
PSYCHOLOGICAL REPRESENTATION OF ENGLISH LEARNERS IN VOCABULARY LEARNING

Qian Pan*

Abstract

English learning is very popular among Chinese native speakers. It is very meaningful to explore their psychological mechanism during the learning process. Using the shared asymmetric model (SAM), this paper carries out a comparative experiment between English native speakers and Chinese native speakers based on word association test, and quantifies the similarities and differences between the two groups of speakers in the acquisition of English vocabulary. Then, the author discussed the psychological representation in English vocabulary learning. The results show that semantic reaction is the leading type of reaction of both Chinese and English native speakers in vocabulary learning; combinatorial relation is much more common than aggregation relation; Chinese native speakers have higher combinatorial relation than their English counterparts in the three lexical structures: predicate-object structure, middle deviation and predicate union, because the latter have better higher mastery and connectivity of English vocabulary. This research promotes the psychoanalysis on English vocabulary acquisition and provides guidance on Chinese English learners.

Key words: English Vocabulary, Psychological Representation, Semantic Reaction, Word Association Test.

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INTRODUCTION

During the acquisition of a language, vocabulary, like the basic blocks of a building, plays a very significant role. With the overall popularization of English around the world, the number of Chinese who learn English (Chinese native speakers) has exceeded 96 million (Griffiths, Steyvers, & Tenenbaum, 2007). English, as the most widely used language worldwide, has certain representative significance in the process of English vocabulary acquisition in terms of psychological representation. In the past, the research on English vocabulary focuses on two dimensions: the depth and breadth of vocabulary, while the frontier scholars put forward a new research dimension-connectivity (Francis, 1999). The connectivity of second

language vocabulary actually embodies the process of constructing a second language vocabulary knowledge network by a second language learner. It is a milestone leap in the process of language vocabulary acquisition from the single language structure to the interdisciplinary study and from the accumulation of vocabulary to the construction of vocabulary structure network. However, at present, the researches of English vocabulary in China mainly focus on the teaching of the depth and breadth of second language vocabulary, while there are few researches on the psychological representation of the process of English vocabulary acquisition by Chinese native speakers (Li, Hou, & Wang, 2013).

The psychological representation of English vocabulary is deeply studied by foreign scholars. Ellis & Sinclair (1996) divided the acquisition process of second language psychological vocabulary into three types: phonetics, meaning and syntax. The point of view of phonetics is that the connectivity of English

Huihua College of Hebei Normal University, Shijiazhuang
050091, China.
E-Mail: panqianweo23@163.com

psychological vocabulary is phonetically dominant. Meaning holds that the connectivity of English psychological vocabulary is generally considered as meaning while syntax suggests that the connectivity of English psychological vocabulary is combinative and mainly related to grammar. Based on the theory of spatial metaphor, Macoir, Routhier, Simard et al. (2012) first proposed three research models of English vocabulary, which were parallel, compound and subordinate. On the basis of the Macoir models, Mohammadi (2014) proposed a lexical connection model, holding that second language vocabulary is connected by the definition and form of the native language. The development of English vocabulary is a process from dependence on native language medium to conceptual integration. Hebert & Powell (2016) pointed out that the difference of native language system would lead to the disproportion of psychological representation of second language vocabulary, and established the theory of distribution characteristics. Stokes, Moran, & George (2013) divided the psychological characteristics of English vocabulary into three levels, namely, morphology level, native language medium level and second language integration level, and put forward a three-level model. The dynamic development of psychological characteristics of English vocabulary in the teaching environment was reflected comprehensively and scientifically for the first time.

The psychological representation process of second language vocabulary learning in China is still in the initial stage. Logigan, taking into account the constraint elements of second language conceptual system, established a shared asymmetric model which believes that the conceptual connectivity of native language is significantly stronger than that of second language, and there are differences between the concepts of unshared translation equivalent words (Lonigan, Anthony, Phillips et al., 2009). After a lot of literature research, Bauserman (1997) summed up four modes of English psychological vocabulary: concept and lexical connection; independent and shared second language concept storage; single coding and double coding systems; distributed and localized representation. According to a series of experiments conducted, the modern English teaching needs to integrate the Chinese native speakers' vocabulary cognition pattern, the characteristics of English vocabulary, the vocabulary teaching system, and vocabulary processing with English as a second language (Swaminathan & Gopinath, 2013). Based on the basic theory of psycholinguistics, Lackner & Goldstein (1975)

proposed that Chinese native speakers have three aspects of phonology, glyph and meaning in the process of learning English. Through investigation and data analysis of subjects of native language and second language, this study expounds the characteristics of word association of Chinese native speakers in English teaching.

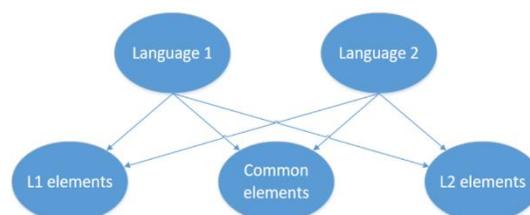
At present, the research on the psychological mechanism of second language vocabulary mainly focuses on the teaching of English vocabulary. The empirical research on the process of psychological representation of Chinese native speakers' English acquisition is not mature. Based on SAM, this study uses the word association test, sets up a comparative experiment and carries out data analysis to quantitatively analyze the similarities and differences between Chinese native speakers and English native speakers in English vocabulary acquisition, as well as explore the process of constructing psychological representation network in English vocabulary.

SAM AND EXPERIMENTAL DESIGN

SAM

This study is based on SAM, and its basic theory holds that the definitions between the two languages are asymmetric, that part of the meanings between the two languages are public, and that some of the vocabulary concepts are unique and non-common. Figure 1 is a schematic diagram of SAM.

Figure 1. Shared asymmetric model



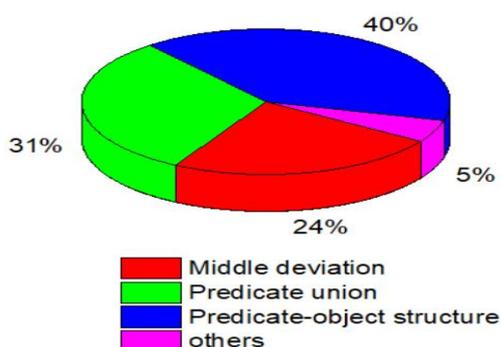
Experimental design

In order to explore the similarities and differences of psychological representation between Chinese and English native speakers in the process of English vocabulary acquisition, a series of comparative experiments are conducted to study the influence of word formation of disyllabic words on the psychological network construction of second language vocabulary of Chinese native

speakers. Based on the word association test, the subjects are tested for 8 minutes by questionnaires. There are 100 English native speakers in the control group and 100 Chinese native speakers in the experimental group, all of whom are 20-30 years old.

There are three main factors affecting the psychological representation process of English learners' vocabulary recognition: the length of English vocabulary, the frequency of occurrence of vocabulary, and the transparency of word meaning. According to word formation, there are three forms of synthetic verbs in English: middle deviation, predicate union and predicate-object structure. As shown in Figure 2, in the formation of English vocabulary, middle deviation accounts for 24%, predicate union is 31% and predicate-object structure makes up 40%. The total proportion of the three is about 95%, which is of a certain representative significance.

Figure 2. The composition of English synthetic verbs



The word association test is conducted in the form of questionnaires, and the Chinese version is issued to English learners whose native language is Chinese, and the subjects are required to write the English form of the vocabulary. English native speakers are given English version and only need to write English vocabulary.

TYPES OF PSYCHOLOGICAL REPRESENTATION OF SUBJECTS IN SYNTHETIC VERBS

The collected questionnaire results are counted and the data are analyzed by Matlab platform. The psychological representation of Chinese native speakers in the process of English vocabulary acquisition is shown in Figure 3.

According to the statistical results, 55 Chinese

native speakers take meaning as first reaction in the process of constructing the psychological network of English vocabulary learning, which accounts for the highest proportion. There are 21 people in glyph reaction, 9 in phonology reaction, 5 in morpheme reaction, and other reaction types account for 5%.

Figure 3. Psychological representation of Chinese native speakers in the process of English vocabulary acquisition

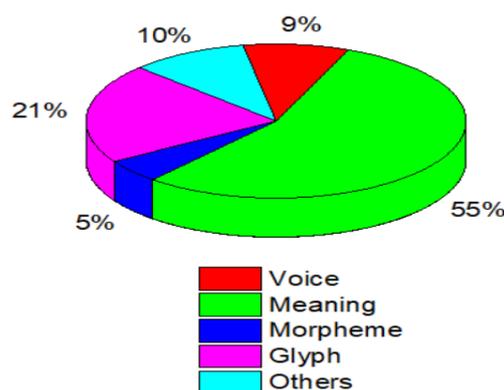
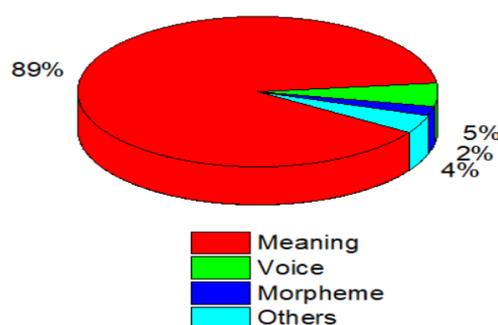


Figure 4 shows the psychological representation of English native speakers in the process of English vocabulary acquisition.

Figure 4. Psychological representation of English native speakers in the process of English vocabulary acquisition



The results show that in the process of constructing the psychological network of English vocabulary learning, there are 89 English native speakers who take meaning as the first reaction, accounting for the highest proportion. There are 0 people in glyph reaction, 5 in phonology reaction, 2 in morpheme reaction, and other reaction types account for 4%.

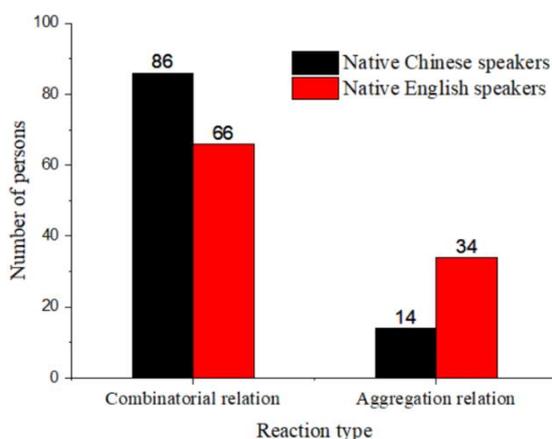
By comparing Figure 3 and Figure 4, the following results can be obtained. Firstly, 21% of Chinese native speakers show morpheme reaction, while English native speakers have no morpheme reaction, indicating that morpheme interferes to some extent with the vocabulary recognition of English learners whose native language is Chinese. Secondly, both Chinese native speakers and English native speakers take semantic reaction as the main type in the learning process, and the proportion is the highest. Thirdly, the proportion of semantic reaction of English learners is more than 30% lower than that of English native speakers. Fourthly, the proportion of phonology reaction of English learners is 4% higher than that of English native speakers, which shows that phonology plays a certain role in promoting the construction of psychological network in the English vocabulary acquisition by Chinese native speakers.

SEMANTIC REACTION ANALYSIS OF SUBJECTS

Combinatorial and aggregation reaction

According to the statistical results of the control experiment, semantic reaction has the highest proportion, which is the main reaction type in the process of English vocabulary acquisition. Therefore, all types of reactions are classified into two types: semantic relation and non-semantic relation. The semantic relation includes combinatorial relation and aggregation relation. Non-semantic relation includes phonology reaction, glyph reaction, morpheme reaction and so on. Figure 5 is a comparative diagram of combinatorial relation and aggregation relation of subjects.

Figure 5. Comparative diagram of combinatorial relation and aggregation relation of subjects



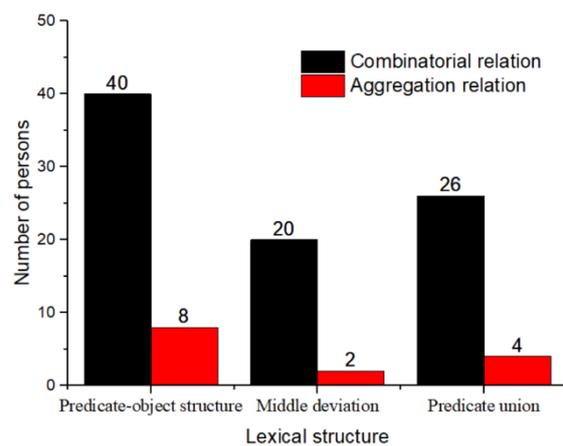
As shown in Figure 5, in the semantic reaction type, the reaction type of 86 Chinese native speakers is combinatorial relation, and that of 14 is aggregation relation. The proportion of combinatorial relation is about 6 times of that of aggregation relation. The reaction type of 66 English native speakers is combinatorial relation, and that of 34 is aggregation relation. The proportion of combinatorial relation is about 2 times of that of aggregation relation.

The following results can be obtained from the data analysis. First, both Chinese native speakers and English native speakers take combinatorial relation as the main semantic reaction type. Second, the proportion of English learners' aggregation relation is significantly lower than that of English native speakers, indicating that aggregation relation is still immature in the psychological representation network in English vocabulary of Chinese native speakers.

Influence of lexical structure

Figure 6 shows the influence of three lexical structures on the reaction types of Chinese native speakers.

Figure 6. The influence of different lexical structures on the reaction types of Chinese native speakers

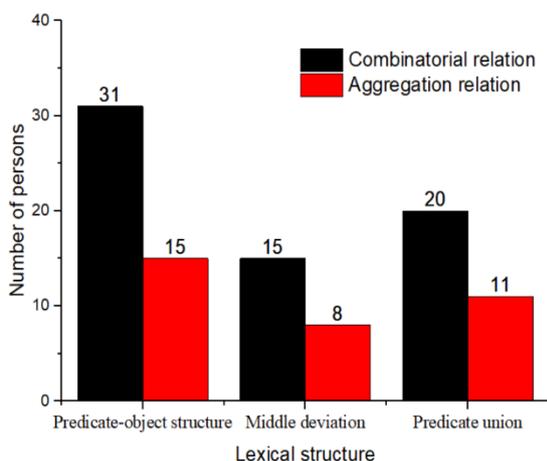


As shown in Figure 6, 40 Chinese native speakers react in the combinatorial relation with the predicate-object structure, 5 times as much as the aggregation relation; 20 Chinese native speakers react in the combinatorial relation with the middle deviation, 10 times as much as the aggregation relation; 26 Chinese native speakers react in the

combinatorial relation with predicate union, 6.5 times as much as the aggregation relation.

Figure 7 shows the influence of three lexical structures on the reaction types of English native speakers. As shown in Figure 7, 31 English native speakers react in the combinatorial relation with the predicate-object structure, 2 times as much as the aggregation relation; 15 Chinese native speakers react in the combinatorial relation with the middle deviation, 2 times as much as the aggregation relation; 20 Chinese native speakers react in the combinatorial relation with predicate union, 2 times as much as the aggregation relation.

Figure 7. The influence of different lexical structures on the reaction types of English native speakers



By comparing Figure 6 with Figure 7, it is found that the combinatorial relation of Chinese native speakers is higher than that of English native speakers in predicate-object structure, middle deviation and predicate union. The reason is that English native speakers usually have a higher mastery and connectivity of English vocabulary than Chinese native speakers, which limits the breadth of vocabulary to some extent. Simply speaking, English native speakers' association with English vocabulary of combinatorial relation is more precise and limited. Chinese native speakers don't fully grasp the strict meaning of qualifiers and modifiers and morphemes tend to weaken and activate other words that produce combinatorial relation, so the breadth of their English vocabulary is greater.

CONCLUSIONS

Based on SAM, this study uses word association test, sets up a comparative experiment and carries out data analysis to quantitatively analyze the similarities and differences between Chinese native speakers and English native speakers in English vocabulary acquisition, as well as explore the process of constructing psychological representation network in English vocabulary learning. The conclusions are as follows:

(1) In the process of learning, both Chinese and English native speakers take semantic reaction as the main type, and the proportion of combinatorial relation is obviously higher than that of aggregation relation. The proportion of English learners' aggregation relation is significantly lower than that of English native speakers, which indicates that aggregation relation is still immature in the psychological representation network in English vocabulary of Chinese native speakers.

(2) The proportion of phonology reaction of English learners is higher than that of English native speakers, so it can be seen that phonology plays a certain role in promoting the construction of psychological network in the English vocabulary acquisition by Chinese native speakers.

(3) The combinatorial relation of Chinese native speakers is higher than English native speakers in the three kinds of lexical structures: predicate-object structure, middle deviation and predicate union, because English native speakers have higher mastery and connectivity of English vocabulary than Chinese native speakers, which will limit the breadth of vocabulary.

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