Research Hotspot and Trend of International Oral English Ability Test: Visual Measurement Study Based on VOSviewer

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Abstract—Oral communication is one of the most direct and natural forms of language interaction. Oral ability test is a effective way to evaluate learners' oral English level and language use ability. This study conducted a systematic review of the field of oral ability testing. By employing the VOSviewer visualization tool, we analyzed 247 relevant articles from the Web of Science (WOS) database. In terms of research strength, we identified the most influential countries, institutions, and authors. Furthermore, we explored the most highly cited journals to gain a deeper understanding of the theoretical foundations of oral ability testing. Additionally, through co-occurrence analysis with VOSViewer, we found out the research hotspots in oral ability testing and predicted future development trends. The findings obtained through VOSviewer will deepen the understanding of oral ability testing and provide references for the future development of theorists and practitioners.

Keywords—oral English ability test, VOSviewer, visual analysis, research trend

I. INTRODUCTION

In the context of globalization, many countries and regions need to engage in cooperation on multiple fronts through the medium of foreign languages. In light of this, the ability to produce language, including both oral and written output capabilities, has become a vital component in the cultivation of language education. Compared to written expression, oral language, as the primary form of language acquired by humans, enables speakers and listeners to achieve information exchange within the same time frame, thus more efficiently conveying ideas. However, due to its simultaneity and high degree of flexibility, standardizing the assessment of oral language poses a significant challenge.

Given the increasing significance of oral English ability test, a growing number of scholars have voiced their opinions on its development and existing issues. However, through the analysis of these documents, the existing research papers cover a multitude of directions. There is a lack of a comprehensive review of literature in this field. In light of this, our work aims to explore the current state of research and future trends in this area. We utilize VOSviewer software, with the Web of Science (WOS) database as the data source, to visually present the most influential countries, institutions and authors, as well as the most highly cited documents. Additionally, by summarizing the key terms from the literature, the research hotspots and trends are highlighted.

This study makes three contributions. Firstly, it identifies the most influential countries, institutions, authors, and showcases the most highly cited literature, enhancing the accuracy and credibility of literature searches for researchers. Secondly, it provides a more intuitive reflection of the trends in research hotspots within the field, which makes it clear and easy to trace the origin in this field. Thirdly, it forecasts upcoming research trends, indicating directions for scholars to further investigate.

The next section is the literature review. The results of the bibliometric analysis are then presented. The last part is the conclusion.

II. LITERATURE REVIEW

There is a consensus that the definition of oral ability is not uniform. Bachman and Palmer [1] conceptualizes oral ability as encompassing language use ability, discourse organization ability, appropriateness of expression, and the use of communicative strategies, viewing language ability and communicative context as two distinct components. Chalhoub-Deville [2], based on the Interactional Competence Theory, proposes the concept of language ability within context, suggesting that context is an integral part of language ability.

Regarding the assessment criteria for oral ability, scholars have also offered varying perspectives. Lennon [3] proposes broad fluency, which refers to an individual's comprehensive oral language level, representing the pinnacle of measuring second language oral ability. Some scholars focus on vocabulary, considering it an indicator of language ability [4].

It is evident that different interpretations of language ability significantly impact the methods and focal points of language ability testing. Consequently, in order to ameliorate the fragmented state of language ability assessment, we have conducted a comprehensive review through bibliometric analysis, aiming to present an integrated and systematic overview.

III. MATERIALS AND METHODS

Bibliometric analysis is a quantitative method for reviewing and describing published papers. It involves analyzing the distribution, quantity and relationships of literature to reveal the structural distribution, quantitative relationships, and trends of scientific knowledge. In this paper, we utilize VOSviewer to visualize information through scientific plotting and tabular presentation. This approach allows us to gain insights into the research landscape by transforming complex data into more accessible and interpretable formats.

In terms of data, this study uses the literature on oral

ability testing indexed in the Web of Science (WOS) Core Collection as the data source. By employing the search function with the query "Topic='oral proficiency test' or 'oral ability test' or 'speaking test' or 'oral test'", a total of 265 documents were retrieved. To enhance the accuracy and credibility of the research findings, a secondary screening was conducted to exclude conference papers, theses, and other non-relevant and non-research-oriented documents. Ultimately, 247 documents were selected as the research sample.

IV. RESULT AND DISCUSSION

A. Literature Base Analysis

1) Analysis of country and institutional

Using country/region as the classification criterion, a total of 55 countries/regions are included in the field of oral ability testing, as seen in Table 1. It is noteworthy that the top ten countries/regions account for more than 94% of the total output in this field, highlighting their central role on a global scale. The data indicates that the United States leads in the number of publications in this area, with a total of 64 articles, representing 25.9% of the total publications. It is followed by the United Kingdom with 35 articles and China with 34 articles. It is worth mentioning that although the difference in the number of publications between the UK and China is not significant, the UK's publications have three times the citation count of China's. This suggests that while Chinese scholars produce a substantial number of articles, the quality and international recognition of their work are not as high and require enhancement.

Table 1. Distribution of the top 5 countries/regions in terms of number of publications

Rank	Country /Regin	Distribution of publications	Citation court	Link strength
1	United States	64	1192	49
2	United Kingdom	35	933	23
3	China	34	282	14
4	Taiwan	19	154	9
5	Brazil	18	943	10

In terms of research institutions, a total of 329 institutions worldwide are engaged in research on oral ability testing. By setting the publication threshold to 2 articles, we obtained 59 nodes, as shown in Fig. 1. Overall, the collaboration among members is relatively dispersed, leading to a situation characterized by "regional concentration with overall dispersion." Among the top ten institutions by publication volume, universities account for 80% of the total research institutions, indicating that higher education institutions are the key sources of information in the field of oral ability testing. Within the scope of the search, the University of Bedfordshire and the University of São Paulo rank first, each with 11 articles.
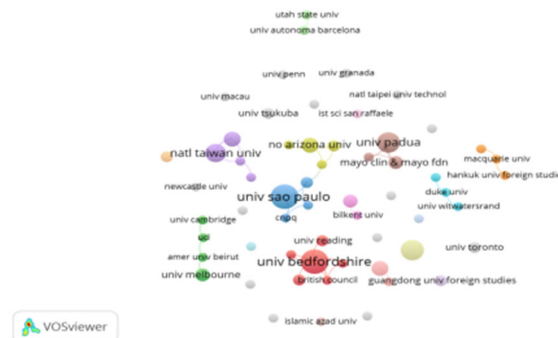

Fig. 1. Co-citation of institution.

2) Analysis of author

By conducting a co-citation analysis of the authors of the collected literature, a total of 830 authors were involved in international research related to oral ability testing. With the publication threshold adjusted to 2, 53 authors were extracted, as shown in Fig. 2. Data analysis reveals that the proportion of prolific authors in the field of international oral ability testing is not high. Among them, Huang published the most articles, ranking first with 8 publications within the search range. These 53 authors have collaborated 91 times, and the overall cooperation network shows a trend of "group independence" with low cohesion between groups.
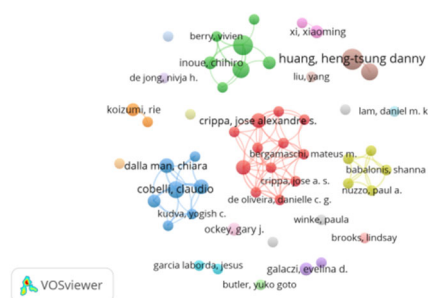

Fig. 2. Co-citation of cited authors.

Upon comprehensive examination of the authors' contributions in this field, although the number of publications per author is relatively low, there is a group of highly cited authors whose academic value is significant. To further conduct a quantitative analysis, the top five authors were selected based on the total number of citations, as seen in Table 2. Statistical analysis of the data shows that the number of publications by highly cited authors is relatively limited, totaling 12 articles, but each has an average citation frequency of over 100 times, which confirms the high academic value and broad influence of these authors' scholarly achievements. The author with the highest total number of citations is Crippa, who published 4 articles within the search range and was cited 582 times, demonstrating their important position in the field of international oral ability testing.

Table 2. Top 5 cited authors

Rank	Author	Distribution of publications	Citation court	Average citations
1	Crippa	4	582	145.5
2	Chagas	2	575	287.5
3	Bergamaschi	2	529	264.5
4	Nardi	2	529	264.5
5	Rocio	2	528	264

B. Analysis of Research Hotspots and Trends

Keywords, as the core terms that encapsulate the essence of literature, hold a significant position in uncovering high-profile research topics within a particular domain. By employing a keyword co-occurrence knowledge map, the research frontiers of the field can be more intuitively and effectively highlighted. Upon importing the retrieved documents into VOSviewer, a total of 822 keywords were obtained in the domain of oral ability testing. To further refine the results, the threshold for keyword occurrence was set to two or more times, yielding 84 high-frequency keywords. After additional screening, 58 interconnected core keywords were ultimately identified, as depicted in Fig. 3. With the aid of the keyword knowledge map and by integrating a review of the literature, all keywords can be divided into four clusters, namely #1 Emotions and Influencing Factors, #2 Testing Indicators and Measures, #3 Oral Interactive Expression, and #4 Technological Oral Assessment.
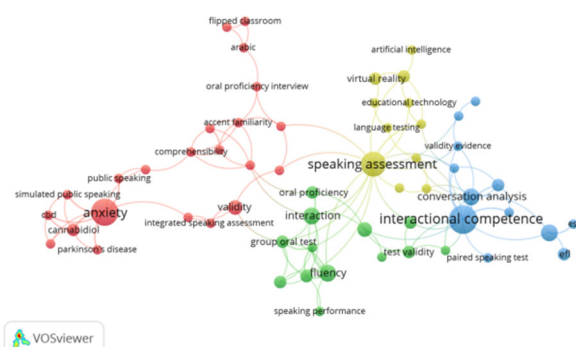

Fig. 3. Co-occurrence of keywords.

Cluster 1 encompasses 22 cluster members (e.g. Anxiety, Cannabidiol, Public Speaking, and Social Anxiety Disorder). Oral ability tests, due to their high degree of uncertainty and output difficulty, place substantial demands on language learners' linguistic abilities, becoming a significant source of anxiety. Hewitt *et al.* [5] replicated Phillips' research, confirming the negative effects of anxiety in oral testing and innovatively proposing that participants with moderate anxiety levels may exacerbate their anxiety in two oral performance criteria. Given the substantial impact of anxiety on students' performance in oral tests, some scholars suggested that teachers should actively intervene, guiding students in deep breathing exercises or positive self-affirmations [6]. Linares [7], delving into the medical aspect, focuses on the field of public speaking and through experimentation confirmed the anxiolytic properties of Cannabidiol (CBD).

Cluster 2 contains 13 cluster members (e.g. Accuracy, Complexity, Fluency, Oral Proficiency, and Speaking Performance). Compared to written tests, oral ability tests are flexible in form and open in response. Test designers must consider a broader range of discourse features of the test-takers, such as fluency, lexical complexity, and grammatical accuracy [8]. However, constrained by the "Trade-off Hypothesis," traditional language teaching posits that learners cannot achieve both accuracy and fluency simultaneously in oral expression. Yet, Toni [9] argues that Form-Focused Second Language Teaching (FFSL) played an affirmative role in enhancing both accuracy and fluency in oral testing, offering new practical possibilities for teachers in oral training and the preparation of related teaching materials. Handley *et al.* [10] focused on oral fluency, using pronunciation rate, clause pause frequency, and repetition rate as direct indicators of measuring oral fluency, providing valuable references for oral teaching and assessment.

Cluster 3 includes 12 cluster members (e.g., Interactional Competence, Co-construction, Paired Speaking, Conversation Analysis). As a mode of communication, oral language requires interaction among multiple participants. Oral interaction exhibits considerable dynamism and co-constructive nature, achieving shared understanding through continuous evolution and development among interlocutors [11]. Oral interaction plays a significant role in language teaching, learning, and assessment. In oral ability testing, paired speaking tests can more effectively reveal the interactive competence of the test-takers [12]. However, current scoring criteria for interactional competence are not yet clear. May [13], from the perspective of test raters, notes that non-verbal elements such as body language can significantly influence raters' judgments of interactional competence.

Cluster 4 has 11 cluster members (e.g. Artificial Intelligence, Educational Technology, Language Testing, and Speaking Assessment). With the rapid advancement of technology, Computer-Mediated Communication (CMC), has become a current hot topic. For learners with limited parental English proficiency, CMC demonstrates stronger applicability, assisting learners from various family types in completing daily English oral assignments [14]. However, some scholars have raised doubts, suggesting that due to its high cognitive load, CMC is more suitable for students with stronger English ability [15]. In addition, a series of new mobile applications oriented towards high-stakes oral tests (such as IELTS) have emerged in recent years. These applications aim to leverage artificial intelligence technology to provide learners with customized learning opportunities and immediate automated feedback to address various oral ability tests and improve their oral test scores [16].

To further explore the research frontiers in the field of oral ability testing, this study conducts a statistical analysis of the average occurrence times of keywords, as shown in Fig. 4. Analysis reveals that terms such as "Artificial Intelligence" and "Virtual Reality" stand out, suggesting that the integration of technology with oral ability testing has become a hot topic in contemporary research. Leveraging internet technology, computer-assisted oral testing has emerged as a new force in the reform of English language teaching. Compared to traditional oral testing, it can enhance the objectivity of assessment results, accelerate testing efficiency, reduce testing costs, and alleviate the test-takers' oral pressure.
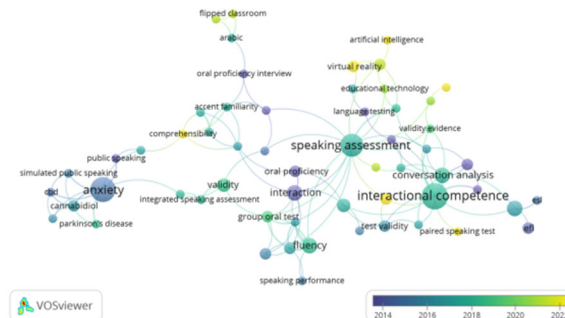

Fig. 4. High-frequency keyword co-occurrence clustering overlay.

V. CONCLUSION

This study conducts a bibliometric analysis of the field of oral ability testing using VOSviewer, providing a comprehensive overview of its structure and development. With the aid of graphical representations, this research identifies the most influential countries, institutions, and authors, and showcases highly cited articles, assisting scholars in selecting reference journals and authors when writing papers in this area. Furthermore, by analyzing keywords, this study pinpoints research hotspots and trends, aiming to offer scholars new perspective of investigation. In addition, this study finds out that there are still issues within the field of oral ability testing, such as a lack of collaboration intensity, which hinders in-depth literature exploration. It is imperative for subsequent researchers to strengthen collaborative efforts to address these shortcomings.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Shiying analyzed the data and wrote the paper; Weijie embellished and revised paper; both authors had approved the final version.

REFERENCES

[1] L. F. Bachman and A. S. Palmer, *Language Testing in Practice*, Oxford, U.K.: Oxford University Press, 1996.

[2] M. Chalhoub-Deville, "Second language interaction: Current perspectives and future trends," *Language Testing*, vol. 20, no. 4, pp. 369–383, October 2003.

[3] P. Lennon, "Investigating fluency in EFL: A quantitative approach," *Language Learning*, vol. 40, no. 3, pp. 387–417, September 1990.

[4] I. S. P. Nation, *Learning Vocabulary in Another Language*, 2nd ed. Cambridge, U.K.: Cambridge University Press, 2013.

[5] E. Hewitt and J. Stephenson, "Foreign language anxiety and oral exam performance: A replication of Phillips's MLJ study," *The Modern Language Journal*, vol. 96, no. 2, pp. 170–189, September 2012.

[6] H. D. Huang, S. A. Hung, and H. V. Hong, "Test-taker characteristics and integrated speaking test performance: A path-analytic study," *Language Assessment Quarterly*, vol. 13, no. 4, pp. 283–301, December 2016.

[7] I. M. Linares, A. W. Zuard, L. C. Pereira *et al*, "Cannabidiol presents an inverted U-shaped dose-response curve in a simulated public speaking test," *Brazilian Journal of Psychiatry*, vol. 41, pp. 9–14, January 2018.

[8] N. Iwashita, A. Brown, T. McNamara, and S. O'hagan, "Assessed levels of second language speaking proficiency: How distinct?" *Applied Linguistics*, vol. 29, no. 1, pp. 24–49, March 2008.

[9] A. Toni and H. Jaleh, "Form-focused skill training in EFL speaking pedagogy: Empirical counterevidence to trade-off hypothesis," *Revista de Educación*, no. 380, pp. 9–41, July 2018.

[10] Z. L. Handley and H. Wang, "What do the measures of utterance fluency employed in Automatic Speech Evaluation (ASE) tell us about oral proficiency?" *Language Assessment Quarterly*, vol. 21, no. 1, pp. 2–32, January 2024.

[11] E. Galaczi and L. Taylor, "Interactional competence: Conceptualisations, operationalisations, and outstanding questions," *Language Assessment Quarterly*, vol. 15, no. 3, pp. 219–236, July 2018.

[12] L. May, "Co-constructed interaction in a paired speaking test: The rater's perspective," *Language Testing*, vol. 26, no. 3, pp. 397–421, July 2009.

[13] L. May, "Interactional competence in a paired speaking test: Features salient to raters," *Language Assessment Quarterly*, vol. 8, no. 2, pp. 127–145, June 2011.

[14] L. Buckingham and S. A. Rosie, "Promoting speaking proficiency and willingness to communicate in Turkish young learners of English through asynchronous computer-mediated practice," *System*, no. 65, pp. 25–37, April 2017.

[15] H. Satar, Müge, and Ö Nesrin, "The effects of synchronous CMC on speaking proficiency and anxiety: Text versus voice chat," *The Modern Language Journal*, vol. 92, no. 4, pp. 595–613, December 2008.

[16] Q. Li and K. K. Chan, "Test takers' attitudes of using exam-oriented mobile application as a tool to adapt in a high-stakes speaking test," *Education and Information Technologies*, vol. 29, no. 1, pp. 219–237, January 2024.