



Research article

Comparative analysis of art therapy in education: China vs. foreign countries using CiteSpace

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ABSTRACTS

Background: Comparative research on art therapy in education is limited, both in China and internationally. This study examines the potential of art therapy to transform art education, focusing on improving students' physical and mental health and aesthetic abilities, both in China and other countries.

Aims: This study provides a comprehensive comparative analysis of art therapy in education within a visual context. Using bibliometric analysis of publications from the CNKI and WOS databases over the past 20 years, and the CiteSpace visualization tool, research hotspots and frontiers in art therapy within education were identified. Clustering research topics were explored, and the influence of art therapy on current art education was discussed. The study also predicts the future development trend of art therapy in both Chinese and international art education.

Methods: Bibliometric analysis of CNKI and WOS databases, coupled with the CiteSpace visualization tool, facilitated the identification of key nodes in the keyword network, highlighting research hotspots and frontiers.

Results: The development of art therapy has shown an upward trend over the past two decades, particularly in the last ten years. Comparative analysis revealed ongoing progress of art therapy in both China and other countries, with untapped potential in China. Future trends indicate a complex upward trajectory, emphasizing the integration of localized art therapy methods and educational approaches.

Summary: This comparative research paper explores art therapy in education, focusing on its potential to improve physical and mental health, as well as aesthetic abilities, in students from China and other countries. Using bibliometric analysis and the CiteSpace visualization tool, research hotspots and frontiers in art therapy within education were identified. The findings reveal a growing trend in art therapy over the past two decades, particularly in China. The study highlights untapped potential and predicts a complex upward trajectory, emphasizing the integration of localized art therapy methods and educational approaches. These insights contribute to the advancement of art education practices in China and internationally, underscoring the need for further exploration and integration of art therapy methods.

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1. Introduction

The American Art Therapy Association (AATA) defines art therapy as “the use of art media, the process of artistic creation, and the client’s response to the works of art created to serve the reflection of personal concerns and conflicts. Art therapy provides opportunities for non-verbal expression and communication” [1]. If art therapy is an interdisciplinary mix of visual arts and psychology, then art therapy education is a teaching method that extends the concept of psychological analysis and treatment to the field of education [2]. Art therapy education involves multiple disciplines, discussing art, psychotherapy, and art education. Artistic images help us understand what our students are facing and help us express ideas that cannot be conveyed in words and languages [3]. Therapeutic art education and general art education differ significantly in teaching purposes. The ultimate goal of therapeutic art education is to help students alleviate and cure mental illnesses, emotional problems, or behavioral disorders through art [4]. Pat B. Allen also mentioned in his book that “art is the way to understand our true ideas” [5]. Educators generally agree on the value of treatment-oriented art therapy in helping minors cope with internal and external setbacks during growth [6,7]. This provides a basis for using art therapy as an intervention in primary prevention. For example, Viktor Lowenfeld developed “art education therapy” for children with disabilities [8], and Chinese scholars Su Qi and Zhang Lin proposed “art psychological education: the integration of psychological education and art education” [9]. In treatment-oriented art education, the focus of teaching is not the improvement of students’ artistic skills but the change and improvement of students’ internal psychological experiences.

The study of art therapy education helps us observe, record, explore, and discover students’ emotional problems, promoting their self-identity and sound personality development. The literature analysis software CiteSpace used in this paper is a text mining and visualization research tool developed by Professor Chen Chaomei based on Java. It helps researchers use quantitative methods to describe and detect existing research results. Through machine modeling and analysis, we can effectively avoid subjective bias or information omission in literature analysis, making our research results more scientific and effective. It quickly identifies the research path and development trend of the discipline through the visual map [10]. This study provides a comprehensive comparative analysis of art therapy in education within China and other countries over the past 20 years. Using bibliometric analysis and CiteSpace visualization, it identifies research hotspots and frontiers, explores clustering research topics, and discusses the influence of art therapy on current art education. The significance lies in revealing trends and future directions for integrating localized art therapy methods

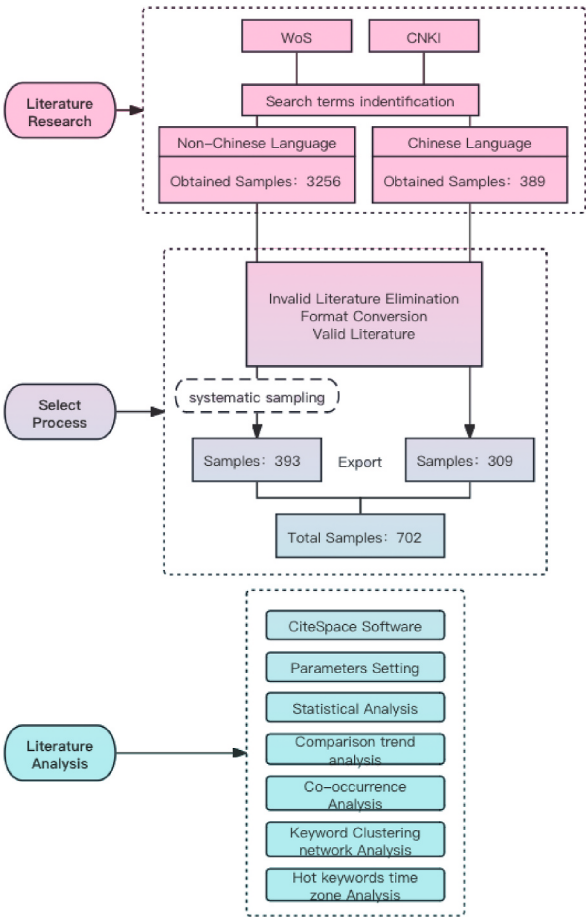


Fig. 1. The integrated analysis framework of the study.

into educational practices. The innovative aspect is the use of advanced bibliometric tools to provide an objective, quantitative overview of the field, contributing valuable insights for policymakers, educators, and researchers.

CNKI: Short for China National Knowledge Infrastructure, is the largest, most complete and authoritative database of academic resources in China. CNKI is a highly esteemed academic platform recognized for its vast collection of scholarly resources. Widely utilized across universities, research institutions, and libraries, CNKI is supported by the government and plays a pivotal role in academic research and knowledge dissemination in China.

WoS: Web of Science (WoS) is a renowned global citation database widely respected for its comprehensive coverage of scholarly literature across various disciplines. Embraced by researchers, academic institutions, and libraries worldwide, WoS serves as a cornerstone resource for accessing authoritative research publications and tracking citation metrics.

2. Methods

2.1. Research methods

This study is a retrospective and descriptive study, using cross-sectional study to analyze the development trend of art therapy in the field of education at China and other countries. The main analysis method is to cluster keywords and draw the knowledge map of the application of art therapy in the field of education with the help of CiteSpace. Through the analysis and comparison of the retrieved relevant literature at China and other countries, the development trend and frontier development direction of art therapy in the field of education at domestic and abroad since the 20th century are analyzed and expounded, It is try to providing ideas and macro vision for the application and future development direction of art therapy education in China. This study focuses on the development and future trend of art therapy in the field of education at domestic and abroad. At the beginning of the study, a preliminary test was carried out using advanced search and setting the timeline in the data range of about 20 years from May 2003 to May 2022. The combination used in the first test (Art therapy and education; Chinese: Art Therapy * Education) results, the amount of foreign data is more than 3000, while the amount of domestic data is about 300, due to large differences in data is not conducive to subsequent analysis, after carefully reviewing the data, the subject types in the strategy are screened. Adjust the search strategy as follows: keywords combination English: (Art therapy) AND (Education OR Curriculum OR Pedagogy), keywords combination Chinese: (Art therapy)* (Education OR Curriculum OR Teaching). The year is limited to the research scope of the past 20 years, and the final execution date of this search is May 30, 2022. As an integrated analysis framework for the current study, the full strategy described above is presented in Fig. 1.

2.2. Research samples

To address the significant disparities in the original data volume (CNKI: 389; WoS: 3256). After excluding books, journals lacking author information or keywords, conference records, and publications irrelevant to the research topic, 2751 WoS samples and 309 CNKI based data samples remained. From this pool, systematic sampling was conducted, selecting one paper for every 7 data points, resulting in 393 WoS-based data samples.

The sample data were sourced from both the CNKI academic journal database and the WoS global citation database, utilizing keywords “art therapy” and “education” for retrieval. The selected literature spanned the years 2003–2022, yielding a total of 702 papers. Subsequently, 309 valid Chinese literature and 393 English literature were identified. Notably, Chinese research literature exhibited a concentration in Mental Health Education in Primary and High Schools and Art Education Journals, with primary research directions encompassing ‘education theory and management,’ ‘adult education and special education.’ Conversely, studies abroad predominantly focused on Art Therapy and Frontiers In Psychology, with primary research directions including ‘clinical psychology,’ ‘pedagogy,’ and ‘interdisciplinary psychology.’

3. Results

3.1. Annual development comparison of art therapy education in China and abroad

The comparison of Chinese and foreign data can help to understand the research trend and development level of this field. Since art therapy has only been a legal profession for decades. In the 1940s, Margarete Namberg truly established a painting art treatment

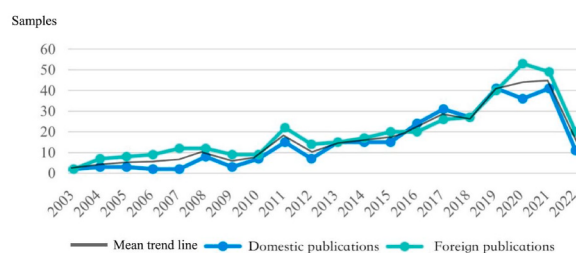


Fig. 2. Comparison of Chinese and foreign publications 2003–2022.

system using artistic expression as a treatment model [11]. The National Health System of the UK established the first position in art treatment in 1946. However, it was not until 1981 that this major was officially recognized in the area of health services [12]. Therefore, since the 20th century, the research in this field has ushered in the first real development period. In this paper, the literature samples from May 2003 to May 2022 were drawn into a line graph (Fig. 2). In addition to the large-scale suspension of the work of most scientific research institutions and researchers caused by the new coronavirus in 2023, the overall number of published literatures in the field of art treatment education in China and abroad is on the rise, and it shows a rapid upward trend after 2012. The research in the past 20 years can be roughly divided into three periods.

3.2. Phase I low-speed development period 2003–2010

The development of art therapy in the field of education starts later than the psychological development of art therapy. In the early twenty-first century, the development of art therapy education at domestic and abroad belongs to the exploratory stage. In the first stage of China (2003–2010), 31 articles were published, and 70 articles were published in the same period abroad. During this period, foreign art treatment education was affected by the trend of psychological research, and the research field mainly focused on the combination of medicine and education in clinical psychotherapy. Compared with more extensive research abroad, the main research direction in this stage in China focuses on the integration of disciplines and small-scale experimental research in colleges and universities.

3.3. Phase II upward period 2011–2015

At the beginning of the second stage, the number of publications in China has increased year by year, reaching 91 articles, which is close to the data of 108 articles published abroad in the same period. This reflects the rapid development of China's art therapy education industry after 2010. From the point of view of the number of published papers, domestic research has generally tended to flat upward trend since 2010, compared with foreign research shows a ladder-like upward trend. During this period, foreign art education psychology study area is interdisciplinary research between different fields, and its research scope is expanding. The domestic research is aimed at exploring the different age groups of students, focusing on the deep development of similar groups.

3.4. Phase III high-speed development period since 2016

At this stage, the number of Chinese papers reached 187, and the number of foreign papers reached 215. In 2020, the total number of publications in foreign related fields reached a peak of 53, while the peak in domestic related fields reached 41 in 2021. At this stage, foreign countries began to use art therapy for depression, anxiety and other mental illness patients with educational research with intervention purposes. Some related systems and treatment technologies have been gradually developed. At the same time, the research in the field of art therapy in China has gradually focused on the education of special psychological problems.

The publication numbers and keywords of each country in the relevant field during these three stages is shown in Table 1.

Further, through Fig. 3, the total amount of domestic and foreign publications in the first stage is 101, that in the second stage is 199, and that in the third stage is 402. Therefore, according to this set of data can also clearly reflect the development of this field in the world is very rapid, because they almost double the number of published time cycle is getting shorter. Under this trend, it is expected that the research and development in the field of art therapy education will rise in the next few years, and will gradually become the focus of attention in the field of art education and psychotherapy interdisciplinary.

3.5. Comparison of keywords co-occurrence in domestic and foreign research directions

Co-word analysis is one of the content analysis methods, which is usually used to analyze the co-occurrence of different professional words in a certain field, reflecting the main research directions and hot topics in this field to some extent. In this study, CiteSpace is used to analyze the literature data at China and other countries, and the high-frequency keyword network knowledge map is obtained after removing the basic keyword "art therapy education" (Fig. 4). Among them, foreign research can be roughly summarized into the following three aspects: (1) The clinical medicine direction primarily focuses on research concerning psychological health education requiring artistic intervention for individuals with physiological illnesses. (2) The research orientation of affiliated groups predominantly explores various demographic segments such as women, soldiers, students, and the elderly. (3) comprehensive research, mainly related to the implementation means of 'intervention', 'prediction' and 'empathy'; domestic research can be roughly summarized into the following three aspects. (1) The practical direction of education and teaching mainly involves the research of related groups such as "art teaching" and "art practice". (2) It primarily encompasses research into the theoretical aspects of "special children" "adolescents" and "left-behind children"; (3) This area of focus primarily involves "art therapy" and "special education"; From the domestic research direction keywords can be seen, art therapy education in the domestic research focuses on solving the current problems and guiding education practice; The research direction of foreign related fields focuses on the future development of research, the broadening of theory, social significance, etc.

Table 1
Phase feature analysis.

Stage	Feature	Foreign high frequency keywords	China high frequency keywords	Number of publications
Phase I 2003–2010	Less published, low frequency, germination period	Women, Interventions, Cancer Patients, Children, Psychotherapy	Art therapy, psychotherapy, art education, mental health, college students	USA:22 GER:13 AUS:6
Phase II 2011–2015	Steady increase in the number of communications; rise period;	Women, AIDS patients, clinical symptoms, depression, art therapy	Art therapy, art education, college students, special children, special education	USA:35 GER:16 UK:12
Phase III 2016 to Now	Surging number of publications, high-speed development period	Clinical symptoms, depression, anxiety, psychological intervention, minors	Art therapy, college students, mental health, autism, art education	USA:53 GER:21 FRA:17

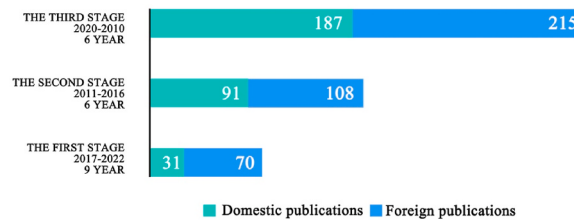


Fig. 3. Comparison of the total number of publications.

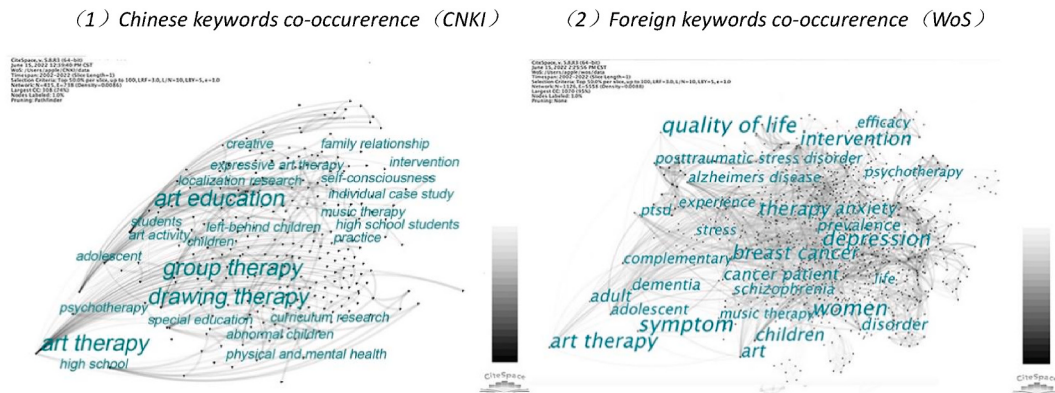


Fig. 4. Art therapy education keywords co-occurrence 2003.05–2022.05.

4. Trend analysis and comparison of art treatment education in China and abroad

4.1. Comparative analysis of keyword clustering network

Using pathfinder, prune sliced networks and prune the merge network algorithm, $k = 10$ in g-index; Top N is set to 50. Foreign WoS data got 231 nodes; china CNKI data obtained 218 nodes; due to the limitation of software, Chinese and foreign data cannot be encoded at the same time, so the cluster is renumbered by # 0 ~ # 19, where # 0 ~ # 9 is the foreign data code and # 10 ~ # 19 is the domestic data code (Fig. 6). The time axis is 2003–2022, and the time slice is one year to generate the keyword clustering network diagram (Fig. 5).

As shown in Fig. 5 ~ 6, it is not difficult to find that foreign research is more extensive than domestic research, and domestic research is more focused on in-depth research in the field of art therapy subdivision. According to the background data of the atlas in CiteSpace, the main research areas can be divided into five main research directions.

4.1.1.1. Art therapy education & medical field - 3 clusters

This group mainly contains # 3 HIV; # 4 Schizophrenia; # 7 Overeating; This group clustering is concentrated in foreign literature research, and there are few studies in domestic related fields, which do not appear in the main keywords in the clustering map. This cluster study shows that art therapy is an effective psychological intervention for patients with terminal illness, mental illness under special circumstances. By setting some specific themes and painting tools, psychologists and educators have found a way to analyze the mental state of patients with works of art.

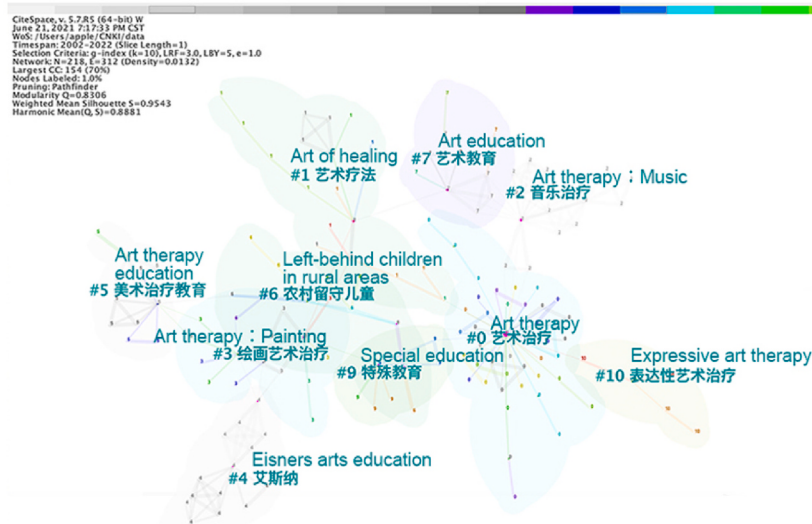
4.1.2. Art psychotherapy & educational theory - 7 clusters

This group mainly contains # 0 symptoms; # 1 Art therapy; # 8 Art; # 10 Art therapy; # 11 Artistic healing; # 14 Esna art education; # 17 Art education; The research under this cluster mainly focuses on the discussion and verification in the theoretical field. This cluster shows that the intersection of art and educational psychology is much more than imagined. Art therapy education can help our educators effectively define the psychological state of students and develop the corresponding supporting teaching mode in the teaching activities of art therapy by studying the corresponding psychological symptoms and behavior patterns.

4.1.3. Art therapy education & different groups - 3 clusters

This cluster contains # 5 adults; # 6 Burnout population; # 16 Rural left-behind children; the highly cited literature under this cluster deals with the relationship between some special groups such as elderly mental health intervention, psychological problems of soldiers after the war and art treatment education. Another major keywords under this cluster are burnout, anxiety, depression, etc. It is mentioned that due to the reasons of urbanization in China, most rural families are facing the pressure of choice between families and

(1) Chinese keywords cluster diagram (CNKI)



(2) Foreign keywords cluster diagram (WoS)

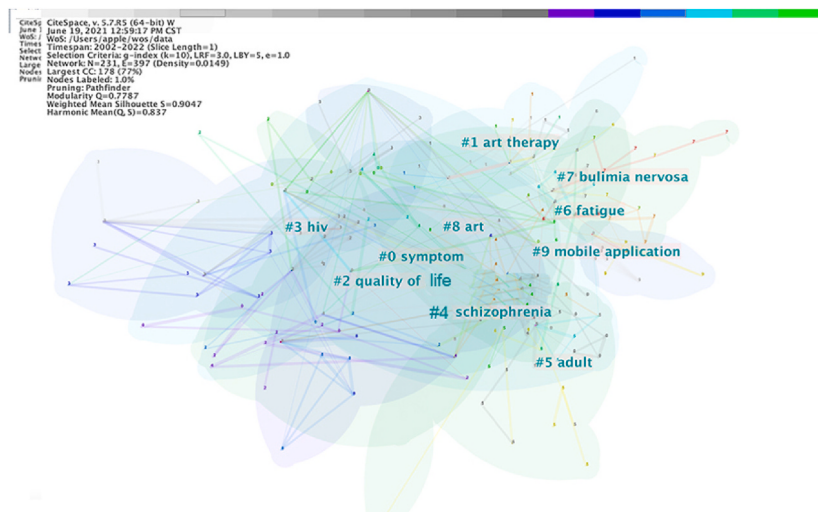


Fig. 5. CNKI& WoS art therapy education keywords cluster diagram.

occupations. A new social problem is formed between adults who have left the family environment for a long time and children who live alone, it is resulting in the mental disorder or emotional problems of minors [13].

4.2. Art therapy education & teaching system –6 clusters

The keywords in this group show that most of the literature studies are based on the application and development of art therapy in education and teaching system, mainly covering # 9 mobile applications; # 12 Music therapy; # 13 painting art treatment; # 15 children art therapy; # 18 special education: # 19 expressive art therapy; art therapy in the field of education will have a more detailed division according to different professions, such as music psychotherapy, painting therapy, the combination of performance and psychotherapy, most of them are designed by foreign researchers and introduced into China for localization modification [14]; It is worth mention that in the ' mobile applications ' cluster referred to the contactless psychotherapy programs; with the continuous updating of contemporary information dissemination technology, we have the possibility of remote psychological intervention and treatment. With the tension of international geographical relations and the impact of the new coronavirus epidemic in recent years, this kind of psychological treatment has gradually begun to spread.

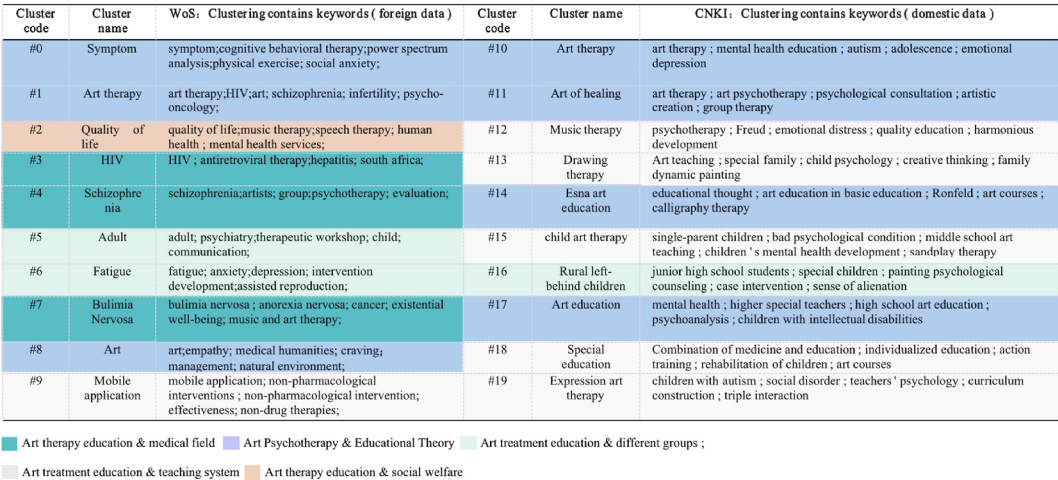


Fig. 6. CNKI & WoS art therapy education high frequency keywords group diagram.

4.2.1. Art therapy education & social welfare –1 cluster

2 Quality of life in this keyword clustering literature mainly refers to the life experience and quality of patients with psychological diseases, physical and mental health and other issues. In this category, we can see that foreign researchers and institutions pay more attention to the personal experience of patients in this process and the impact on their life meaning or life perception.

4.3. Comparative analysis of hot spot diagrams and future research trends

The hot spot time zone diagram can show the keywords in this field and the research distribution and changes in different time periods, helping researchers to grasp the hot topics in the field of art treatment education from the time dimension and analyze the future trends [15]. By observing the time-zone diagram of keywords in domestic and foreign research literature in the field of art therapy education in the past 20 years (Fig. 7), it can be found that with the gradual development of this research field, the research direction in China is obviously inclined to the campus environment, and the mental health of college students, minors, special children and other groups has been extensively studied. Development to today, scholars are not satisfied with the direct use of foreign art therapy technology, there is a trend of localization, scholars began to try to use Chinese traditional calligraphy, Chinese traditional painting combined with art therapy means to explore the education and teaching mode with psychological treatment function [16]; the trend of art therapy education in foreign countries is more inclined to develop students positive behavior patterns, mindfulness and thinking. Compared with previous clinical studies, more attention has been paid to the consideration of humanistic care and social well-being such as human life experience.

The conclusions of these studies show that in the past 20 years, the development of this field has shown an upward trend, especially in the past 10 years, the number of publications has increased significantly. Through comparative studies in this field at China and other countries, it is shown that the development of this field in China has not yet reached its peak. On the contrary, in the future, China's trend in the development of art therapy will show a tortuous upward trend. The results of clustering map show that the research in related fields shows some differences. In order to facilitate reading, I summarize these characteristics in Table 2.

5. Discussion

5.1. Influence of art therapy on education

Through the visual analysis of key nodes by CiteSpace to cluster literature analysis, we can understand the impact of art therapy on the development of education is mainly reflected in the following aspects.

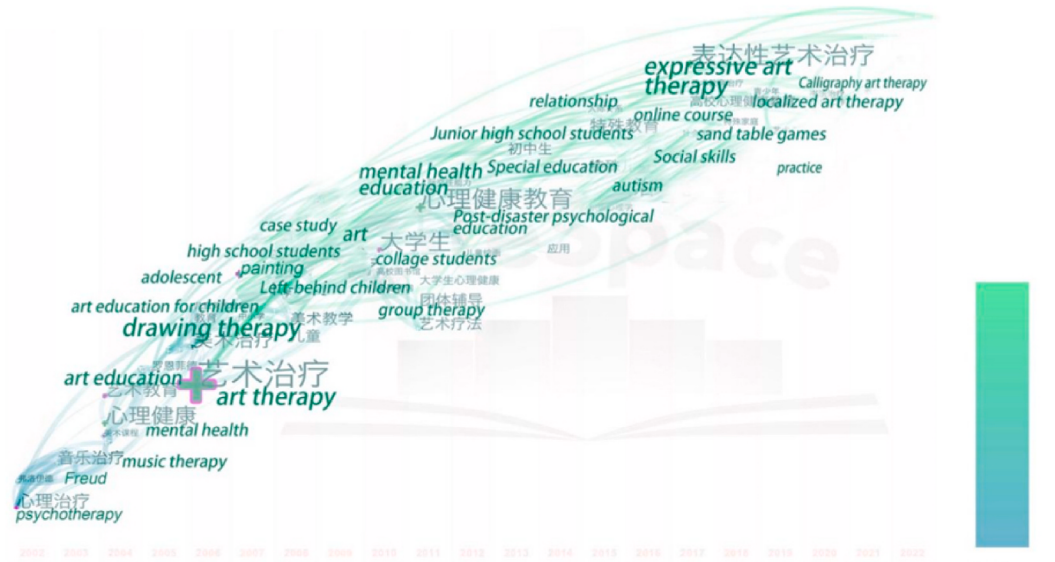
5.1.1. Changes in teaching purpose and content

At present, China ' s art education mainly focuses on the examination-oriented education system, emphasizing students ' learning of skills and basic knowledge. However, since the early twenty-first century, with the attention to the mental health education of minors at China and other countries, art therapy has been widely transplanted from clinical medicine to education. In recent years, there have also been studies on localized art therapy education.

5.1.2. Understanding students ' psychological state and optimizing teaching model

By extending psychological knowledge to the field of education, it can effectively help education industry practitioners to have a deep understanding of students ' psychological state, not just academic performance or school performance. There is also considerable

(1) Time Zone Diagram of Chinese Hot Keywords (CNKI)



(2) Time Zone Diagram of Foreign Hot Keywords (WoS)

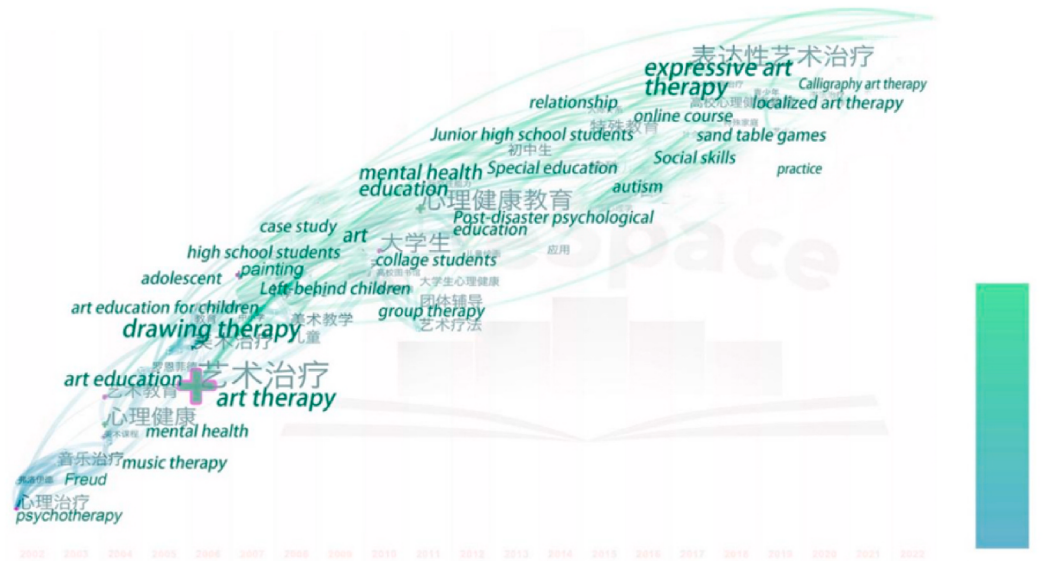


Fig. 7. Hot keywords time zone diagram of China and foreign.

evidence that art therapy can help problem or vulnerable children improve their attitudes towards learning, others and themselves [17]. It can also help teachers have a deeper understanding of students' psychological state and pay attention to educators to better develop teaching strategies and implement teaching plans.

5.1.3. Improve students' emotional problems and alleviate academic pressure

In the education of minors, especially adolescent students, their emotional problems often lead to a series of educational problems [18]. If improperly handled, it will develop more serious psychological problems.

5.2. Reflection of art therapy on the development of education in China

Cultivating professional art therapy educators is a necessary condition for the combination of art education and art therapy [19]. Art therapy education is undoubtedly an interdisciplinary research field, which has higher professional requirements for practitioners in the education industry. They need not only professional knowledge of education, but also a certain knowledge base related to art

Table 2
Analysis table of clustering map at domestic and abroad.

	Art Therapy Education - Domestic	Art Therapy Education - Abroad
Trend	Research and Reform on Localization Adaptability from External Learning Theory and Research	From medicine to education, pay more attention to the role of social or personal well-being.
Object	The main target is student groups, relatively concentrated research topics and areas	Special population studies, such as terminally ill patients, hospice care, women, soldiers, the elderly, special children, etc.
Diversity	1 Late start, less relevant research and rapid development trend 2 Pay attention to practical and experimental inquiry and the feasibility of combining with the current education; 3 Focus on System Construction 4 Research fields are concentrated, and more attention is paid to the research of school education-related objects.	1 Early start, more related research and stable development trend 2 Paying attention to the updating and research of theories and exploring different possibilities 3 Focus on social significance 4 Wider research topics and fields
Innovation	The localization of art therapy technology into the education system, such as traditional Chinese painting art therapy and education reform mode, art therapy in the application of compulsory education.	More involvement of art therapy in social institutions, research and development of new methods and technologies, and collaborative work in cross-disciplinary fields
Value	1 Provides value for localization development and in-depth research in this field 2 It provides an important impetus to the development and research of related fields and makes up for the blank of education system in China. 3 It is a more practical and applicable psychological intervention for Chinese adolescents	1 Provides an international perspective and broader research direction for development in this field 2 Research and expansion combined with multi-disciplinary and cross-disciplinary researchers 3 Pay more attention to the broader social aspects and solve more personal or social well-being problems.

therapy. Therefore, it is urgent to establish a training system for disciplines and specialized talents in this field in China, and create a talent training mode with Chinese local characteristics that meets the needs of art treatment education [20]. It also makes a useful attempt for the cultivation of art therapy talents in the field of special education in China [21].

- (1) The government should give necessary policy support in the development of adolescent psychological intervention and related art courses.

In the process of localization in China, art therapy is involved in art teaching in high school, which is also an exploratory stage. Most of them are explored by universities or research institutions based on the actual situation, lacking systematic curriculum framework design and research. This study calls on the government to introduce policy support and encourage schools to carry out experimental curriculum research.

- (2) Pay attention to the mental health of minors, especially young minors.

Schools in China often carry the burden of children ' s mental health education. Therefore, the use of art therapy for education and intervention is a new teaching model that can be explored in subsequent studies, which can help school administrators to share the problems of students ' mental health education. In this regard, foreign scholars have made useful attempts, such as art exhibitions as educational interventions [22].

- (3) Establishing a set of perfect education and teaching system and methods of painting test/diagnosis/treatment.

In art therapy, even if the scale was designed in previous studies to conduct scientific statistics and evaluation of paintings, the objectivity and reliability of painting analysis are still often questioned. Therefore, it is necessary to further clarify the operational definition and effect evaluation of painting therapy on the basis of summarizing the experience gained in clinical practice, so as to establish a set of systematic education principles and teaching methods of painting test/diagnosis/treatment [23].

6. Limitations of the study

However, it is important to acknowledge the limitations of this study. Firstly, the classification of keywords in the retrieved literature may have some deviations, and the data screening process is subject to accidental errors, including the inclusion of non-academic literature. Secondly, the use of different search engines (CNKI for Chinese literature and WoS for foreign data) introduces limitations and variations in the data. Based on these limitations, future research will continue to focus on and track the development and application of art therapy in education.

7. Implications for policy, practice and further research

This research paper on art therapy in education has significant implications for policy, practice, and further research in the field. Policymakers should consider integrating art therapy into educational policies and programs to improve students' physical and mental health, as well as their aesthetic abilities, fostering a holistic approach to education. Incorporating art therapy techniques in art

education can provide a more comprehensive learning experience, and educators should receive training to effectively apply these approaches in the classroom. Further research is needed to explore specific art therapy interventions and their impact on student well-being and artistic skills. Conducting comparative studies between China and other countries can offer valuable insights into cross-cultural differences and best practices in art therapy within educational settings. Trend analysis reveals a positive trajectory for art therapy development in China over the past two decades, indicating growing recognition of its benefits. This trend emphasizes the integration of localized art therapy methods and educational approaches, presenting untapped potential for further advancement. By following this trend, researchers, policymakers, and practitioners can effectively integrate art therapy into the education system, maximizing its impact on student well-being and artistic growth. These implications contribute to a more holistic and comprehensive approach to education, emphasizing the importance of art therapy in enhancing student outcomes.

8. Conclusion

In conclusion, the paper identifies a positive trend in the development of art therapy over the past two decades, particularly in China. This indicates a growing recognition of the benefits of art therapy in education. The study reveals untapped potential for further advancement, suggesting a complex upward trajectory for art therapy in Chinese art education. The future trend emphasizes the integration of localized art therapy methods and educational approaches. By following this trend, researchers, policymakers, and practitioners can work towards effectively integrating art therapy into the education system, maximizing its impact on student well-being and artistic growth.

This research paper provides valuable implications for policy, practice, and further research. By integrating art therapy into educational policies, educators can enhance their practice and promote student well-being. Continued research is essential to explore specific interventions and cross-cultural variations. Overall, embracing art therapy in education has the potential to positively transform the educational landscape, benefiting students' physical and mental health, aesthetic abilities, and overall educational experience.

Ethics

The authors of this paper, "Comparative Study on the Development Trend of Art Therapy in Education between China and Foreign Countries since the 21st Century Based on CiteSpace Analysis," declare that the research was conducted in accordance with ethical principles and guidelines. The study did not involve any human or animal subjects, and therefore, no ethical approval was required. The data used in this study was obtained from publicly available sources, and no private or confidential information was used. The authors affirm that all research procedures and data handling were conducted in accordance with ethical principles and professional standards.

Data availability statement

The data supporting the findings of this study are derived from previously reported studies and datasets (CNKI and WoS). The derived data generated by literature review and analysis are available from the corresponding author upon reasonable request. All original sources can be accessed through CNKI and Web of Science databases via keyword searches as described in the methods section of this paper.

Disclosure statement

The authors declare no conflicts of interest or financial benefits associated with this research.

CRediT authorship contribution statement

Wei Xing: Writing – original draft. **Mohd Isa Hamzah:** Conceptualization, Methodology, Supervision. **Khairul Azhar Jamaludin:** Data curation, Formal analysis, Supervision, Visualization, Validation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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