclusion

The results of this study are of significance both in the theoretical and the practical development in the teaching of second language vocabulary.

For one thing, to some extent, the study verified the *Involvement Load Hypothesis*, that is, vocabulary acquisition is better in high involvement load tasks than in low involvement load tasks. Even in the case of L2 proficiency involving in the experiment, the conclusion is still confirmed. At the same time, it also should be noticed that the writing task is productive, and its involvement load is significantly higher than that of the receptive tasks (reading-for-comprehension and blank-filling) in this study. The effects of writing tasks on incidental vocabulary acquisition are significant in both the immediate and the delayed tests.

For another, the practical implication of this study lies in how to reasonably design tasks to help learners with different levels of L2 proficiency acquire vocabulary more effectively. Teachers should try to guide L2 learners to use more effective learning strategies. The results show that learners with different L2 levels can acquire L2 vocabulary incidentally while completing different tasks. Tasks with high involvement load are significantly better than those with low involvement load in terms of the efficacy of incidental vocabulary acquisition. Therefore, in the teaching of *College English* course in China, for those keywords, such as the academic vocabulary, idioms, synonyms, etc., teachers should adopt high involvement load tasks, like productive tasks, to help learners acquire new English words more effectively.

Of course, this study has its limitations. Other factors influencing vocabulary acquisition, such as learners' motivation, grammar knowledge, vocabulary knowledge, etc., have not been involved or controlled in the research. These factors also have a great impact on immediate vocabulary acquisition and vocabulary retention, and can also be researched for further studies of incidental L2 vocabulary acquisition.

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