

Original Paper

Quantitative Analysis of Knowledge Graph of Domestic Interpretation Research -- Taking the Periodical Literature of CNKI from 2001 to 2022 as an Example

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Abstract

With the help of CiteSpace, this paper sorts out all the articles on interpretation research collected by China National Knowledge Infrastructure from 2000 to 2022, and analyzes the number of articles published in this field, the status quo of research methods, research hotspots and research trends. The results show that China's interpretation research has formed a clear research framework, which mainly includes four subject categories and research hotspots: theoretical research, skill research, teaching research and other research. The most influential and core keywords include "empirical research", "training methods", "pre-translation preparation" and "corpus", etc. These keywords have strong co-occurrence ability with other keywords, which are easy to form a specific research topic and are also the core keywords to promote the structural changes of interpretation research. From 2011 to 2015, the number of published articles reached its peak, and interpretation in China developed professionally. At this stage, interpretation research showed a trend of objectification and standardization.

Keywords

Interpretation research, research trend, research hotspot, research method

1. Introduction

As an important part of translation discipline, interpretation research is booming in China. Since the publication of the first review on China's interpretation research (Hu, 1989), scholars have been sort out the interpretation researches in different stages (such as Mu & Wang, 2009; Zhong & Jia, 2015; Ren, 2019, etc.), which is of positive significance for giving a bird's eye view of the interpretation research in different stages in China, reflecting on the existing problems and guiding the future research direction. However, previous reviews mainly rely on manual reading to determine the research theme

and summarize the characteristics of a certain period. Although it can present the characteristics of phased development to a certain extent, it is subjective in classifying research topics and predicting future development trends, and has the limitations of a preset framework, and it is also difficult to study the internal structure of topics and the interactive relationship between topics. This study combs the development of domestic interpretation research in order to provide basis for interpretation teaching and practice. This study intends to use quantitative methods, taking the papers of China National Knowledge Infrastructure (CNKI) as research data, analyze the hot spots and development of domestic interpretation research from 2001 to 2022 in terms of research content and research methods, and predict the future trend, and explore the problems and shortcomings of interpretation research.

2. Data Collection and Research Methods

2.1 Data Collection

This paper intends to make a statistical analysis based on the research papers on interpretation in journals (2001-2022). In CNKI, the retrieval time of Chinese periodical papers with the theme of “interpretation” including “simultaneous interpretation” and “consecutive interpretation” ranged from January 1, 2001 to December 31, 2022, and a total of 600 related documents were obtained, excluding the unqualified items such as introduction of simultaneous interpretation equipment, notice of competitions and meetings, news, etc., and finally 572 effective papers were obtained.

2.2 Research Methods

The research tool used in this study is Citespace 6.1.R6, a visual analysis software of knowledge map, which analyzes the development trend and frontier of a specific field by calculating the information such as the number of documents, authors, countries and regions, co-occurrence of keywords and clustering of co-cited documents. This paper analyzes the co-occurrence of keywords and the clustering of co-cited documents in interpretation research, and reveals the present situation and development trend of interpretation research in China in recent twenty years.

3. Statistical Analysis

3.1 Annual Publishing Trend

By drawing with Citespace and Excel software, the published articles of interpretation research in China since 2001 are shown in Figure 1. From 2001 to 2022, the number of articles on interpretation research in China showed a trend of overall increase and then steadily decreased, which can be roughly divided into the following four stages. (1) From 2001 to 2005, the number of articles published was relatively small, with 29 articles published in five years, accounting for 6%, and the average annual number of articles published was less than 10; After 2000, the study of interpretation entered a new historical period (Mu & Wang, 2009), and the study gradually changed from prescriptive to descriptive, with the expansion of research fields and continuous improvement of methods. The National Interpretation Conference, which was held for the first time in 1996, has been held for 14 times, with

great scale and influence, and has become a landmark event in China's interpretation research. During this period, the research quality has been significantly improved, the perspective has been gradually broadened, and attention has been paid to the deep cognitive processing mechanism and functional operation process of interpretation activities (Chen, 2002). (2) During 2006-2010, the number of published articles increased sharply, reaching 135, accounting for 26%. The establishment of translation bachelor's degree program in 2006 and master's degree program in 2007 and doctor's degree program in translation studies promoted the great development of translation and interpretation. A group of doctors (students) joined the research team, and the number of papers increased significantly. The research topics expanded to interpretation products and performances, education and meta-research, and empirical research methods such as psychological and communication perspective research, experiments and observations emerged. (3) In 2011-2015, 209 articles were published, accounting for 40%, of which 47 articles were published in 2011. In recent years, China has hosted G20 Summit and "The Belt and Road Initiative" International Cooperation Summit Forum, which has promoted the professional development of interpretation in China. Since 2010, the scientification and standardization of research has been significantly improved, and interdisciplinary and empirical research has become the main trend. Graduate and doctoral students and tutors in translation studies at home and abroad, especially in the field of interpretation research, have become the main force in the study of interpretation theory, and the standardized and high-quality research results are increasing. At this stage, interpretation research tends to be objective and standardized, the number of papers is rapidly increasing, the research topics are further enriched, covering most topics of international interpretation research, interdisciplinary and multidisciplinary perspectives emerge, the proportion of empirical research is increasing, the research methods are constantly enriched, and the research design is becoming more and more scientific. (4) From 2016 to 2020, although there is a downward trend in the number of articles published annually, the minimum annual number of articles published is not less than 10. The slight decrease in the number of articles may be related to the international articles published by domestic scholars (Lu, 2022). At this stage, the research breadth, depth, height, scientificity, objectivity, interdisciplinary, innovative, normative and professional research have been comprehensively improved. It is a very obvious trend for technology to trigger or empower interpretation research at this stage: media simultaneous interpretation, multimodal corpus, distance learning, speech recognition and computer-assisted interpretation teaching/practice have attracted much attention. China's interpretation research not only pays attention to the practice of simultaneous interpretation, teaching and research in the context of China, but also closely follows the development trend of international hot topics, methods and perspectives, and actively introduces foreign research results; It not only focuses on China context issues, such as Chinese-English interpretation skills, strategies, quality and interpreter's ability, China interpretation profession and teaching, but also explores international hot topics, such as working memory, cognitive processing paths and models, input variables, source language translation correspondence and output fluency, and computer-assisted

interpretation. In addition, some research topics, methods and perspectives are also innovative internationally, such as the influence of interpretation on the development of working memory, the influence of interpreter rotation on the quality of target language, the construction of target language content quality evaluation system based on information structure theory, the study of interpreter's ability, and the study of interpretation relay language from the perspective of language strategy.

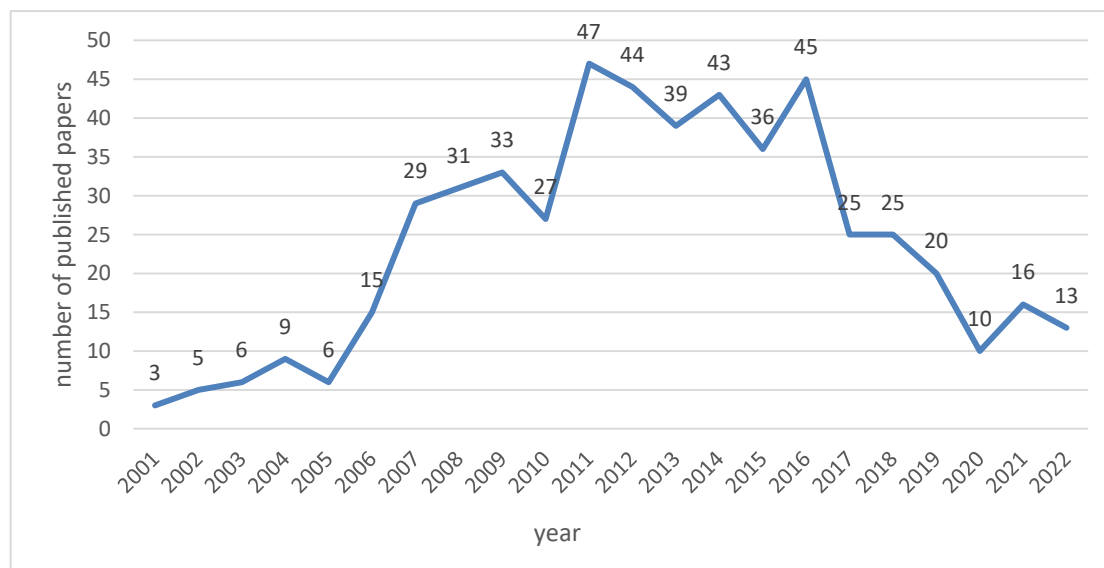


Figure 1. Numbers of Annual Publication

3.2 Research Contents, Methods, and Hotspots

Interpretation research covers a wide range, which can be roughly divided into theoretical research, skill research, teaching research and others. Theoretical research involves the definition, characteristics, on-the-spot psychology and evaluation criteria of interpretation, especially the theoretical system of interpretation. Skill research mainly focuses on the process of interpretation. This kind of research has insights into the internal mechanism of interpretation, that is, the operating mechanism of various elements in the process of interpretation, such as understanding, memory, cognition and anxiety, and their influence on the quality of interpretation. Among them, memory is the focus of skill research. Scholars mainly explore the memory mechanism, memory strategy and memory training from the perspective of cognitive psychology and linguistics by using empirical research methods such as experiments, surveys and corpora. The study of interpretation skills is an important field of empirical research and an important indicator reflecting the level of interpretation research. Interpretation skills can reflect the practical work experience of interpreters, and in the process of interpretation, it is a means to improve the effect of on-site translation. Among all kinds of interpretation studies, skill research accounts for the largest proportion, which reflects the importance that interpreters attach to summing up experience and improving the quality of work. The study of interpretation in China has always paid attention to the actual effect of interpretation and emphasized the cultivation of practical

skills in different backgrounds. Teaching research has always been a hot topic in interpretation research, and in recent years, there are more and more related documents. Teaching research aims at testing interpretation teaching methods and improving teaching quality. The higher-level goal is to train interpreters who meet the market demand, serve the professional development of interpretation practice, and cultivate “compound talents with rich professional knowledge and interpretation skills” (Luo, Huang, & Xu, 2008), which is not only the goal of current vocational interpretation education, but also the core issue of interpretation teaching and career research. In the research of interpretation teaching, the key issues worth exploring are: teaching mode, ability standard and testing system for students of different levels, and the specification of textbook compilation. Song's (2015) research shows that before 2004, teaching research accounted for about half of the total research; Subsequently, the study of interpretation continued to deepen, the theme gradually widened, the proportion of teaching research continued to decline, and the focus shifted. Other research, the content of interpretation research is very wide. Some specific researches are named according to different fields and industries, such as “foreign affairs interpretation” and “court interpretation”, and some regional studies, such as interpretation research in the western region and interpretation research in Hong Kong, Macao and Taiwan.

The methods of studying interpretation are mainly divided into positivism research, humanism research and qualitative plus quantitative research. Positivism research, also known as "data-driven" research, refers to obtaining data by observing the research object and doing experiments, and summarizing the attributes and development laws of things from individual to general. Humanism research means that when studying social phenomena and people's social behavior, we should fully consider the particularity of people and the difference between social phenomena and natural phenomena, and give full play to the subjectivity of researchers in the research process. Humanism research is qualitative research, not through empirical methods such as observation, experiment, investigation or corpus. This method accounts for a large proportion in the existing research in China. Qualitative plus quantitative research refers to a higher level of qualitative research on the basis of quantitative analysis. Before quantitative research, the nature of the research phenomenon is determined by qualitative research, and in the process of quantitative research, the quantitative boundary and the reason of qualitative change are determined by qualitative research.

Keywords are a high summary of the content of the article, which can reflect the central idea and main content of the article. The frequency of keywords reflects the research focus in this field to some extent. Based on the co-occurrence analysis of keywords in 527 documents by Citespace, this paper concludes that there are 653 keywords in interpretation research. In order to present the research hotspots more intuitively, this paper lists the keywords with frequency more than 10, as shown in Table 1.

Table 1. High-frequency Keywords in Interpretation Research

Keywords	Freq	Centrality
notes	17	0.06
strategy	16	0.09
syntactic linearity	15	0.1
working memory	15	0.06
interpretation notes	14	0.1
prediction	13	0.28
skill	12	0.14

As can be seen from the table, “notes” has always been the focus of scholars’ attention, and the frequency of key words is 17 times, accounting for 1.73% of the total frequency. Intermediary centrality reflects the intermediary relationship and influence between this keyword and other keywords. Prediction (0.28) and skill (0.14) have the highest intermediary centrality, which shows that prediction and skill are closely related to other topics and are important topics in interpretation research.

Cluster analysis is a common method in co-word analysis. Taking the frequency of co-occurrence of words as the analysis object, closely related topics are gathered together to form clusters, and each cluster represents a research sub-field (Zhong et al., 2008). Keyword clustering can further observe the hot spots and distribution of interpretation research. As shown in Figure 2, the key words of interpretation research in China from 2001 to 2022 can be grouped into the following 15 categories: #0 simultaneous interpretation, #1 consecutive interpretation, #2 interpretation, #3 empirical research, #4 strategy, #5 training method, #6 pre-translation preparation, #7 quality, #8 corpus, #9 cognitive load model, #10 syntactic linearity, #11 schema theory, #12 interpretation learning, #13 output quality, #14 cognitive processing. The clustering module value in keyword clustering graph is $Q = 0.8754$ ($Q > 0.3$), and the average contour value of clustering is $S = 0.985$ ($S > 0.5$), which indicates that the structural reliability of the clustering model is high. These keywords have great influence in the network and are easy to form cross-research with other keywords, and the integration between domains needs to be connected through these keywords. It can be seen that the current academic circles mainly focus on empirical research and interpretation teaching, with strategies and quality as the background, cognitive load model, syntactic linearity and schema theory as the core to carry out related research. Scholars pay attention to the internal mechanism of interpretation, that is, the operating mechanism of various elements in the interpretation process, such as understanding, memory, cognition and anxiety, and their influence on the quality of interpretation, in which memory is the focus of interpretation process research. From the perspective of cognitive psychology and linguistics, empirical research methods such as experiment, investigation and corpus are used to investigate the relationship between

interpretation memory mechanism, memory strategy and memory training, such as Zhang (2009). Interpretation psychology and cognitive processing are another major research object in interpretation research. For example, Kang (2017) focuses on the effects of interpretation anxiety and cognitive control on interpretation output. Some scholars have also studied interpreters and their roles, indicating that the role of interpreters is not static, but in a dynamic process. For example, an article examines how interpreters play their functions and control the communication process in court interpretation (Wu, 2016).

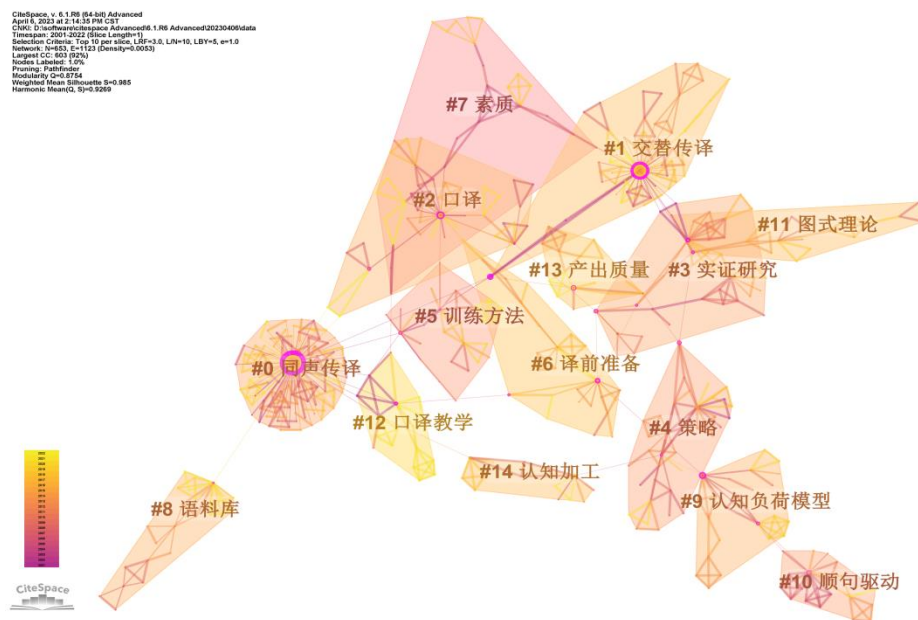


Figure 2. Keywords Clustering Graph

3.3 Research Trends and Existing Problems

In order to better observe the evolution of interpretation research in China in recent years, this study draws the core keywords by using the Timezone function in Citespace, and obtains the co-occurrence time zone graph of the core keywords in interpretation research from 2001 to 2022. Nodes in the time zone graph indicate the appearance of high-frequency keywords. The larger the node, the higher the frequency of keyword appearance, and the time corresponding to the node is the time when the keyword first appears.

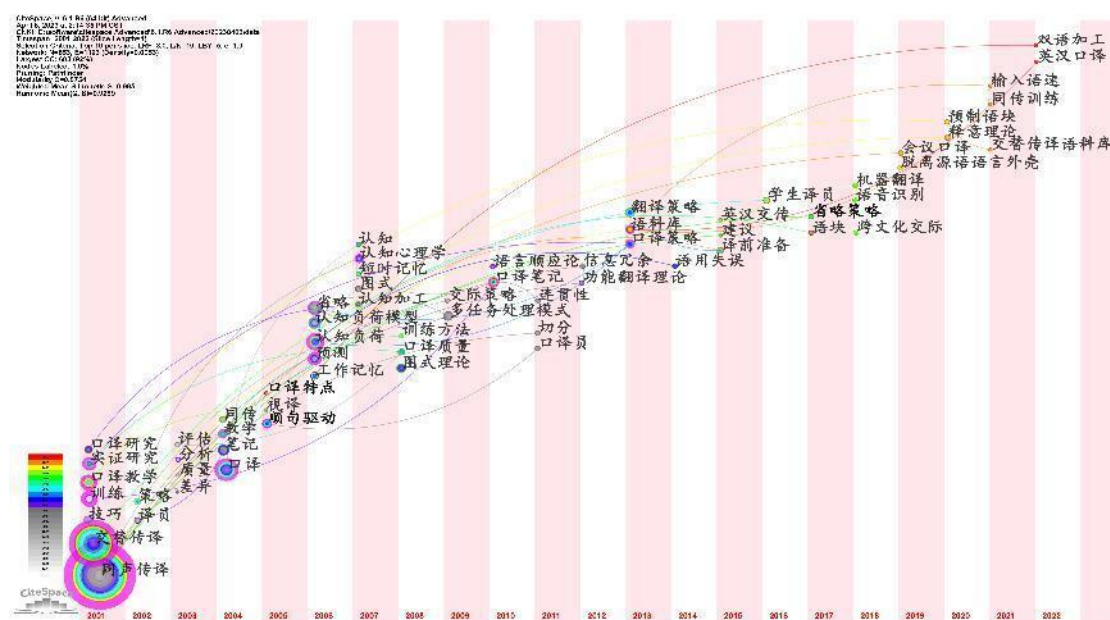


Figure 3. Keywords Co-occurrence Timezone Graph

As shown in Figure 3, the study of interpretation in China from 2001 to 2022 has the following characteristics: Since 2001, China has conducted a series of studies on “simultaneous interpretation” and “consecutive interpretation”. With the increasing international communication, simultaneous interpretation began to develop professionally (Lu, 2022). Simultaneous interpretation is an important form of interpretation, and its research results are quite rich. For example, Mu and Wang summarized the articles on interpretation published in China in recent 30 years, and analyzed the number, topics and methods of domestic interpretation research. The paper mentioned that the research on interpretation in China is developing in the trend of diversification of topics, concretization of contents, interdisciplinary research approaches, marketization of orientation, and internationalization of communication. The main problems are weak discipline theoretical awareness and lack of scientific research methods, which can be improved by expanding research topics, improving research methods, and advocating interdisciplinary research.

The interdisciplinary research in interpretation research in China, especially the research supported by empirical data, has not yet reached a large scale; Interdisciplinary research is often applying the theories of other disciplines, and there is insufficient researches that explain the phenomenon of interpretation by conducting in-depth analysis and systematic investigation of interpretation in combination with practice; There are few studies that verify relevant theories with authentic interpretation corpus or data. According to Pöhhacker (2004), we should attach importance to the cognitive and enlightening value of interpretation theoretical research, emphasize the deep processing mechanism of interpretation research, and explore the social attributes of interpretation. Corresponding measures should be taken to promote the systematic and scientific interpretation research in China and further deepen the level of interpretation research.

The research methods need to be further standardized and scientific. In recent years, general interpretation research still accounts for a certain proportion. The number of experimental studies is too small, the experimental design is not perfect and the analysis process is not clear enough. Generally speaking, China's interpretation research lacks specific research design and implementation instructions, quantitative empirical research is insufficient, and research methods and strategies are few. A research problem is only explained by one method from one angle, and interdisciplinary research applies theory more than empirical analysis. In view of the above problems, we should further strengthen the awareness of methodology, pay attention to learning research procedures, and strengthen the dissemination and popularization of interpretation research methodology.

4. Conclusion

This study is based on the high-frequency keywords in the interpretation literature of domestic journals from 2000 to 2022, combined with cluster analysis and co-occurrence analysis, the following conclusions are drawn: according to the results of high-frequency keyword clustering analysis, the research framework of interpretation in China has been formed, which mainly includes four subject categories and research hotspots: theoretical research, skill research, teaching research and other research. This study makes a more accurate quantitative analysis of the keyword relationship in the interpretation research network, and the results show that the keywords are interrelated, among which the most influential and core keywords include "simultaneous interpretation", "consecutive interpretation", "interpretation", "empirical research", "strategy", "training method", "pre-translation preparation", "quality", "corpus" and "cognitive load model", "syntactic linearity", "schema theory", "interpretation learning", "output quality", "cognitive processing", etc. These keywords have strong co-occurrence ability with other keywords, which are easy to form a specific research topic, and are also the core keywords to promote the structural change of interpretation research. Paying attention to these keywords can give a general understanding of the development of interpretation research. With the deep development of globalization and the deepening of China's opening-up strategy, interpreting, a young profession, is gaining unprecedented social attention, and the professional development of interpreting and teaching is in the ascendant. Interpretation is a highly complex language cognitive processing procedure, and it is a product/service to promote cross-language and cross-cultural communication. The cognitive process, product quality, professional practice and teaching research of interpretation is booming. The statistical analysis of periodical literature in recent 20 years has clarified the development stages and trends, current situation and progress, problems and development direction of interpretation research in China, which is helpful to enlighten future research and improve the overall level of interpretation research in China.

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