
PSYCHOLOGICAL COGNITION PROCESS OF ENGLISH VOCABULARY ACQUISITION

Hua Xie¹, Jingfang Wu^{2*}

Abstract

This paper aims to disclose the cognitive rules of English vocabulary acquisition, which are important to vocabulary memory and language learning. Firstly, the basic concepts of psychological cognition and fundamental theory of cognitive psychology were reviewed thoroughly. Then, a questionnaire survey was carried out among students from a middle school in Shandong Province, China. Based on the survey data, the author analyzed the students' cognition process of different types of English vocabulary, ranging from nouns, verbs, adjectives to adverbs. The results show that, listening and speaking are the main cognitive channels of vocabulary among students in lower grades, and multiple methods should be integrated to promote the vocabulary learning of these students; English reading proficiency can be enhanced by automatic matching between word form and lexical meaning, with the growth in vocabulary and improvement of psychological cognition; the students have no cognitive difference between English learning and the learning of their mother tongue, and do not have to consider vocabulary changes all the time. The research provides a guide for vocabulary acquisition among English learners.

Key words: English Reading, English Vocabulary, Psychological Cognition, Learning Process.

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INTRODUCTION

Cognitive psychology is a discipline that studies the changes in human psychology during cognitive process; in a broad sense, it is a part of the cognition science (Makita, Yamazaki, Tanabe et al., 2013; Pulido, 2003). Cognitive psychology teaches people how to get information about the world, how to transform it into one's own knowledge, and how it is stored. Knowledge can be used to guide our behavior (Ender, 2016; van de Ven, Segers, & Verhoeven, 2018; Chen & Yen, 2013). Cognition includes processes from sensory to perception, attention, learning, memory, thinking, recall, and emotional development, etc., which involves many fields

related to the behavior. Therefore, cognitive psychology is the foundation of learning and can help people learn different knowledge (Wheatley, 2009; Lowell & Morris, 2017).

In the study of English vocabulary, learning English vocabulary through English courses, English reading, listening, speaking and other methods is a gradual process of cognition (Oberg, 2011; Sadeghi, 2013; Fuente, 2003). Scholars at home and abroad have conducted preliminary research on foreign language vocabulary learning and psychological cognition, which is minor beneficial to the learners in mastering language learning skills and improving the learning efficiency (Bahrack, Bahrack, Bahrack et al., 1993; Ortiz, Folsom, Otaiba et al., 2012). However, the above effects still cannot meet the expectation, and the studies have not yet formed a systematic theory to give effective guidance to the actual vocabulary learning.

Based on the above problems, this paper combines theoretical analysis with

¹School of Business Foreign Languages, Hunan International Business Vocational College, Changsha 410201, China.

²School of Humanities, Hunan City University, Yiyang 413000, China.

E-Mail: smile7178@163.com

questionnaire survey to sort out the basic theories of cognitive psychology, it investigates and analyzes the students' psychological cognition during the learning of English vocabulary, thereby systematically studying their cognition process of English vocabulary acquisition. This study provides a theoretical basis for enhancing foreign language vocabulary learning skills and improving the efficiency of vocabulary cognition.

THEORY OF PSYCHOLOGICAL COGNITION

Basic concepts of psychological cognition

Psychological cognition originated from behavioristic psychology and the Gestalt theory. At present, the academic field generally believes that cognitive psychology was born when the famous American psychologist Neisser's *Cognitive Psychology* was published. In the early 20th century, behavioral psychology almost occupied the field of psychology. In the 1960s, people began to realize that cognitive processes such as perception, memory, and thinking are also parts of the cognitive process. Therefore, psychology had come into being, and cognitive psychology was already an important research direction of psychology after the 1970s. Today, in Western psychology, cognitive psychology and humanistic psychology are the two main trends of psychology (Gleitman & Gleitman, 1992; Kim, 2016).

The emergence of information theory, system theory, and computer science has promoted the development of cognitive psychology. Cognitive psychology explains the human cognition activities through information processing and its research field is quite extensive (Lonigan, Anthony, Phillips et al., 2009; Williams, 2015), including perception, sensation, attention, thinking, cognition and other processes, and it can be further extended to areas such as the cognition of children, and artificial intelligence, etc. The core of cognitive psychology is to study the psychological mechanism of people during the cognition process, and how the information is obtained, stored, processed, and used; it can be basically divided into three aspects: first, the influence of people's inherent knowledge on their psychological and behavioral activities; second, people's subjective initiative, in the process of learning, people's intelligence and initiative have a great impact on learning; third, using the

comparison between human brain and computer to explain people's cognition process.

Basic theory of cognitive psychology

The basic theory of cognitive psychology adopts the principle of information processing to explain human cognitive behavior. The cognitive process of people is the process of obtaining information from the outside world and processing and extracting the information. The theory of information processing is the essence of the two main trends of psychology, namely the cognitive psychology and the behavioristic psychology. It explains that people's learning process starts from the environmental stimulation, and there is a mutual effect between environmental stimulation and learning. The principle of information processing is that information processing is like a calculator, it has a complete set of information processing system, including effectors, sensors, processors, memories, etc., and each part has its unique function, see Figure 1 for the processing process.

As can be seen from Figure 1, when the brain receives information simulation, first it will process the information using the sensors and register it, then long-term memory and short-term memory are conducted appropriately according to the requirement, if long-term memory is required, the brain will perform deep processing on the information so that it can be stored for a long time; for the human brain, it will store the information after deeper level and careful processing for a long time. It can be seen from this theory that the acquisition of information requires information input, and the input information should be greater than the output information.

From the perspective of cognitive psychology, the learning of English vocabulary is essentially a process of the construction of mental lexicon from scratch. The theory of mental lexicon believes that there is a device similar to a dictionary in the human brain. When encountering new problems, the brain will transmit information from the outside into the device, output information if there's a match, or refresh the device if there's no match, functioning just like a dictionary. Mental lexicon is not a dictionary used in our daily life, it compares the existed stored information, if there's a successful match, it will be identified. In the mental lexicon, the sounds, the meanings, and the forms are stored in three different

Figure 1. Information processing principle

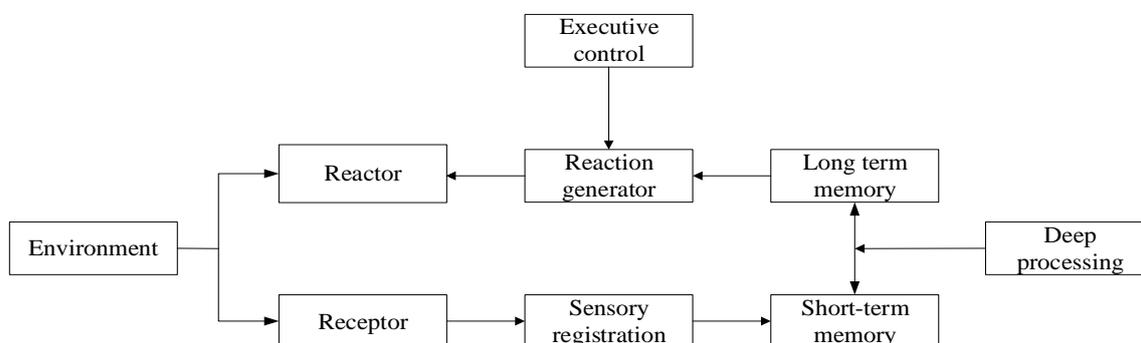
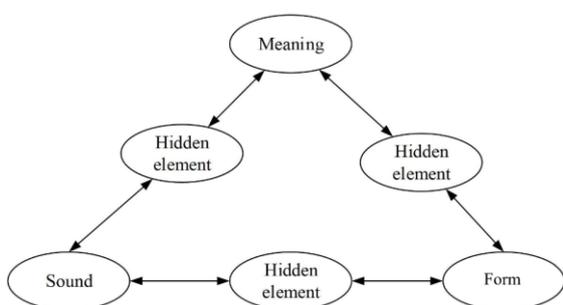


Figure 2. Vocabulary storage



modules, and their storage method is shown in Figure 2.

EXPERIMENT ON THE PSYCHOLOGICAL COGNITION OF ENGLISH VOCABULARY ACQUISITION

Test methods and data collection

This study mainly investigates students' psychological cognition in the process of English vocabulary learning and solves problems such as the differences in the composition characteristics of different English vocabulary, students' comparison between associative words and the associative words dictionary, and providing students with English learning strategies and new ideas through comparison and analysis.

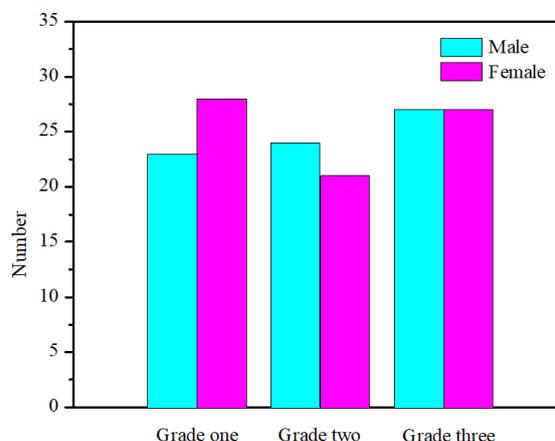
This study conducted random survey in a university, the test method was to play ppt slides of words on the spot, the interval of different words was 5s, and the subjects were asked to make selection using the list of response words. The test vocabulary included high-frequency vocabulary such as verbs, nouns, adjectives,

prepositions, and adverbs, etc. The response words are mainly divided into several types: paradigmatic response, syntagmatic response, phonetic response, encyclopedic knowledge response, non-response, derived response, inflection response, etc. The subjects were students from a middle school in Shandong Province, China, and a total of 150 subjects were tested. The information statistics of the subjects are shown in Table 1. It can be seen from Figure 3 that the proportions of male and female subjects are basically equal, and the number of subjects in different grades is generally consistent.

Table 1. Information statistics of the subjects

Grade	Male	Female	Total
Grade one	23	28	51
Grade two	24	21	45
Grade three	27	27	54

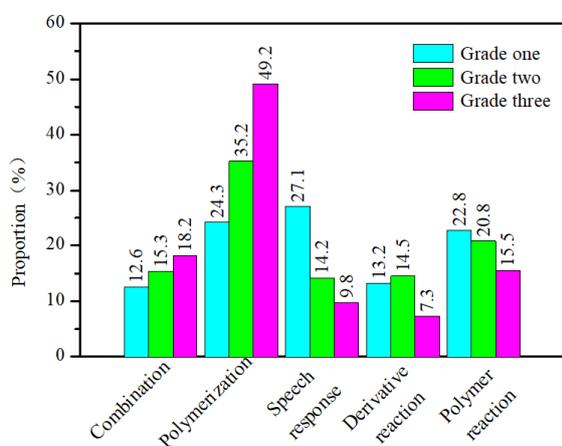
Figure 3. Information statistics of subjects



Test results

By analyzing the test results, we can see that the response proportions of various types of vocabulary stimuli are different. Paradigmatic response and syntagmatic response can best reflect the learners' psychological cognition level of the English vocabulary, and a statistic of the proportions of the response vocabulary is shown in Figure 4, from which we can know that, in terms of syntagmatic response, there is third-grade>second-grade>first-grade; in terms of paradigmatic response, there is third-grade>second-grade>first-grade; in terms of phonetic response, there is first-grade>second-grade > third-grade. The test results show that, the first and second grades are in the primary stage of English learning, and their psychological cognition needs to be based on phonetics. Mastering English vocabulary requires more syntagmatic relations and paradigmatic relations, and smaller proportions of paradigmatic response and derived response indicate higher proficiency.

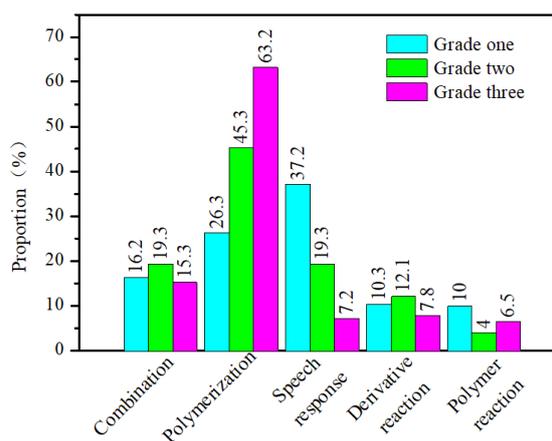
Figure 4. Proportions of response vocabulary types



From the statistics of the noun vocabulary we can know the development law of the learners' cognitive psychology of English vocabulary, the results are shown as Figure 5. In terms of the response results of the association of nouns, for higher-level English learners, the proportions of paradigmatic response and syntagmatic response are basically equal, and the proportions of these two types of response increase with the English proficiency of the learners, and the derived relation also has an increasing trend among skilled English learners.

Verbs are important vocabulary in the English learning process, their many changes are the difficult and important points of learning, and learners often have to make extra efforts for them. The test results of verbs in this study are shown in Figure 6. In terms of paradigmatic response and derived response, they had not disappeared with the improvement of learning competence, and the derivative vocabulary also accounted for a large proportion, indicating that in the process of English vocabulary learning, with the increase of vocabulary size and the improvement of psychological cognition, the students would automatically match the word form and lexical meaning of the words, thus further enhancing their English reading proficiency.

Figure 5. Proportion of nouns' effects on English learners' psychological cognition



The result analysis of response of adjective stimuli is shown in Figure 7, from which we can see that the trends of paradigmatic response and syntagmatic response are unbalanced. With the increase of English proficiency, the proportion of paradigmatic response increases gradually, while the syntagmatic response does not show obvious difference. This indicates that with the increase of vocabulary size, the relation of different types of words in English vocabulary has not increased significantly, the function of adjectives in the sentence is connection. Therefore, in the process of vocabulary learning, after the increase of the vocabulary size of adjectives has promoted English proficiency to a certain level, the improvement of English level would be quite slow.

Figure 6. Proportion of verbs' effects on English learners' psychological cognition

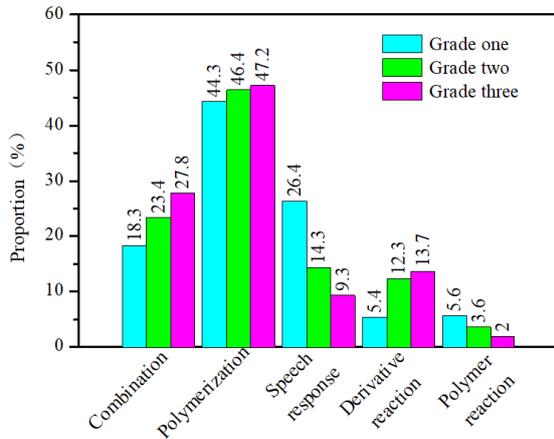
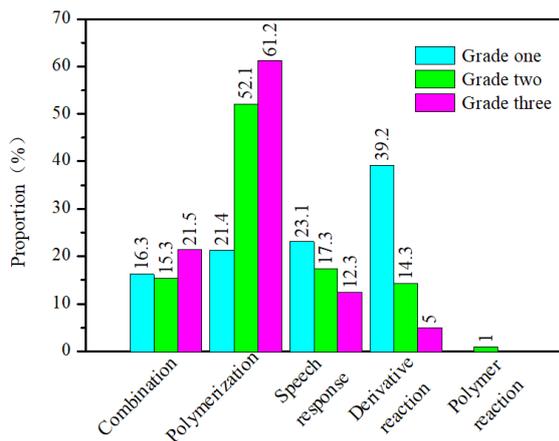


Figure 7. Proportion of adjectives' effects on English learners' psychological cognition

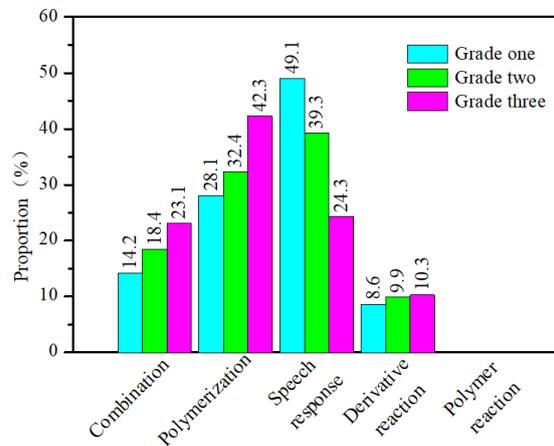


When adverbs are used as vocabulary stimuli, the statistical results are shown in Figure 8. It can be seen from the figure that the trend of adverbs in the psychological cognition is in line with the development of English vocabulary. With the increase of learners' vocabulary size, the proportion of phonetic response decreases, the proportions of paradigmatic response and syntagmatic response increase gradually, and the adverbs do not appear in the paradigmatic response. On the one hand, it indicates and the test samples are insufficient; on the other hand, it can be known that adverbs are dominant in the English learning process. Therefore, the learning of adverbs requires a lot of effort, and we have to master them flexibly so as to be fluent in English.

From the English dictionary, corresponding

response words were found and classified into paradigmatic response, syntagmatic response, encyclopedia knowledge response and derived response according to the previous paragraphs, and the statistical results are shown in Figure 9. It can be seen from the figure that the paradigmatic response of nouns is higher than that of other vocabulary, indicating that for different types of words, the learners' psychological cognitions are different in the learning process. In terms of the encyclopedia knowledge response of adjectives, the result is much higher than that of other types of vocabulary, indicating that besides language knowledge, the encyclopedia knowledge response of adjectives has a great impact. The modification and grammar of adjectives can easily confuse students. In terms of paradigmatic response, the figure didn't show it, indicating that there's no essential difference in students' psychological cognition when they learn English or their mother tongue, they don't have to consider the vocabulary changes at all times.

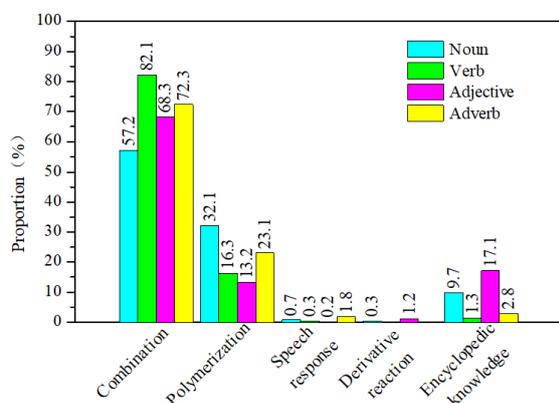
Figure 8. Proportion of adverbs' effects on English learners' psychological cognition



Above analysis shows that in the English vocabulary learning process, the psychological cognition process can be divided into three stages: the first stage emphasizes the structure and pronunciation of the words, grade one and grade two students who are English beginners are mostly in this stage; the second stage is the middle stage which focuses on the concepts of English and the correspond Chinese translations, grade three students are mostly in stage; the third stage is the summary and integration of

English vocabulary during the learning process, and most people stop learning from this stage.

Figure 9. Lexical classification reflected in the English dictionary



CONCLUSIONS

This paper investigated the process of English vocabulary cognition and the psychological changes during English reading, it revealed the laws of the psychological cognition of English vocabulary, and studied the process of English vocabulary acquisition. The main conclusions are as follows:

(1) Due to the paradigmatic response and syntagmatic response of the psychological cognition in the process of English vocabulary learning, compared with the higher-grade students with certain English learning foundation, the vocabulary cognition of lower-grade students is mainly listening and speaking, and the learning of vocabulary requires to combine multiple ways and methods.

(2) When learning English vocabulary, with the increase of vocabulary size and the improvement of psychological cognition, automatically matching the word form and lexical meaning of the vocabulary can enhance the English reading proficiency; for the students' cognition, there is no essential difference between English learning and their mother tongue learning, they don't have to consider the vocabulary changes all the time.

(3) The psychological cognition process of English vocabulary can be divided into three stages: the stage focusing on the structure and pronunciation of words; the stage forming the concept of English and corresponding Chinese translation; and the stage of the summary and

integration of English vocabulary in the learning process, and most people stop learning from this stage.

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