A Visual Analysis of English Vocabulary Acquisition Research in China (2005-2025) Based on CiteSpace

Liu Fen

College of Foreign Languages Shandong University of Science and Technology, Qingdao, Shandong, 266590, China

Abstract: This study employs CiteSpace to conduct a visual analysis of 309 articles related to English vocabulary acquisition and English vocabulary learning published in CNKI core journals from 2005 to 2025. The analysis outlines the trends, research hotspots, and knowledge structure of studies on English vocabulary acquisition in China. The results show that although research in this field was active in the early years, the number of publications in core journals has declined in recent years, indicating fluctuations in research attention. Overall, research hotspots mainly focus on learning strategies, learner differences, cognitive mechanisms, and technology-based vocabulary learning models. The research themes continue to expand, with increasingly various perspectives and methodologies. This study aims to provide insights for the development and expansion of second language English vocabulary acquisition research in future.

Keywords: English vocabulary acquisition; CiteSpace; Second language acquisition

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1. Introduction

Vocabulary is the foundation of language learning, and its acquisition process plays an important role in second language acquisition. With the deepening of English education in China, English vocabulary acquisition has gradually gained widespread attention as a research focus. Many studies have explored factors influencing English vocabulary acquisition, such as output tasks and glossing [1], language proficiency [17], and vocabulary presentation methods [9], acquisition strategies like memory strategies and affective strategies [5], and reviews of second language vocabulary acquisition research [14]. These studies aim to uncover effective ways and mechanisms for promoting vocabulary learning. However, most current studies are case-specific or based on experiential summaries, with relatively few focusing on overall research trends, hot topics, and quantitative analysis.

Therefore, this paper employs the visualization tool CiteSpace to systematically review literature related to English vocabulary acquisition published by Chinese scholars in CNKI core journals from 2005 to August 2025. The aim is to reveal the trends, research hotspots, and future directions in this field, providing systematic references and theoretical support for subsequent research.

2. Data Source and Analysis

(1) Data sources

This study uses data from the CNKI Academic Journal Database, limited to Peking University Core Journals, CSSCI,

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About the Author

Liu Fen (2002-), female, of Han ethnicity, a native of Wuhan, Hubei Province. She is currently a Master's candidate, with her research interest focusing on Foreign Linguistics and Applied Linguistics.

and CSCD. Using topic keywords related to English vocabulary acquisition such as "English vocabulary acquisition" and "English vocabulary learning", the literature search was conducted for the period from 2005 to 2025. After manual screening, a total of 309 relevant articles were selected.

(2) Data analysis

CiteSpace 6.3.R1, a Java-based visualization tool, was used to analyze the selected literature. The time span ranged from January 2005 to August 2025, with one-year time slice. Publication output was analyzed to show overall research trends. Keyword co-occurrence, clustering, and burst analyses were then conducted. These analyses were used to identify major research topics and new trends in studies on English vocabulary acquisition in China.

3. Analysis of Research on English Vocabulary Acquisition

(1) Annual publication trends

As shown in Figure 1, between January 2005 and August 2025, publication output on English vocabulary acquisition in Chinese core journals first increased, then fluctuated, and later declined.

From 2005 to 2015, the number of publications remained relatively stable, at around 20 articles per year. A peak occurred in 2009 with 26 articles, and another high point appeared in 2014 with 25 articles. This trend may be related to English education reforms in China and increased attention to education research in core journals. After 2016, the number of publications showed stronger fluctuations and an overall downward trend. Although there was a short increase in 2016, annual output fell to five articles in 2018 and further dropped to two articles in 2022. By 2025, only three articles had been published. The underlying reasons for this change remain unclear and deserve further exploration in future research.

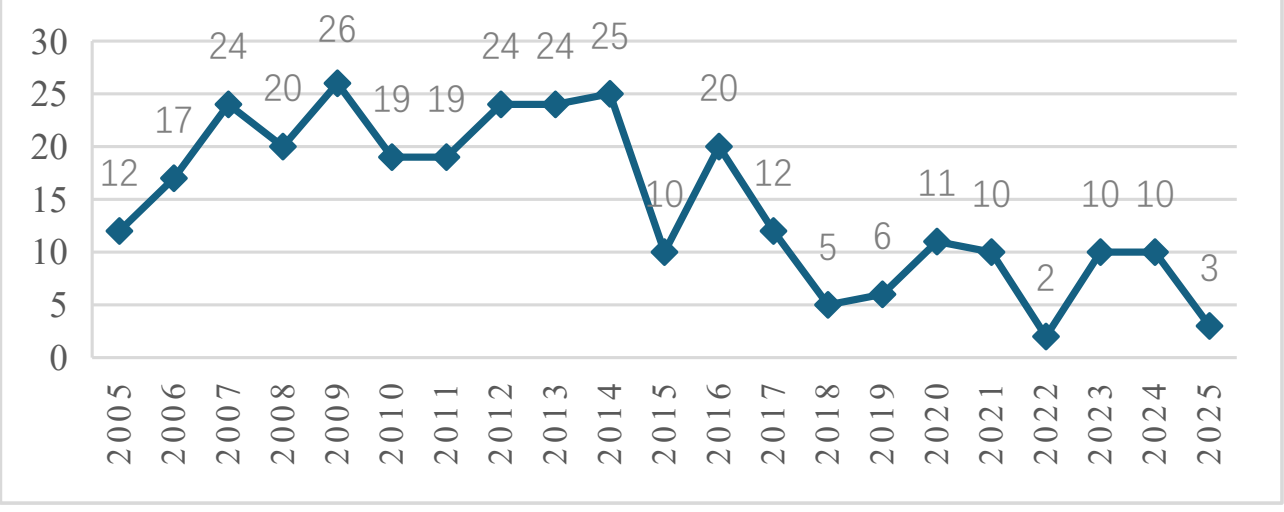


Figure 1. Trends in publications on English vocabulary acquisition in China (2005–2025)

(2) Research hotspots and trends in English vocabulary acquisition in China

1) Keyword co-occurrence analysis

Keywords summarize the main topics of academic publications and provide an overview of research hotspots and trends. In the visualization map, larger keywords represent higher frequencies. Figure 2 shows the keyword co-occurrence map of English vocabulary acquisition.



Figure 2. Keyword co-occurrence map of English vocabulary acquisition research in China (2005-2025)

As shown in Figure 2, the network consists of 295 nodes and 417 links, with a density of 0.0096. A large number of keywords are organized around the central concept of vocabulary acquisition. In the central area, keywords such as vocabulary acquisition, vocabulary learning, vocabulary teaching, English vocabulary, learning strategies, and mobile learning are particularly prominent, indicating their high co-occurrence frequency and important status in this research field. For example, Yang et al. analyzed the development directions and trends of L2 vocabulary acquisition research from the perspective of the continuation paradigm [14]. The close association between learning strategies and vocabulary acquisition suggests that researchers place strong emphasis on the role of different strategies in the acquisition process, including metacognitive strategies, memory strategies, and contextual inferencing strategies. For example, Kang carried out a 16-week strategy training program with students. The results showed that memory and affective strategies helped learners plan their learning more clearly and efficiently. As a result, learners achieved better retention of English vocabulary [5].

In addition, keywords such as second language acquisition, college students, primary school English, cognitive processing, mental lexicon, corpus, working memory, and language output also show relatively high co-occurrence frequencies, reflecting a multidimensional exploration of the vocabulary acquisition process. From the perspective of learner populations, research has focused on learners of different ages and proficiency levels, including college students, secondary school students, primary school learners, and adult learners. From a methodological perspective, researchers have not only emphasized the effectiveness of instructional approaches, but have also paid increasing attention to individual differences and underlying psychological mechanisms, such as the roles of attentional resources, cognitive load, and working memory in vocabulary processing.

Notably, several keywords appear at the periphery of the map, such as vocabulary association [3], context construction [7], and culture-loaded words [18]. These words show relatively low frequencies of occurrence but may reflect emerging research topics related to cognitive psychology, empirical investigation, and in-depth lexical processing, thereby offering possible directions for subsequent studies.

2) Keyword cluster analysis

Based on the keyword co-occurrence analysis, this study conducted a cluster analysis using the LLR (log-likelihood ratio) method, resulting in a keyword cluster knowledge map (see Figure 3). The cluster numbers reflect cluster size, with smaller numbers indicating larger clusters [11]. The modularity value (Q) of the map is 0.7504, and the average silhouette value (S) is 0.9262. A Q value > 0.3 indicates a clearly defined map structure, while S > 0.5 suggests reasonable clustering; when S > 0.7, it indicates efficient clustering with high reliability. In summary, this cluster map demonstrates both reliability and a well-defined structure.

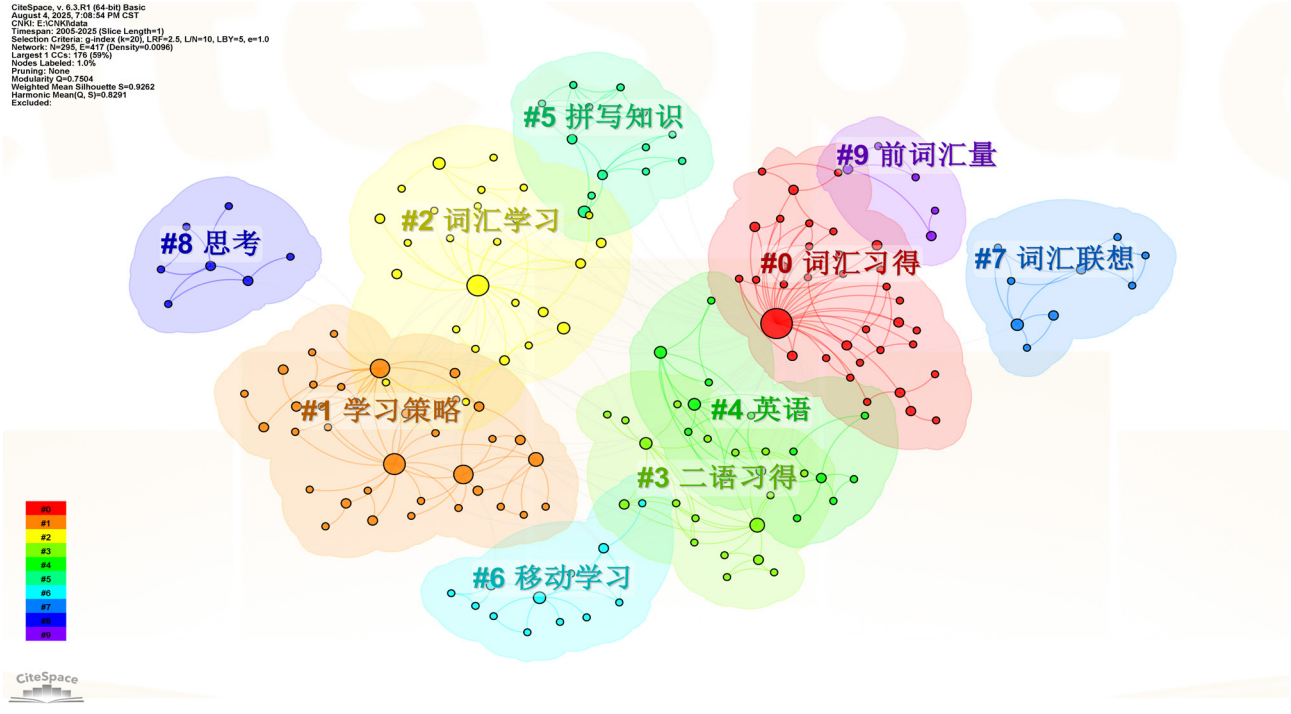


Figure 3. Keyword cluster map of English vocabulary acquisition research in China (2005-2025)

As shown in the cluster map, this study identified 10 major clusters, each representing a different area of English vocabulary research in China. Based on a review of the cluster content, the main research focus can be grouped into four directions: learning strategies (#0, #1, #2), learner differences (#3, #4), cognitive mechanism (#5, #7, #8, #9), and technology-based vocabulary learning models (#6).

① Learning strategies

This line of research represents the traditional backbone of English vocabulary acquisition studies in China, focusing on various types of vocabulary teaching designs, strategy use [2], and the effects of task models on learning outcomes. For example, Zhang and Yang [16] analyzed vocabulary use in medical humanities writing tasks using natural language processing and found that strategy use significantly influenced lexical density and complexity. Other studies have explored interventions such as continuation tasks, production tasks, and sentence-making tasks, showing that the type of instructional task is closely linked to the depth of vocabulary acquisition. Frequent

attention has also been given to dictionary use, semantic association, and guessing strategies, providing diverse pathways for instructional practice.

② Learner differences

This direction focuses on vocabulary learning trajectories from the broader perspective of L2 acquisition theory, examining variables such as language proficiency levels, learning backgrounds, and language environments, with particular attention to how individual learner characteristics and contextual factors moderate vocabulary learning outcomes. For instance, Wu and Li conducted reading experiments to investigate the Matthew effect in L2 vocabulary, showing that prior vocabulary knowledge and contextual comprehension abilities contribute to differential vocabulary acquisition outcomes [13]. Li and Li employed ERP methods to study incidental vocabulary learning in advanced English learners, emphasizing that learners with high contextual engagement demonstrate stronger semantic integration abilities [6]. Collectively, these studies highlight the interactive effects of individual differences and input features, enriching research methods and expanding the scope of traditional instructional studies.

③ Cognitive mechanism

Research on cognitive psychological mechanisms has received increasing attention and become an important theoretical focus. This area studies processes such as lexical recognition, mental lexicon representation, semantic association, emotional word processing, and form-sound relationships. Recent research is shifting from broad strategy studies to more detailed cognitive mechanisms, often using tools like ERP and eye-tracking. For example, Ren et al. used ERP methods to examine how semantic representations affect vocabulary learning. Their results showed that perceptual symbol representations increased the depth of late-stage lexical encoding and supported the use of multimodal information to improve image-based word recognition, which in turn implicitly enhanced vocabulary learning outcomes [12]. Chen et al. examined the structure of the English L2 mental lexicon using network science methods [4]. Yu et al. showed that Chinese-background learners rely heavily on orthography-phonology links, suggesting that orthographic awareness affects L2 lexical processing [15]. Overall, cognitive studies are becoming more experimental and micro-level, providing new evidence on how vocabulary is acquired.

④ Technology-based vocabulary learning models

This direction reflects the rapid growth of technology-assisted vocabulary learning in recent years. Research mainly focuses on app-based learning, virtual reality (VR), and AI personalized feedback systems, highlighting how technology can improve learners' motivation, efficiency, and retention. Liu and Wang found that between 2012 and 2023, mobile learning technologies (e.g., multimodal apps, gamified designs, VR) reshaped L2 vocabulary learning, enhancing memory and self-directed study. They also noted that domestic studies mainly examine tool effectiveness with college students, while international research emphasizes AI-based personalization, deep lexical processing, and interdisciplinary integration [8]. Luan et al. showed that immersive VR tasks can significantly boost learners' motivation [10]. Overall, these studies suggest that educational technology is increasingly supporting vocabulary acquisition and promoting more digital and collaborative learning approaches.

3) Keyword burst analysis

A keyword burst map reflects the sudden increase in the research attention or influence of certain keywords within a specific time period in a given field. It is commonly used to identify emerging topics, phase-specific hotspots, and their temporal trends. Based on the keyword burst map (see Figure 4), the analysis indicates that research hotspots in this field have dynamically evolved from strategy-focused instruction and cognitive theories toward integrated applied studies, showing clear phase-specific characteristics.

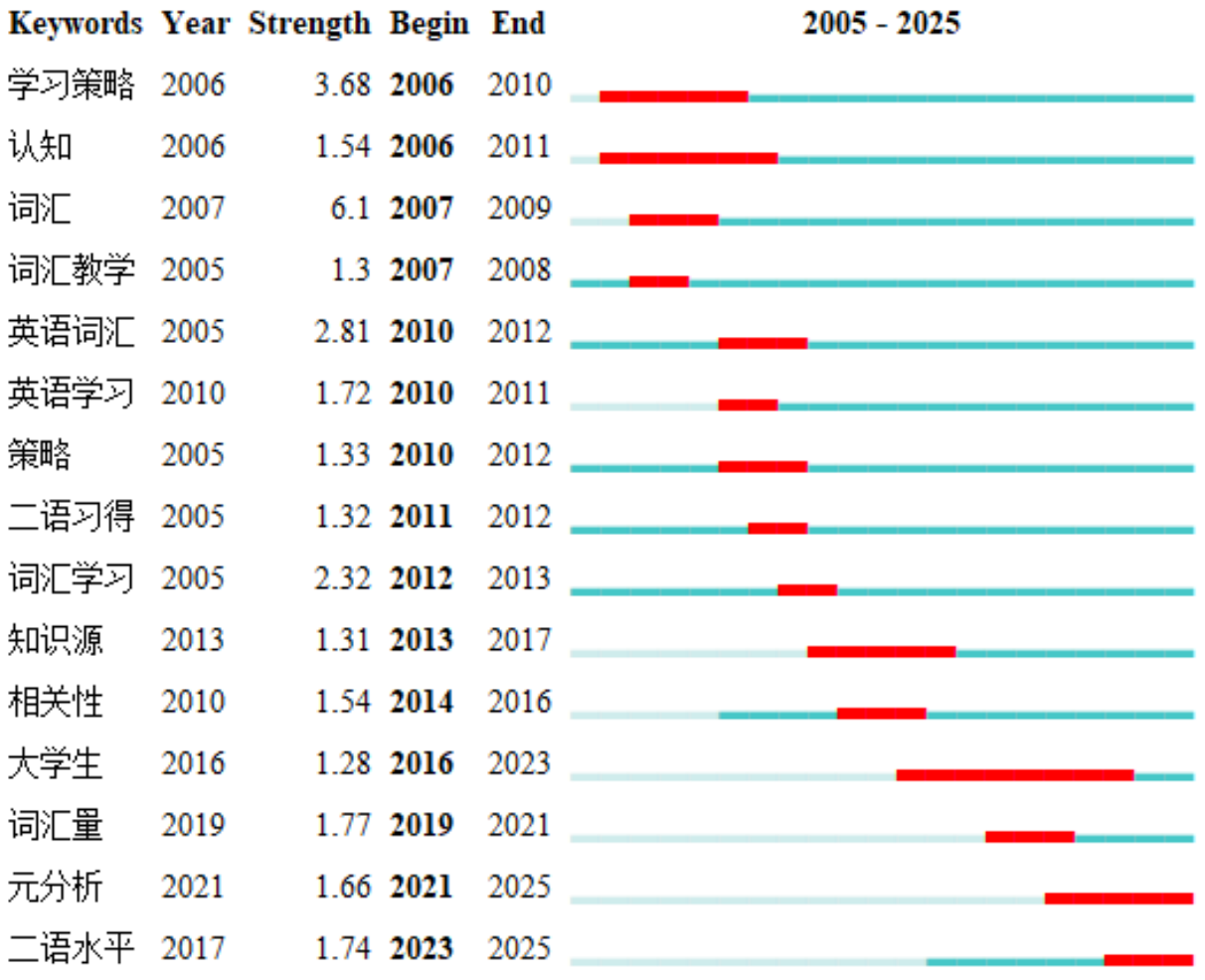


Figure 4. Keyword burst map of English vocabulary acquisition research in China(2005-2025)

In the early stage (2005-2012), research focused on keywords such as learning strategies, cognition, vocabulary, and vocabulary teaching, reflecting an emphasis on improving vocabulary through instructional interventions and strategy training. Topics like vocabulary input, presentation methods, and classroom teaching highlight the teaching-oriented nature of early L2 acquisition studies.

In the mid-stage (2010-2017), keywords such as English vocabulary, English learning, strategy, second language acquisition, and vocabulary learning emerged, with burst strengths of 1.3-2.81, indicating a shift from practical teaching to theoretical development and learner differences. Keywords like relevance and knowledge source suggest growing attention to connections between vocabulary acquisition, other language abilities, input types, and contextual factors.

Since 2018, research has become more refined and integrative. The emergence of college students shows a focus on specific learner groups, while vocabulary size reflects increased use of quantitative measures. Meta-analysis indicates a systematic integration of previous findings. Most recently, L2 proficiency (2023-2025) highlights attention to the link between vocabulary learning and overall language development, showing a move toward broader theoretical integration.

4. Conclusion

This study conducted a visual analysis of literature on English vocabulary acquisition in China from 2005 to 2025, based on the CNKI core journal database using CiteSpace. By systematically examining keyword co-occurrence maps, cluster maps, and burst terms, the study identified four main research focuses in the field. These hotspots illustrate the key priorities and trends of domestic research from different perspectives.

Overall, over the past two decades, research on English vocabulary acquisition in China has gradually evolved from classroom-based instruction toward theoretical exploration and technological integration, with increasingly diverse and in-depth research methods. With the development of new technologies such as artificial intelligence and mobile learning, vocabulary acquisition research will continue to face new opportunities and challenges. Future studies could pay more attention to individual learner differences, the effective use of technological tools, and the interactions between vocabulary learning and other language skills. It is hoped that the analysis presented in this study can provide reference and inspiration for related research.

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