

A Diachronic Study on the Attrition of Mental Lexicon in Second Language

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Abstract: Vocabulary attrition is a very common phenomenon in foreign language study. This paper studies the vocabulary attrition of Chinese learners through an empirical research. It tries to analyze the Chinese non-English majors' vocabulary attrition in different stages of their English study, which provides a reasonable explanation to maintain the students' ability to learn English as well as the university foreign language reform.

1. Introduction

Psycholinguistics is a rapidly developing interdisciplinary subject in recent years, which provides a more scientific perspective and method for the study of the development and origin of human language, and greatly promotes people's understanding of cognition and information processing, making people more clear about the process of language acquisition and guiding teaching. With the development of psycholinguistics, people realize that the development and learning of language is not only a superficial phenomenon, but also a process of mutual influence, correlation and integration of people's internal language knowledge. Knowledge is stored in the brain in a certain mode. People use various experiments and methods to try to find out exactly how this storage mode is. At present, many achievements have been made in these researches, which provide powerful data and theoretical support for the development of psycholinguistics theory.

Information is stored on the surface of the brain, such as foreign words, which is easy to be attrited, while deep stored language elements, such as pronunciation and syntax, are not easy to be attrited (Craik&Tulving, 1975). Therefore, the fundamental attrition of language is the attrition of words. If language users cannot randomly extract words from the brain that constitute the text and syntax, then language learning is undoubtedly a failure. Speech is rarely affected in the process of language attrition and can basically remain stable. To slow down the rate of language attrition is to slow down the process of word attrition.

De Bot (2002) argues that language attrition belongs to the category of psycholinguistics. In recent years, some scholars have begun to analyze the attrition of words from the perspective of psycholinguistics. Gui Shichun believes that mental lexicon is not invariably stored in the human brain, it is attrited with the passage of time and the environmental changing which includes pronunciation, word meanings and quantity change. For Chinese English learners, Chinese-English words are mixed together, and have obvious interference between the two languages. There are also studies that suggest that there are two dictionaries in the mental vocabulary of second language learners. The second is a dictionary corresponding to the vocabulary knowledge of the first language. Most researches on mental vocabulary is based on word association tests. The word association hypothesis refers to the response words automatically extracted by language users in their own mental vocabulary, which are closely related to the stimulated words in a certain way. By analyzing these reaction words, we can get the organization mode of people's mental vocabulary, and understand the thinking process of learners and the process of constructing vocabulary network, so as to provide theoretical support for learners to effectively language learning.

2. The Research Methods

2.1. The Subject of Study.

All of the 20 non-English majors from 2 classes in Jingchu University of Technology took part in the study. Before the experiment, the vocabulary level of the subjects was tested by vocabulary level test. According to test results (as shown in table 1) were divided into four groups, the lowest level 1 subjects vocabulary, grasp the vocabulary by less than 2500 words, level 2 participants grasp the vocabulary between 2500 to 3500 words, which is above the average of level 3, who can reach 3500 to 4500 words. The final group, level 4 subjects, whose vocabulary is the largest, more than 4500 words. Five students from each group of pretests were randomly selected as subjects of this study.

2.2. Research Methods and Means.

In this study, 20 non-English majors were randomly selected to conduct vocabulary tests in the first semester, the second semester of the freshman year and their sophomore respectively. 30 high frequency words were selected from the teaching requirements of college English course, and these stimulating words were randomly shuffled. Participants will be given an vocabulary association test, in which they will be given access to a mental lexicon during the test. The test was conducted four times over a period of two years. Before and after the test, the “look-write” free association test was adopted. The test was conducted in the multimedia classroom. The subject looked at the words appearing on the slide at the same time, and wrote down the words that could be thought of after 5 seconds, which was the response words of the subject. Finally, these response words are statistically analyzed to answer the three questions raised in this study: first, what is the mental lexicon association mode of second language learners? 1. Semantic or formal association? 2. Is the formal association phonetic or flexural? Second, at different stages of learning (i.e., at different levels of English proficiency), what are the changes in the mental lexicon association patterns of English learners? Third, is the rate of word attrition related to the mode of word association, and if so, what is the mode of association?

The experimental tools used in this study include English word association test, vocabulary familiarity questionnaire and retrospective interview.

This study intends to use WordNet to identify the longitudinal aggregation relationship of words. WordNet is a vast vocabulary repository designed by psychologists, linguists and computer engineers at Princeton university. Its characteristic is that it is in accordance with the words in the meaning rather than to organize the information of vocabulary and in WordNet, nouns, verbs, adjectives and adverbs are in accordance with the synonym set organization, each Synset gives a basic vocabulary concept, and has established including synonymous relationships between these concepts (synonymy, antonym relations (antonymy), a relationship (hypernym & hypony), part of the up and down (meronym) and so on many kinds of semantic relations. For the horizontal combination relationship between response words, we can use the corpus tool BNC. BNC can not only use its matching SARA retrieval software, but also support a variety of general retrieval software, and can directly search online, which is convenient and fast.

Vocabulary knowledge Scale of Wesche & Paribakht (1996) was adopted in the Vocabulary familiarity questionnaire, which divides learners' Vocabulary knowledge into the following five levels:

- 1) I haven't seen this word before.
- 2) I haven't seen the word before, but I know its meaning.
- 3) I've seen this word before, and I know its meaning.
- 4) I know the word perfectly and I know its meaning.
- 5) I can use the word in a sentence.

3. The Results and Analysis

3.1. Results of the First Test.

The first test took place at the beginning of enrollment, and the results showed that the total number of response words given by the four groups was 107,124,138,142 respectively. Semantic responses were 50%, 56%, 59%, 65%, and formal responses were 38%, 37%, 37% and 34%, respectively. It can be seen that the semantic response words given by the four groups of subjects are all higher than the formal response words, which indicates that no matter what the level of the second language vocabulary of the subjects is, the semantic association is dominant and the formal association is auxiliary in their psychological lexicon. The results also showed that the proportion of response words provided by the four groups showed an increasing trend from level 1 to level 4, while nonsense words and non-reactive words showed a decreasing trend. That is to say, the higher the level of the second language, the more response words the subjects provided. This phenomenon is in line with the vocabulary response characteristics of learners at different English vocabulary levels.

3.2. Results of the Second Test.

After one year of English study, the subjects were given a second vocabulary response test. The results showed that the total number of response words given by the four groups was 127,139,143,154 respectively. In this study, the proportion of semantic responses and formal responses given by the four groups were 56%, 60%, 64% and 67% respectively. It can be seen from the above results that semantic association is still dominant and formal association is secondary. Compared with semantic and formal reactions, nonsense response and non-response vocabulary still show a decreasing trend. According to the total number of response words provided by the subjects, after one academic year of English learning, the vocabulary level of the four groups of subjects has improved somewhat compared with that of the students who just entered the school.

3.3. Results of the Third Test.

After two years of learning English, the participants took the third vocabulary response test. The results showed that the total number of response words given by the four groups was 133,135,135,141 respectively. Among them, the proportion of semantic reaction is 59%, 67%, 70%, 74%, and the proportion of formal reaction is 29%, 23%, 22% and 19% respectively. From the above results, it can be seen that the results of the third vocabulary test are not much different from the results of the second vocabulary test. The results also showed that the higher the vocabulary level of the subjects, the less nonsense words and unresponsive words were provided. However, from the total number of words provided by the third and second subjects, there was no significant difference in the vocabulary level between the four groups in the first and second year.

3.4. Results of the Fourth Test.

The fourth vocabulary test was conducted in the second semester of the third year of college English learning. The results showed that the total number of response words given by the four groups was 80, 97, 107, 124 respectively. The results of this study showed that the proportion of semantic responses given by the four groups was 54%, 69%, 67%, 69%, and the proportion of formal responses was 23%, 15%, 23% and 22%, respectively. The above results show that the total number of responses provided by the subjects is significantly lower than that of the first three times after they stop learning English for one year, but the number of words provided by the subjects with high vocabulary level is significantly higher than that of the subjects with low vocabulary level, and the proportion of semantic association is still significantly higher than that of formal association.

From the above results of the four test reaction words we can see, as for comparison of semantic reaction and formal reaction, the proportion of semantic reaction words in the first three tests increased with the improvement of the subjects' vocabulary level. Since the fourth test took place one year after the end of English learning, the number of respondents declined significantly, while

the number of formal respondents did not show much change. Nonsense words and non-reactive words of the four groups of subjects increased significantly in the fourth test, that is to say, one year after the ending of English study, the subjects' second language vocabulary was severely attrited. No matter the level of the subjects' vocabulary, it would be attrited to some extent. The most serious attrition was found in the level 1 group, for whom the total number of non-reactive words was up to 9, accounting for 30% of the total. This group provided the least number of response words in the four tests, indicating that the mental lexicon of low-level vocabulary learners is more vulnerable to attrition. Level 4, the subject with the highest vocabulary level, also suffered from attrition in the four tests, but the situation was more optimistic. Semantic response words and formal response words were the most in the first three tests, however, in the second and third tests, the proportion of semantic respondents was higher than that of formal respondents. That is to say, the lexical structure of the second language, which is dominated by semantic association, is relatively solid. Therefore, the higher the proportion of semantic connections in mental lexicon, the less vulnerable L2 learners' L2 vocabulary will be to attrited.

4. Discussions

Mental vocabulary is the mental representation of word knowledge in the brain and the long-term memory of word knowledge in the brain (Gui shichun 2000). One of the main contents of mental vocabulary research is how words are stored and extracted in the human brain. As the basic ideographic unit of language, vocabulary plays an important role in language learning. Only paying attention to foreign language learning research and ignoring foreign language attrition can not effectively improve the efficiency of foreign language learning. The study of language acquisition is inseparable from the study of language attrition, which opens up an important new way for language acquisition. From the perspective of psychological lexicon in psycholinguistics, it can provide an important theoretical basis for the study of vocabulary acquisition.

5. Conclusion

How to intervene in foreign language attrition is an effective way to delay the decline of college students' foreign language learning ability. In China, English is only a foreign language, especially for non-English majors, after intensive learning of English in senior high schools, some students have been slack in learning English after entering the university. As a college English teacher, learners will inevitably experience the phenomenon of language skills attrition or even forgetting over time. Therefore, it is of great significance and research value to explore how to maintain foreign language competence and prevent foreign language abrasion in the current context.

Acknowledgments

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