

Visual Analysis of L2 Vocabulary Acquisition Research Based On Vosviewer (2011-2021)

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ABSTRACT

This paper attempts to review L2 vocabulary acquisition research from 2011 to 2021 in the hope of figuring out the related research trends in recent 10 years and offering suggestions for further studies. Data in this paper is derived from Web of Science. 1,752 articles have been reviewed. Research instrument adopted in this paper is VOSviewer. Through analysis and discussion, it is found that leading countries/regions, universities and authors have all changed over time. In terms of countries, USA once dominated but then China began to lead. As for universities, Radboud Univ Nijmegen dominated mainly in 2018, while the new university that has dominated the research situation since 2019 is Educ Univ Hong Kong. For authors, Paradis, Johanne and Chen, Xi produced more articles around 2015, but then the leading role transferred to Verhoeven, Ludo, Segers, Eliane and some independent new authors. Besides, the previous keywords were tightly around this topic "L2 vocabulary acquisition", but with the depth of those studies, more specific and newer topics have been noticed. As for the potential trends in the future, China is gradually on the stage. There are also several new but promising countries/regions, universities and authors emerging in this field. Finally, research topics in L2 vocabulary acquisition have become more specific.

Keywords: L2 vocabulary acquisition, literature review, visual analysis, VOSviewer

INTRODUCTION

Vocabulary, as an essential element of language itself, has gained more attention in SLA research. Researchers have conducted studies related to vocabulary from various perspectives, such as vocabulary learning beliefs and strategies (He et al., 2021), influencing factors on learners' lexical performance (Qiao & Wang, 2020), and also some psychological views (Zhao & Gu, 2020). However, in consideration of rapid development of society and technology, current status on L2 vocabulary acquisition research seems to become richer and more complex. In order to have a better understanding of L2 vocabulary acquisition, it is worthy of figuring out the hot topics of its researches and trends in recent years.

On account of the advantage of intuition, visual analysis becomes a common choice to do knowledge arrangement. With the help of such ways as knowledge mapping and CiteSpace, we can realize visual analysis.

In addition to CiteSpace, VOSviewer is also a widely used software to do visual analysis. Researches using VOSviewer have embodied

such disciplines as medical science (Samah, 2021; Zhang et al., 2021), environmental science (Guo et al., 2021; Zhou et al., 2021) and architecture (e.g. Xu et al., 2021). Nevertheless, VOSviewer has not become widely used in linguistics. Therefore, this paper attempts to use VOSviewer to retrospect L2 vocabulary acquisition research in the last ten years and also provide the corresponding visual analysis. The purpose of this study is twofold: one is to grasp the research trend of L2 vocabulary acquisition in SLA so that researchers can better understand second language acquisition from the lexical level; the other is to enrich the application of VOSviewer in the discipline of linguistics and promote visual analysis when arranging knowledge is needed.

MATERIALS AND METHODS

Research samples

Research samples in this paper are selected from a website named Web of Science (WOS), which provides subscription-based access to multiple databases with comprehensive citation data for many different academic disciplines. To be more detailed, research articles are selected

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from one corpus in Web of Science, that is Web of Science Core Collection. In addition, in order to avoid omission, the topic for retrieval is set as “L2 vocabulary acquisition” OR “L2 vocabulary learning” OR “second language vocabulary

acquisition” OR “second language vocabulary learning”, and only articles published from 2011 to 2021 count. After searching, there are in total 1,752 research articles that suit the purpose. Table 1 presents the above information.

Table1. Information on research samples

	Search Content
Source of Data	Web of Science Core Collection
Search Method	Topic = “L2 vocabulary acquisition” OR “L2 vocabulary learning” OR “second language vocabulary acquisition” OR “second language vocabulary learning”
Publication Years	2011-2021
Search Type	Articles
Search Results	1,752
Search Time	2021.7.21

RESEARCH INSTRUMENT

Research instrument adopted in this paper is VOSviewer. It is a software tool for constructing and visualizing bibliometric networks. There is a connection between VOSviewer and WOS, that is VOSviewer can create files to process data downloaded from WOS. Hence, it is convenient to use VOSviewer to analyze research articles derived from WOS. Furthermore, VOSviewer provides three types of result views - network, overlay and density visualizations. Network visualizations reflect the relationship between terms, overlay visualizations can be used to show developments over time, and density visualizations provide a quick overview of the main areas in a bibliometric network. In the following part, results of overlay visualizations will be mainly interpreted.

RESEARCH QUESTIONS

There are two research questions involved in this study:

What is the research status of L2 vocabulary acquisition research from 2011 to 2021?

What are the further research trends in L2 vocabulary acquisition research?

RESEARCH PROCEDURES

The research procedures are composed of four steps. The first step is data collection and processing where we will select the appropriate research samples from Web of Science. The second step is to operate VOSviewer to get visualizations. After that, we will analyze those screenshots from VOSviewer and try to answer the research question. In the final place, we will make a conclusion.

RESULTS AND DISCUSSION

Research status of L2 vocabulary acquisition research from 2011 to 2021

Active countries/regions

To begin with, we explore the active countries/regions which play a major role in L2 vocabulary acquisition research from 2011 to 2021. Table 2 presents the top ten countries/regions following the order of articles from high to low.

Table2. The selected top ten countries/regions

Country	Articles	Citations	Total link strength
USA	595	7936	187
the Peoples' Republic of China	192	1406	94
England	157	2394	118
Canada	132	1842	78
Spain	98	608	44
Taiwan	88	927	31
Germany	83	544	56
Netherlands	80	1145	54
Japan	66	501	25
Belgium	61	927	45

According to Table 2, USA is the most active country that focuses on L2 vocabulary

acquisition with the most articles of 595. China, England and Canada are the second active

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countries whose number of the published articles is between 100 and 200. Then, the

articles of the rest countries/regions, such as Spain, Germany and Belgium, are below 100.

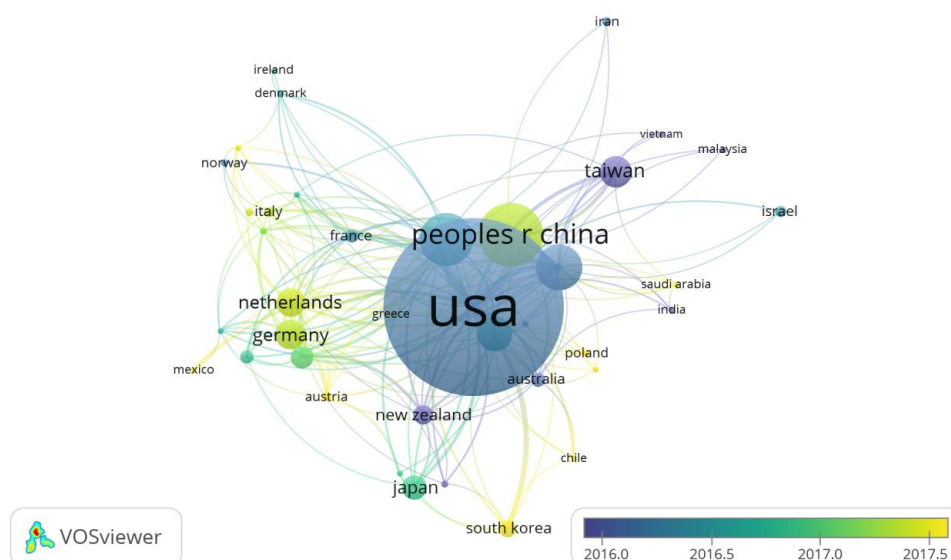


FIGURE 1. *Overlay visualization of countries/regions*

Figure 1 presents the results of overlay visualization on countries/regions, through which we can find the connections of countries/regions and the changes of those connections over time. It is worth noting that Figure 1 only shows the items that have connections with each other and the largest set of connected items consists of 39 items. Furthermore, in this screenshot, circle represents items, lines show the connections among items and the color follows the years. According to Figure 1, from the size of circles and lines, it is found that USA have the biggest circle and the most connecting lines with other items and China the second. Apparently, the situation matches Table 2. In addition, based on the colors of circles and lines, we can find that in 2016 USA might dominated the global L2

vocabulary acquisition research but in 2017 and later, China gradually took the dominating position. Besides, some countries/regions have emerged since 2017, like Austria, Netherlands and South Korea.

Active universities

Table 3 introduces the information on the top ten active universities in the field of L2 vocabulary acquisition research. It is shown that Radboud Univ Nijmegen, Victoria Univ Wellington and Educ Univ Hong Kong are the top three most active universities in the field of L2 vocabulary acquisition, whose number of articles is between 30 and 40. The leftover universities, like Univ Ghent, Univ Hong Kong and Univ Calif Irvine, have articles less than 30 but more than 20.

Table 3. *The selected top ten universities*

University	Articles	Citations	Total link strength
Radboud Univ Nijmegen	36	467	24
Victoria Univ Wellington	36	746	15
Educ Univ Hong Kong	30	134	17
Univ Ghent	29	390	27
Univ Hong Kong	26	284	36
Natl Taiwan normal univ	26	281	11
Univ Calif Irvine	25	257	37
Univ Utrecht	23	380	26
Katholieke Univ Leuven	23	290	10
Chinese Univ Hong Kong	22	275	30

The following Figure 2 and Figure 3 show the connection situation among universities from two perspective. Since there are 134 items in the

network not connected to each other, Figure 2 presents the largest set of connected universities consisting of 125 items while Figure 3 presents

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all the universities.

Based on Figure 2, we can see that Radboud Univ Nijmegen dominated mainly in 2018, and it has some older connections with Univ Toronto (2015) and Penn State Univ (2016), and

some newer connections with Univ Ghent (2018) and Univ Lancaster (2019). The new university that has dominated the research situation since 2019 is Educ Univ Hong Kong.

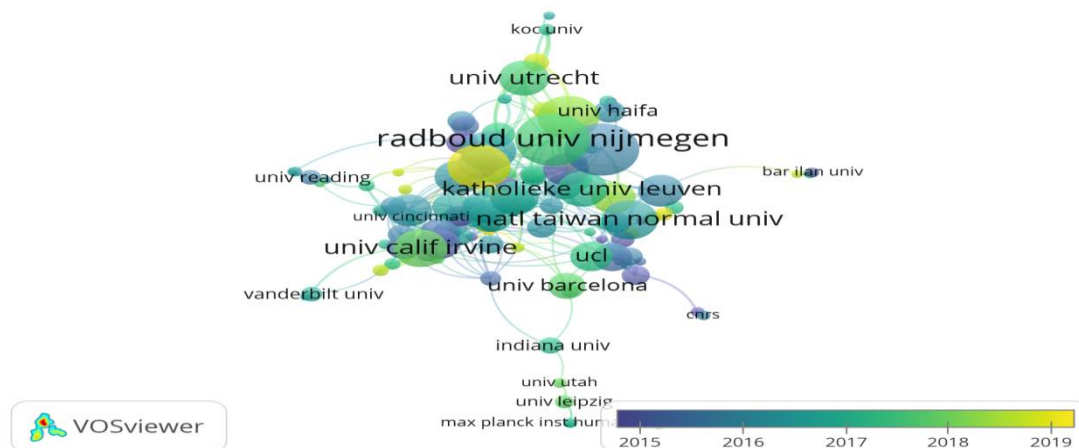


FIGURE2. *Overlay visualization of the largest set of connected universities*

Compared with Figure 2, Figure 3 shows an overall view of all the involved universities. Based on the figure below, it is presented that apart from the biggest cluster centered around Radboud Univ Nijmegen, there are some

universities that have done researches on L2 vocabulary acquisition independently, among which the previous active universities are Univ Castilla La Mancha, Najran Univ and so on, while the quite new active one is Univ Helsinki.

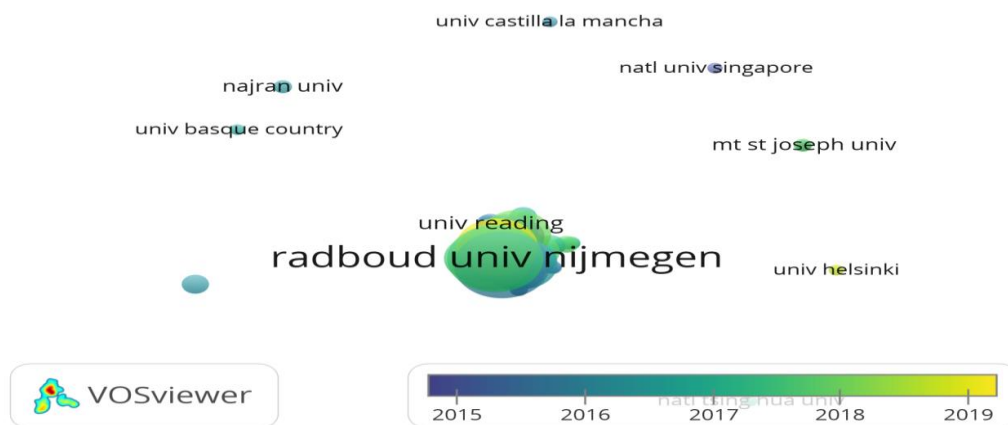


FIGURE3. *Overlay visualization of all the universities*

Active authors

This section relates to the active authors who have thrown themselves into the field of L2 vocabulary acquisition research. The following table reveals the top ten authors according to the

articles they have. It is obvious that Webb and Stuart are the most active authors with the most articles - 19. The number of articles for the rest of authors are from 12 to 16.

Table4. *The selected top ten authors*

Author	Articles	Citations	Total link strength
Webb, Stuart	19	308	9
Verhoeven, Ludo	16	144	13
Chen, Xi	14	116	13
Paradis, Johanne	14	468	9
Segers, Eliane	13	69	13

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Saito, Kazuya	13	245	1
Elgort, Irina	12	245	8
Brysbart, Marc	12	139	6
Nakata, Tatsuya	12	175	6
Boers, Frank	11	277	8

In addition, Figure 4 and Figure 5 are the overlay visualizations of the active authors. Some of the 85 items are not connected to each other, therefore we use two figures to show both the largest cluster of connected authors and all the authors. From Figure 4 we can see that there are several circles and the connection lines of them are multiple. In the earlier time, Paradis,

Johanne and Chen, Xi were the most active. However, when it came to 2018 and 2019, Verhoeven & Ludo and Segers & Eliane started to take the lead in L2 vocabulary acquisition research field. Since 2019, some authors have shown up, such as Oudgenoeg-paz, Ora and Vogt, Paul.

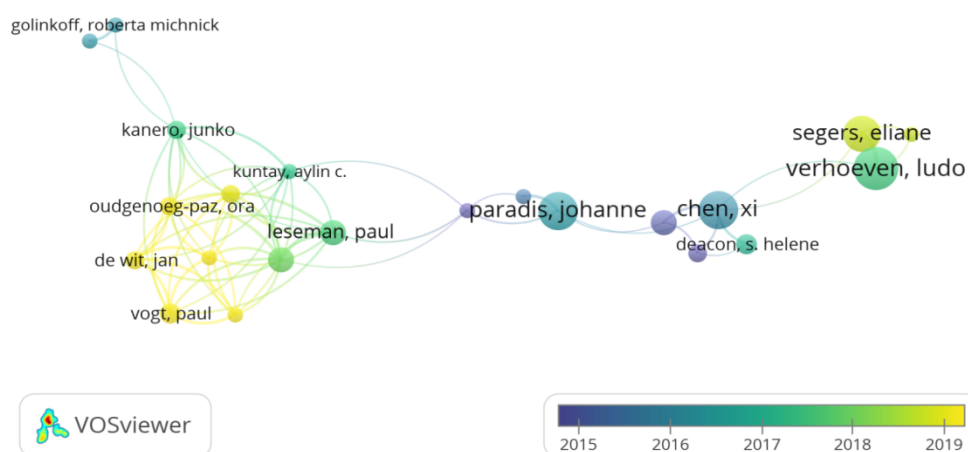


FIGURE 4. *Overlay visualization of the largest set of connected authors*

Figure 5 below demonstrates the visualization of all the authors, which matches the information on Table 4 well. Except for the largest cluster centered on Paradis, Johanne shown in Figure 4, Figure 5 still contains some smaller connected groups such as the group centered at Webb, Stuart, and independent authors, like Kan, Pui Fong. Moreover, by comparing two active

authors in Table 4, that is Webb, Stuart, and Chen, Xi, it is found that the former group were active around 2019 while the latter group were active around 2016. Although, Chen, Xi mainly took the leading role in 2016, they have connections with some newer author-groups, like the one centered around Leseman, Paul, through their other connected authors.

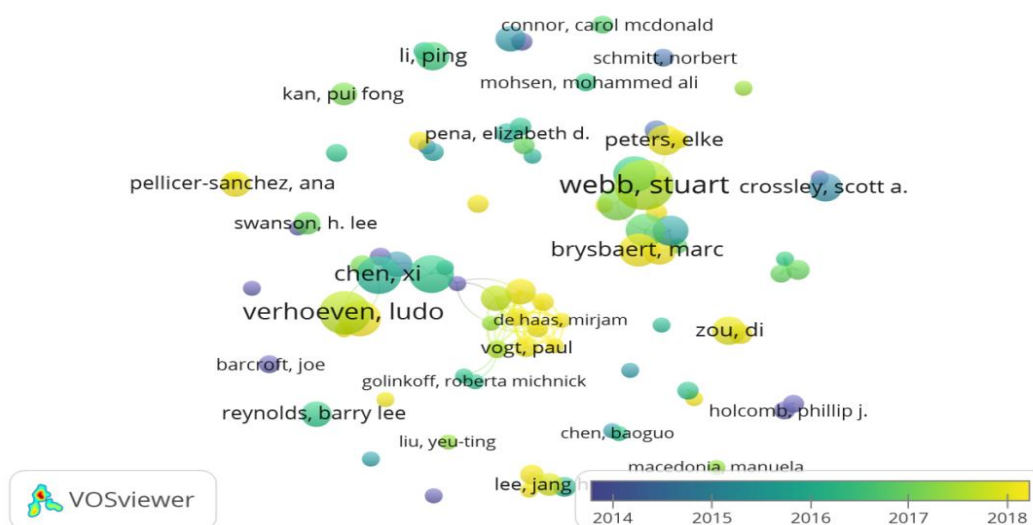


FIGURE 5. *Overlay visualization of all the authors*

keywords were tightly around this topic “L2 vocabulary acquisition”, but with the depth of those studies, more specific and newer topics have been noticed, which reflects that research on L2 vocabulary acquisition has been gradually refined.

Suggestions on the future research trends

Based on the above facts, there are some suggestions on the research trends of L2 vocabulary acquisition research in the future. Firstly, in terms of leading countries, it is believed that China is the most promising country to influence L2 vocabulary acquisition research. Secondly, some emerging universities (e.g. Educ Univ Hong Kong) and authors are believed to accomplish great deeds in the future. Thirdly, enlightened by active keywords in current research, as for further studies, scholars are recommended for some specific topics, such as some mechanisms in psycholinguistics (e.g. working memory and cognition), metalinguistic aspect (e.g. phonology, and lexical access), particular groups (e.g. children, late talkers and teachers) and new forms of learning (e.g. video games, computer games and educational games).

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CONCLUSION

With the help of VOSviewer, this paper analyzes the research status on L2 vocabulary acquisition from 2011 to 2021 in the form of visualization. Active countries/regions, universities, authors and keywords have been figured out. It is found that the research situation is dynamic developing on the whole. Besides, in view of those information, this paper also offers suggestions for further studies. Leading country is most likely to be China. Educ Univ Hong

Kong plays a more and more active role in this field. In addition, more specific topics are worthy studying.

REFERENCES

- [1] GUO Fen, ZHANG Haiyan, SHAO Bo, ZHANG Fujun. Visual analysis of perfluoroalkyl and polyfluoroalkyl substances research in environment - A bibliometric analysis based on Web of science. *Environmental Protection Science*. 2021; (03): 54-61.
- [2] HE Chunxiu, GU Yongqi, MIAO Jia. Longitudinal Studies of Vocabulary Learning Beliefs and Strategies in English Majors. *Technology Enhanced Foreign Language Education*. 2021; (01): 32-37+5.
- [3] QIAO Liting, WANG Wenyu. An Empirical Study of the Impact of Dictionary Use on Learner’s Lexical Performance in L2 Writing: Chinese L2 Learners as an Example. *Foreign Languages Research*. 2020; (05): 36-42+112.
- [4] Samah W Al-Jabi. Current global research landscape on COVID-19 and depressive disorders: Bibliometric and visualization analysis. *World Journal of Psychiatry*. 2021; (06): 253-264.
- [5] XU Jiangying, CHEN Hong, XIONG Yuya. Comparison of Natural Ventilation of Buildings in China and Abroad Based on Bibliometric Analyses. *South Architecture*. 2021; 6:114-123.
- [6] ZHANG Xiao, LV Shijie, CHEN Yingxin, SUN Zheng. Analysis of International Research Hotspots of Nursing Ethical Decision Making Based on VOSviewer. *Medicine and Philosophy*. 2021; 6(12): 27-31.
- [7] ZHAO Cuilian, GU Chenyu. Vertical Spatial Conceptual Metaphor in Chinese EFL Learners’ Representation of Emotion Words-Evidence from Emotion Priming Experiment. *Foreign Languages Research*. 2020; (05): 7-15.
- [8] ZHOU Xiaoqun, FAN Dongsheng, MA Xiaoqing. Bibliometric Analysis of International Studies on Linguistic Landscape with VOSviewer. *Journal of University of Shanghai for Science and Technology (Social Sciences Edition)*. 2021; 7: 1-9.

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