Hot Spots and Frontier Evolution
of Acculturation Research in China
CiteSpace Visual Analysis Based on CSSCI (2002–2022)

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Abstract. Based on a sample of 1493 CSSCI source journals included in the CNKI database from 2002–2022, CiteSpace visual analysis technology was applied to identify clusters by extracting keywords and using the log-likelihood ratio (LLR) algorithm to generate clustering labels in the co-citation network. The results indicate that hot spots of research on acculturation in China focus on the areas of acculturation styles, influencing acculturation factors and cross-cultural communication. Future research can explore and discuss the localisation of acculturation theory in depth and focus on the group of Chinese students overseas in order to enhance the integration and application of acculturation research.

Keywords: acculturation · CiteSpace · visual analysis technology

1 Introduction

Acculturation is a process of cultural, psychological, and behavioral change that occurs by groups and individuals in cross-cultural contact and exchange [1]. While the central issue in intercultural communication research is values and cultural patterns, cultural adaptation research concerns the changes that happen in groups and individuals during cultural encounters and exchanges, as well as the antecedents and outcomes of these changes [2]. However, acculturation is dynamic. It does not occur randomly or automatically with cross-cultural contact. New cultural elements are also not simply joined to previous internal conditions, and each person has a degree of freedom or control based on his or her predispositions, pre-existing needs, and interests [3]. Thus, in previous cross-cultural studies, the issue of acculturation has attracted the attention of researchers in sociology, anthropology, linguistics, and especially social psychology and cross-cultural psychology. With the acceleration of globalisation, international scholars have initiated a more comprehensive and systematic process of cross-cultural adaptation research. They have studied the intercultural adaptation cycle, adaptation strategies, cultural identity and theoretical models [4]. So far, international scholars have made remarkable breakthroughs and progress in both theoretical and empirical research.

Research on acculturation in China was initiated later than abroad. Although research findings are abundant, they are spread across various fields. A large amount of reviewed

literature lacks a dynamic presentation, making it difficult to perfectly present the relevance and systemic nature of the vast acculturation literature. Combined with the slowing down of research interest in the field over the past few years, this reflects a shrinking enthusiasm among scholars for research. This study will use digital technology to quickly and effectively dig into the field of cultural adaptation research in China. The visual analysis will reveal the hot areas and frontier trends of cultural adaptation research. It will assist researchers in determining research directions and provide specific suggestions for grasping the current research trend.

This study will take the CSSCI academic papers on acculturation included in the CNKI database from 2012–2022 as the research object. The econometric analysis will be conducted through CiteSpace software to sort out the current status of research within the field and explore future research trends.

2   Materials and Methods

Bibliometric citation analysis is a well-established meta-analysis research and synthesis analysis approach. It provides a quantitative assessment of scientific articles and other publications using visual techniques of knowledge mapping analysis to analyse the structure, impact and trends of scientific knowledge within the field of study [5]. Information analysis visualisation and knowledge mapping are widely used in all aspects of psychology, sociology and education. However, there has been little research into their application in the field of acculturation. Currently, the software available for visual literature analysis includes Pajek, CiteSpace, Vosviewer, Bibexcel, and Gephi [6]. Many of these software packages are developed by overseas research institutions and support the WOS data format well. However, Chinese domestic CNKI databases and CSSCI literature sources have specific differences in data format processing with foreign databases. Therefore, CiteSpace software was chosen as the instrument for this study to conduct the bibliometric analysis and knowledge mapping output. CiteSpace can support the execution of bibliometric analysis on multiple core databases in China and the construction of data matrices for co-citation, coupling, scientific collaboration analysis and co-word analysis [5].

CNKI (China National Knowledge Infrastructure) is a full-text database of Chinese journals. Collects 62 million articles from 10,324 titles published in Chinese mainland, with 8,491 academic journals and 1,978 core journals, 99% of China's core journals based on Chinese Core Journal Catalogue. From the CNKI database, an advanced search was conducted to ensure that the original data was comprehensive and reliable. A Journal Search was conducted with the following settings: Topic - Acculturation, Publication dates - 2012 to 2022, Journal Source - CSSCI, and Search Criteria - Precise. A total of 1493 documents were retrieved. After excluding duplicates and non-research documents, 1342 valid documents were obtained. The search results were saved as plain text files, including the article's author, title, source, abstract, keywords and citation reference information. The date of data retrieval for this study was 17 February 2023.

3 Findings

It employed CiteSpace software, selected to extract keywords to identify clusters, It employed CiteSpace software, selected to extract keywords to identify clusters, and used the LLR algorithm to analyse the 1493 documents in the database. The results of the study are as follows.

3.1 Hot Areas of Research on Acculturation

Keywords are a high-level summary of research topics in academic literature, and keyword frequency statistics and cluster analysis can help researchers target research hot spots in specific areas [7]. This study aims to identify the hot spots of acculturation research through keyword co-occurrence and clustering analysis. The data from the CNKI database was imported into CiteSpace software, and the node type was selected as "keyword", while other settings were kept unchanged. After running, a total of 662 keywords were extracted, and keywords with similar meanings were combined to analyse the keywords in the literature related to cultural adaptation. The keywords were then combined to analyse the keywords in the literature on cultural adaptation.

Main Research Subjects. The keyword co-occurrence mapping shown in Fig. 1 and the high-frequency keyword list shown in Table 1 show that the primary research subjects on acculturation in China are focused on three areas. One is ethnic minorities. In the context of China's multiculturalism, scholars have conducted research related to the cultural adaptation trials that ethnic minority individuals generally face when facing the collision of the dominant culture and the source culture due to the differences between the two different cultures [8]. Second is migrant children, which refers to children and adolescents who have followed their parents from rural areas to live in cities and have received education in the cities. Migrant children, as a unique group of children in China, experience both rural and urban cultures. The difficulties of acculturation and the healthy development of bicultural people in underprivileged situations are

Fig. 1. Keyword co-occurrence mapping in the literature on acculturation research

the focus of an expanding field of research [9]. The third is international students and migrant workers. They are generally categorised as sojourners in acculturation studies. It includes individuals from non-cultural groups who stay in a society or culture for long or short periods. Migrant workers are mainly cross-culturally mobile groups such as migrants, multinational businesspeople, expatriates, and domestic workers. Volunteers, as an emerging group of cross-cultural interaction, have also attracted the attention of Chinese scholars due to their educational background, special mission and identity, and the problems they encounter in cultural adaptation.

Hot Topic. The frequency of keywords reflects the researchers' attention to the relevant topics and the research value and direction of the article [7]. The keywords were clustered and analysed by CiteSpace to generate a keyword clustering knowledge map (Fig. 2). It used the LLR method to obtain a total of nine clusters with a Modularity Q value of 0. 8963 and a Silhouette S value of 0. 9633, both of which are greater than 0. 7, indicating that the keyword clustering is efficient and credible [10].

The circular nodes in Fig. 1 are keywords, and the size of the graph reflects the frequency of the corresponding keywords. Based on the keyword clustering knowledge map, the keyword co-occurrence network clustering table is obtained by selecting "Summary of Clusters" in the "Clusters" menu bar. As shown in Table 2.

Based on the clustering analysis of the keyword co-occurrence networks in Fig. 2 and Table 2, as well as the included literature, three hot areas of acculturation research in China can be distinguished:

First, the acculturation method. Focusing on this topic, scholars have explored individuals' contact and participation in acculturation at different times and in different technological contexts and suggested strategies to address adaptation problems. For instance, scholars have explored individuals' contact and participation in acculturation at different times and in different technological contexts and suggested strategies to address adaptation problems. For instance, Suo and Teng found that the "cultural shock" and

Table 1. High-frequency keywords

No.	Keywords	Freq	No.	Keywords	Freq
1	cultural identity	65	11	cultural intelligence	11
2	mental health	36	12	migrant worker	10
3	culture shock	34	13	cultural distance	7
4	ethnic minorities	34	14	cultural integration	6
5	cultural adaptation strategy	30	15	social media	5
6	migrant children	29	16	social support	5
7	cross-cultural communication	28	17	psychological capital	4
8	international students	28	18	empirical study	3
9	cross-cultural competence	14	19	academic achievement	3
10	influencing factor	12	20	acculturation theory	2

Fig. 2. Keywords clustering

Table 2. Summary of the 7 Largest Clusters in the Co-Citation Network

Topic ID	Cluster ID	Size	Top terms
1	#3 cultural identity	22	cultural difference; cultural identity; cross-cultural marketing; cultural interaction; empirical study
	#5 acculturation strategies	17	acculturation strategies; sustainable development; acculturation; cultural diversity; coping research
2	#0 mental health	34	mental health; psychological adaptability; psychological stress; behavior problem; poverty
	#7 cultural intelligence	12	cultural intelligence; social support; positive psychological capital; cross-cultural management; cultural distance
	#8 acculturative stress	12	acculturative stress; cultural independence; social and cultural changes; individual differences
3	#2 intercultural communication	26	intercultural communication; interpersonal communication; harmonious relation; multi-culture
	#6 cultural adaptability	13	cultural adaptability; peasant workers; dual social adaptation; living adaptability; occupational adaptability

"cultural interruption" phenomena of Western cross-cultural adaptation theory do not occur in the acculturation process of Chinese ethnic minority students [11]. Therefore, they argue that adaptation strategies are dynamic within different socio-cultural spaces and at different stages. Given the significant differences between Chinese and Western social systems and cultures, researchers suggest that the limitations and shortcomings of Western theoretical models should be discussed and examined when applying them to explicate and analyse the acculturation problems of Chinese students. This will serve as a supplement and development to the theoretical model of cross-cultural adaptation.

Second, the influencing factors of acculturation. There are two perspectives on this topic: external factors and internal factors. External factors include culture shock, cultural distance, social support, and environmental change. Internal factors include mental health, individual differences, cultural intelligence factors and coping styles. Some scholars have found that factors related to individual differences, such as cultural intelligence, self-efficacy and psychological capital, play an essential role in facilitating Chinese students' acculturation process. They help to enhance Chinese students' level of acculturation.

The third is intercultural communication. This topic concerns the development of intercultural communication competence and adaptive assessment. Studies have explored the potential hazards of culture shock that can result in intercultural communication failures and provided strategies for developing these skills. Li argues that most of these studies view culture shock from a negative perspective and consider culture shock as an objective barrier to intercultural communication. In addition, assessing the cultural adaptability of the research subjects is also a hot research topic under this theme. For example, the social, psychological and academic adaptation of international students is predicted, and the impact of the social service system and the school's hardware and software environment on the adaptation of international students are assessed. Recommendations are also made for teaching and international student management [12].

3.2   Frontier Evolution

Burst refers to the significant frequency of fluctuations in a keyword at a particular time7. Burst analysis of keywords can help uncover the most popular research hot spots at different times. This study introduces temporal variables into the graphical network through CiteSpace to outline the historical trajectory and period of the development of specific keywords in each cluster. Figure 3 presents the evolutionary trends of relevant research themes within the field of cultural adaptation research in China during the period 2002–2022 and divides them into three phases. It will facilitate researchers to examine the progress and frontier dynamics of research topics related to acculturation over a relatively long period based on a diachronic perspective.

Phase one is the early frontier, with keywords appearing between 2003 and 2005, biased towards empirically localised research. Within this stage, the connotation of the burst keyword mental health includes mental health problems, such as psychological stress, loneliness, anxiety and depression. In addition, the burst keyword "cultural adaptation strategy" shows that early research topics revolved around negative experiences of acculturation and mental distress. For example, it is the anxiety of adapting to subjects

Fig. 3. Top 18 Keywords with the Strongest Citation Bursts

due to unfamiliarity with the foreign culture, chronic mental stress, discomfort with the loss of familiar food and companions, resentment towards the host country, and a sense of powerlessness to cope with their environment [13]. The literature from this period has been used to examine and elaborate on coping strategies for these adverse reactions. These papers provide a basis for subsequent research on acculturation.

Phase two is the developmental period of cultural adaptation research, with keywords bursts from 2010–2017. The keywords and clusters in this phase are more prosperous than in earlier studies. In particular, the emergence of three types of research objects as emergent keywords implies that this phase has had an essential leading and diffusing effect on the subsequent development of cultural adaptation research. 2006–2009 saw no emergence of any emergent terms, while after 2010, the terms culture shock, cultural distance, and cultural psychology emerged. These topics are emphasized in focus on issues and challenges of cultural adaptation. At the same time, the emergence of the term cultural intelligence suggests a shift from the study of group adaptation to a focus on individual adaptation.

Phase three is the deepening period of acculturation research, with the keywords bursts period from 2017–2022. This phase is the deepening period of acculturation research, with the keyword emergence period from 2017–2022. As researchers further deepen their knowledge and understanding of acculturation theoretical and practical fields, the corresponding research becomes more refined and in-depth. Three main features emerge from this phase: First, the scope of research objects is further expanded. The keywords burst migrant worker, for example, reflects the expansion of cross-cultural adaptation theory in its scope of application. Second, the research on influencing factors has become more diverse. Based on the research on previous themes, more new topics and keywords have emerged in the study of influencing factors, such as psychological capital and social media. Different coping resources play an essential role in the successful acculturation of sojourners and in mitigating the adverse effects of challenges in the process of acculturation. Some researchers have found that individuals with higher psychological capital and cultural intelligence are more inclined to achieve better acculturation success [14]. Thus, the issue of strategy choice and individual differences of individuals in cross-cultural exposure has raised the attention of scholars. The third

is the emphasis on the pluralistic study of intercultural communication perspectives. Researchers in intercultural communication emphasise the central role of communicative competence in the process of acculturation, and Li points out that the ultimate goal expected from intercultural competence training is the development of intercultural communicative competence that truly transcends culture and is an essential orientation of humanistic quality training. In addition, researchers have elaborated on the developmental changes of individuals or groups in the acculturation process from the perspective of intercultural communication [15].

4 Discussion

This study investigates the CSSCI literature on acculturation-related topics published in the CNKI database between 2002 to 2022 and analyses the data through various types of mapping created using CiteSpace software. It analysed the research hotspot areas and the development trend of acculturation-related topics.

Firstly, over the past two decades, issues related to acculturation research in China have received extensive attention from scholars in various disciplines and have achieved rapid development. However, there are still some limitations in domestic scholars' research on acculturation. Early studies were dominated by introductions and reviews of theories from abroad, with researchers from different fields reviewing and sorting out Western theoretical models of acculturation from different perspectives. Although they promoted domestic research on acculturation, it needed a comprehensive and in-depth exploration. Due to individual and cultural differences, whether the theoretical system of cross-cultural adaptation research established in the Western context can fully explain the problem of acculturation in the Chinese cultural context has not been fully discussed and explored [15].

Secondly, in terms of the research object, the outreach of the research object on acculturation has been extended. For instance, the number of expatriates in multinational enterprises is increasing in the context of globalization, and whether they can adapt smoothly will significantly impact the operation of multinational enterprises. As the number of international students coming to China continues to grow, helping international students in China to overcome cross-cultural adjustment challenges is a topical issue for scholars [16]. However, as one of the world's largest sending countries of international students, the adaptation challenges encountered by Chinese students worldwide constantly harm their physical and mental health. These cross-cultural adjustment issues of Chinese students should also receive equal attention.

Thirdly, the various visualisations of keywords show a shift in research direction from the enormous scope of earlier studies to more detailed studies related to coping resources. The clustering of keywords produces labels broadly consistent with high-frequency keywords, including mental health, culture shock, psychological stress and social media. A large amount of literature has come out on these influences and strategies, drawing on overseas experiences, and the research issues have covered all aspects of the acculturation field. However, research questions lack coherence within the field, and few researchers have continued to conduct relevant research and attempt to integrate the expanding research literature. In particular, the local theoretical construction of acculturation is

still in the exploratory stage, and there needs to be a higher volume of literature and high impact. Moreover, most domestic studies on acculturation are conducted based on scholars' disciplinary backgrounds, and research perspectives are limited [17].

5 Conclusion

This study utilises information visualisation techniques to analyse the literature on acculturation in order to deeply explore the interconnectedness of research topics over the past two decades, hence addressing the relatively fragmented and unsystematic nature of acculturation research in China. At the same time, visualisation for the presentation and transmission of implicit information allows for a more intuitive presentation of the results of the literary analysis of cultural adaptation-related research. This digital technology can significantly enhance the efficiency of researchers in identifying problems, thus targeting research objectives and furthering the development of acculturation research depth.

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