



# A Bibliometric And Visual Analysis Of Transformational Leadership At A Physical Education-Focused Institution In China

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## ABSTRACT

Analyzing the hot topics and frontier evolvement of the research field of transformational leadership by Chinese scholars is highly important for the development of sports in Chinese colleges and institutions. The study utilized the metrology program CiteSpace to create a keyword network map of the transformative leadership research field in CNKI publications from 2004 to 2023. This map was generated for the purpose of visual examination. The research findings indicate that the main areas of interest in transformational leadership are the theory of transformational leadership, organizational performance, leadership style, and empirical application. The key areas of focus in transformative leadership research include leadership effectiveness, various transformative leadership styles, transformative leadership in educational administration and business management, organizational support for transformative leadership, transformative leadership in higher education, and other related subjects.

**Keywords:** Transformational leadership, Research hotspot, Bibliometrics, Visualization Analysis and Review

## 1. Introduction

Sports has a significant role in the advancement of socialism with Chinese characteristics, and the enhancement of sports governance capacity and level is also a crucial indicator of social civilization and progress. Sports majors in higher education have the essential task of fostering abilities in sports management, teaching, and training for the country. The quality of talent development in higher education is directly linked to the progress of national modernization, and the level of transformational leadership plays a crucial role in determining the quality of talent development in higher education.(Yongliang et al., 2022). In 2021, the State General Administration of Sport issued the "14th Five-Year Plan for Sports Development", which proposed the long-term goal of building China into a modern socialist sports power by 2035, Making sports as a landmark cause for the great rejuvenation of the Chinese nation. That is to form a modern governance system with vitality, economic contribution, public affinity, cultural soft power, international competitiveness and world influence; There are also eight short-term goals for the 14 5th Five-Year Plan period, of which Article 7 proposes that sports science and education work should reach a new level(Sport, 2021). The importance of leadership in China's higher education is reflected in that it directly promotes organizational innovation, influences organizational performance, helps majors achieve their talent training goals, improves education quality, and increases students' graduation rate and satisfaction(zejun et al., 2015). Promote the school to adapt to the innovation and change of the educational environment; Guidance and motivation in personnel training to help students and teachers in their personal professional development(Congling, 2020); Effective management of resources, reasonable allocation of financial, human and material resources, comprehensive coordination can

ensure the reasonable allocation and utilization of various resources(Erkutlu, 2008); Shaping the school culture can promote a positive cultural environment conducive to growth(Deal & Peterson, 2010); To deal with all possible crises and challenges(Lucas, 2001; Lucas & Valentine, 2002). However, we should also clearly understand that the leadership level of higher institutions in China is still facing many difficulties and challenges in the process of development. The unbalanced development phenomenon caused by the concept of regional differences and economic policies is serious, and the development problem caused by the leadership level difference in the process of development is more serious. Only when we fully grasp the research situation of transformational leadership can we better promote the development of future sports cause. In this paper, 475 CSSCI journal papers, CSCD journal papers and Core of Peking University papers of transformational leadership research collected by China National Knowledge Infrastructure (CNKI) were selected as the research objects by the bibliography measurement method. Knowledge network analysis tools were used to analyze the spatial and temporal distribution, keyword clustering and hot word prominence. Draw the knowledge map of chinese research on transformational leadership, explore the research hotspots and research trends of transformational leadership, find out the research deficiencies, and strive to provide reference for the further improvement of the research on transformational leadership of physical education.

This paper's primary research content has been divided down into five sections, with the last section being this one. The ideas of transformational leadership and the functioning of the Citespace software are introduced in the second component. Research techniques and data sources are introduced in the third part. A visual analysis of the state of Chinese scholars' research on transformational leadership is presented in the fourth section. The application strategy and development research of transformational leadership in the field of sports in China's higher education are further examined in the fifth section. This study's objective is to provide the subsequent studies with evidence and information that are organized in a systematic manner.

## 2. Literature Review

In the process of literature review, this part will be carried out from the concept development and characteristics of transformational leadership, the empirical research of transformational leadership in higher education and the application principle of citespace software.

Transformational leadership is a concept developed by American historian James MacGregor Burns on the basis of leadership experts and presidential biographies. It emphasized that leaders create an organizational vision and motivate employees to exceed their own abilities through inspiring motivation, idealizing influence, intellectual stimulation and personalized consideration. To achieve organizational goals(Bass & Riggio, 2006). Transformational leadership is characterized by the ability to positively influence employees and stimulate their innovation and development, thus contributing to the success of the organization(Bass & Avolio, 1993). The main performance is to set a clear vision and goal, and to communicate it clearly to every employee, so that employees have a resonance with the development of the organization, so that employees feel the value of their work; Create conditions and encourage innovation, encourage employees to propose new ideas at work and support trying new methods, value cooperation between teams, encourage employees to collaborate and share knowledge and experience to achieve personal and organizational goals; Pay attention to their own behavior and norms, demonstrate good professional ethics and values, show a special personal charm, in order to attract employees to establish a close and positive working relationship; Dare to take risks, regarding the personal development of employees, provide support and encouragement for their personal career development, and help them achieve their personal goals; Pay attention to using appropriate methods to stimulate(McCloskey, 2015).

In the process of review, it is found that there are a large number of empirical studies on transformational leadership in education, organization management, medical care and other aspects. The research on transformational leadership in the field of higher education mainly focuses on students, teachers, teaching environment, education reform, policy formulation and practice.

In higher education, transformational leaders provide support for teachers' education and teaching environment, stimulate teachers' teaching motivation, and have a positive impact on teachers' teaching behavior performance(Andriani et al., 2018). The research of teachers in Singapore shows that it has a positive impact on teachers' teaching attitude, which can make teachers have a satisfying experience in teaching(Koh et al., 1995). The influence of transformational leadership on teachers' commitment to change is small and indirect(Yu et al., 2002). It can have an impact on the collective efficacy of school teachers and influence teachers' commitment to their region(Ross & Gray, 2006).

Students are the main body of the higher education system and the carrier of the realization of educational objectives. Students' satisfaction reflects the level of education quality and learning achievements, which are related to the future development of the country and affect the great rejuvenation of the Chinese nation in the long run. Anderson, M mentioned in his research on higher education that the management model of the school system has been commercialized, student achievement and the performance of school leaders are important components of higher education, and transformational leadership style is conducive to improving the performance of schools, so attention should be paid to the training and development of transformational leadership style in the overall system(Anderson, 2017). The influence of students' cultural intelligence on

transformational leadership behavior is more obvious than personality traits (Crowne, 2019). Transformational leadership in college classrooms is moderately correlated with students' learning cognition, emotional learning, motivation and communication satisfaction (Bolkan & Goodboy, 2009). Compared with transformational leadership and instructional leadership, transformational leadership has an indirect impact on student achievement (Shatzer et al., 2014).

The teaching environment guarantees the basis of the implementation of the education and teaching process. In the teaching process, the teaching environment has an important impact on the teaching performance of teachers. The transformational leadership role of leaders can change the teaching and working environment and improve the self-performance of teachers (Sirait, 2021). Under the background of information technology in the new era, higher education is facing multiple pressures and challenges in a dynamic working environment. Working environment has a significant positive correlation with transformational leadership and job satisfaction. In the development of colleges and universities, teaching performance can be innovatively developed by optimizing human resource environment and teaching environment (Jabbar et al., 2020).

CiteSpace software was developed in 2004 by Chen Chaomei, a professor of computer and information science at Drexel University in the United States, is an information visualization software based on JAVA environment. Its working principle is to generate visual icon based on the metadata and references of literature materials to help readers more easily understand the hot spots and development trends in the research field. Data collection Data can be collected from multiple literature databases such as web of science, sciencedirect, CNKI, Pubmed, google scholar, etc. Finally, Citespace is used to generate visual charts, which are clearly displayed in the form of key topic maps, cooperative network maps and timelines, to help scholars better understand the structure, relationships and trends of the academic literature field (Taşkın & Aydinoglu, 2015).

The development of a research must have its specific historical background. Citespace software is developed based on the background of large amount of information and rapid change in the scientific era, and its inspiration is the evolution of Kuhn's scientific knowledge structure, whose development process can be extracted through published literature. In 2015, Chen Yue et al. summarized the theoretical basis system of Citespace software operation as follows: 1. Thomas Kuhn's scientific development model theory. Its core point of view is that scientific development is the historical process of scientific revolution, the process of alternating between conventional science and scientific revolution, accumulation paradigm and transformation paradigm, and the classic works in special periods in scientific research are the turning point in the generation of citespace pictures. 2. Derek John de Solla Price's scientific frontier theory. de Solla Price, D.J., 1965 put forward the theory that "the pattern of reference marks the essence of scientific research frontier", and held that "research frontier is based on recent research results, and the knowledge network will become more and more dense with the development". Then in CiteSpace, the mapping from the knowledge base "co-cited literature clustering" to the research frontier "cited literature" is designed. 3. structure hole and Kleinberg burst detection technology. The theory of structural holes is derived from the "strength of the weak relation" proposed by Granovetter (1973). Ronald Burt (1992), professor of sociology and strategy at the University of Chicago Business School, proposed the concept of structural hole in his book *Structural Hole: The Social Structure of Competition*, and believed that individuals in the position of structural hole can gain more competitive advantages and innovation ability through information filtering. In CiteSpace, the intermediate centrality of nodes in the network is used to measure structural holes (Freeman 1979; Brandes U, 2001) and Turning points. 4. Information foraging theory. The theory describes information searching as similar to how humans and animals hunt for food, arguing that we tend to minimize energy expenditure during information searching. Based on the theory of optimal information foraging and Hidden Markov Model (HMM), Professor Chen et al. proposed an integrated visual navigation strategy research method to obtain the maximum benefit with the minimum search cost. 5. Theory of knowledge unit dispersion and recombination. Chinese scientometricians Zhao Hongzhou et al. proposed in the article "Knowledge Unit and Exponential Law" published in *Science and Science and Technology Management* in 1984 that any scientific creation process is the process of first dissociating crystallized knowledge and reorganizing it. (Jie & Chaomei, 2017).

### 3. Data sources and Analytical methods and tools

#### 3.1 Data sources

All the Data in this study are from the full-text database of CNKI. In order to ensure the comprehensiveness and reliability of the original data, the advanced search was selected from CNKI, and the search condition was set as journal search, TS = transformational leadership. Journal source = CSSCI, CSCD, Core of Peking University, time span = 2004-2023, search conditions = accurate. A total of 475 articles were retrieved (search date: November 10, 2023). After removing duplicate literature and non-research review literature, a total of 466 valid literatures were obtained.

#### 3.2 Analytical methods and tools

The analysis tool of this paper is Citespace software. In the process of visualization, it is necessary to normalize the data. After that, the method of link parameter network nodes is used to calculate the association strength between nodes. CiteSpace provides three methods for calculating the strength of connections in a network,

namely Cosine, Jaccard and Dice methods, the normal software default Cosine algorithm(Chankoson, 2022; jie & Chaomei, 2017). The three connection strength formulas are as follows:

Formula Cosine is as follows:

$$\text{Cosine}(c_{ij}, s_i, s_j) = \frac{c_{ij}}{\sqrt{s_i s_j}}$$

Formula Jaccard is as follows:

$$\text{Jaccard}(c_{ij}, s_i, s_j) = \frac{c_{ij}}{s_i + s_j - c_{ij}}$$

Formula Dice is as follows:

$$\text{Dice}(c_{ij}, s_i, s_j) = \frac{2c_{ij}}{s_i + s_j}$$

Citespace uses the cosine algorithm to calculate the association between co-authors or research institutions, uses the size of nodes and the depth of colors of each module to represent the association intensity, and standardization it between 0 and 1, where  $c_{ij}$  means the number of co-occurrences of  $i$  and  $j$ ,  $s_i$  is the frequency of  $i$  occurrence, and  $s_j$  is the frequency of  $j$  occurrence.

## 4. Research results

### 4.1 Temporal and spatial knowledge graph of transformational leadership research 4.1.1 Time distribution map of transformational leadership research

The number of annual publications is an important indicator to judge the research popularity and development trend of transformational leadership. According to Figure 1, the chronological distribution of transformational leadership research literature shows that during the 20 years from 2003 to 2022, the number of published papers has shown a wave rise, and the number of published papers has shown an overall upward trend, but the total number of published papers is small. The number of articles published in 2017 was a breaking point, and the number of articles published in 2019 showed a turning point in the upward process, and the research on transformational leadership showed a downward trend after 2020(see Figure 1).

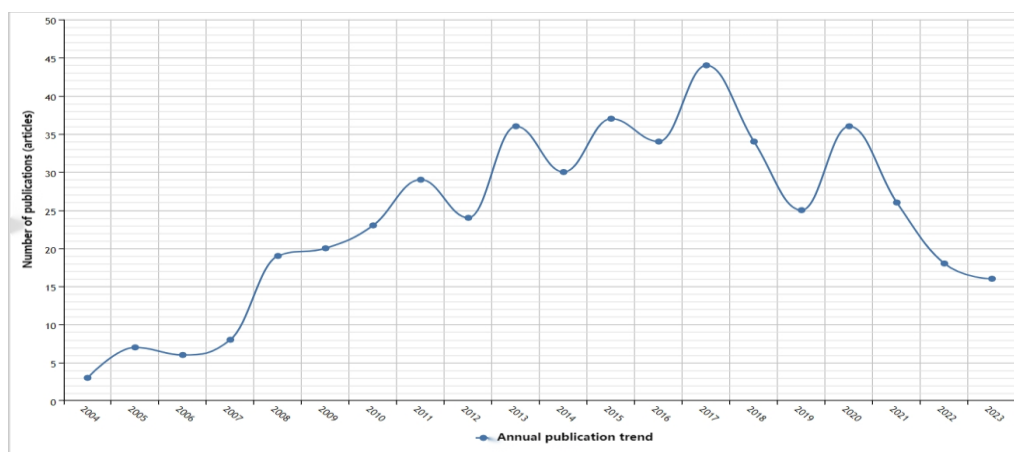


Figure 1. Chronological distribution of transformational leadership research literature

### 4.1.2 Spatial distribution map of transformational leadership research

#### (1) Author distribution

The Node types were set as the Author, the data strategy adopted in the analysis was topN=50, the time span was 2004-2023, and the time slice was 1 year. By running CiteSpace, the number of nodes was 223 and the number of lines was 250. Authors of transformational leadership research with a density of 0.0101 co-present knowledge maps (See Figure 2). As can be seen from the figure, the network of the whole graph is scattered, and there are only a few lines between author nodes, which indicates that there is less cooperation among authors in this research field, and they are all small-scale cooperation between two people, and most authors are independent research. At the same time, CiteSpace statistics show that 87 authors are involved in 127 literatures in the total sample. Table 1 lists only 18 scholars who have published more than 2 papers, among which Liu Hong and Zhou Haoyang have published 20 papers, ranking first (See table 1).

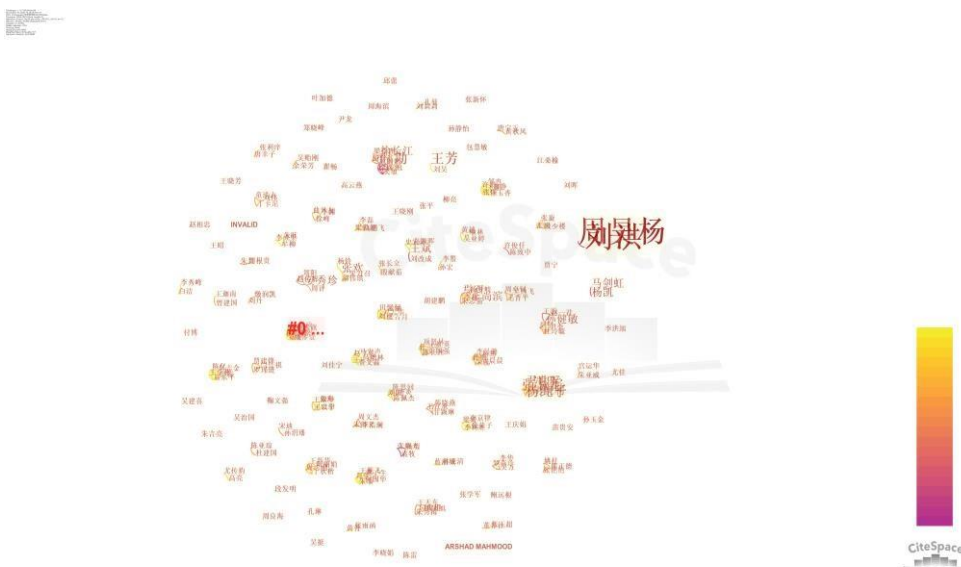


Figure 2. Author co-occurrence map

Table 1 The number of core authors and publications of transformational leadership research in China

Author	Number of published papers
Zhou Haoyang, Liu Hong	20
Wang Fang, Wanghui, yangchunzi, shikan, Zhang Mengxia	3
Hu likai, Wang Bing, Wang Binghua, Yan Shi, Yang Kai, Li Shangbing, Xu Changjiang, Yin Shiyu, Sun Jianmin, Jiang Shiyu, Sun Kai	2

**(2) Distribution of research institutions**

From the perspective of published institutions (see Figure 3), the Business School of Nanjing University has published 20 papers, which is the research institution with the highest number of published papers. The remaining 80 institutions each published 1 paper, and there was no obvious clustering among each other, and there was no cooperation among the research institutions. This reflects that although the research in this field has received the attention of academic groups, it is mostly independent research, researchers and institutions lack a sense of cooperation, and knowledge and research results are not shared and mobile.

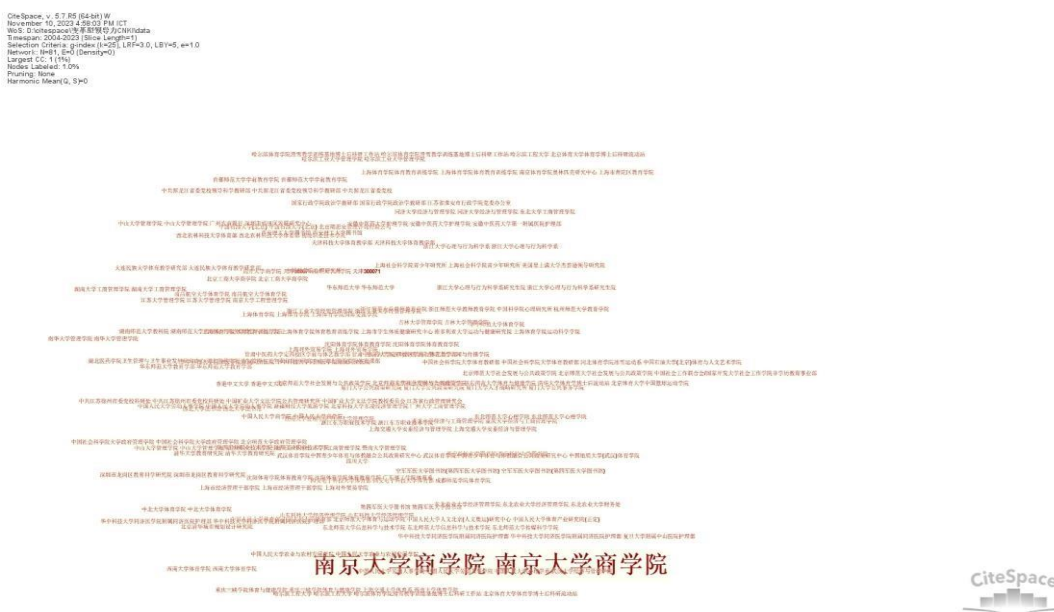


Figure 3. A visualization of the transformational leadership research institutes

### 4.2 Research hotspots of transformational leadership

Research hotspot refers to the research question or topic discussed by a group of papers that have been published in a relatively large number and are intrinsically related in a specific period of time (Song et al., 2014). Keywords in an article are highly condensed and summarized the core content of the article, reflecting the direction and value of the main research subject of the article. Keywords with high frequency are often identified as hot issues in the research field (Zhao & Jiang, 2014). This research set the node as Keywords, set the node threshold as Top N = 50,

selected the “pathfinder” to crop, Using the "canthal logarithmic likelihood algorithm", and then the software obtain the knowledge map of transformational leadership. CiteSpace software was used for keyword cluster analysis to generate keyword cluster knowledge map (see Figure 4). 29 clusters were generated, which reflected the current status of hot issues in the research field of transformational leadership.

Figure 4 shows that there are 371 hot keyword network nodes and 969 links, and the network density is 0.0141%. Common terms based on node size are Transformational leadership, Change self-efficacy, Learning inertia Openness to digital transformation, etc. This shows that these disciplines are highly valued by researchers in the field. In order to clarify the presentation of hot research issues related to transformational leadership, the top 10 co-occurrences are ranked in Table 2. For example, transformational leadership, transformational leadership level, sports literacy, planned behavior theory and other keywords have a high degree of centrality, indicating that they play a crucial role in the network structure formed by various hotspots.

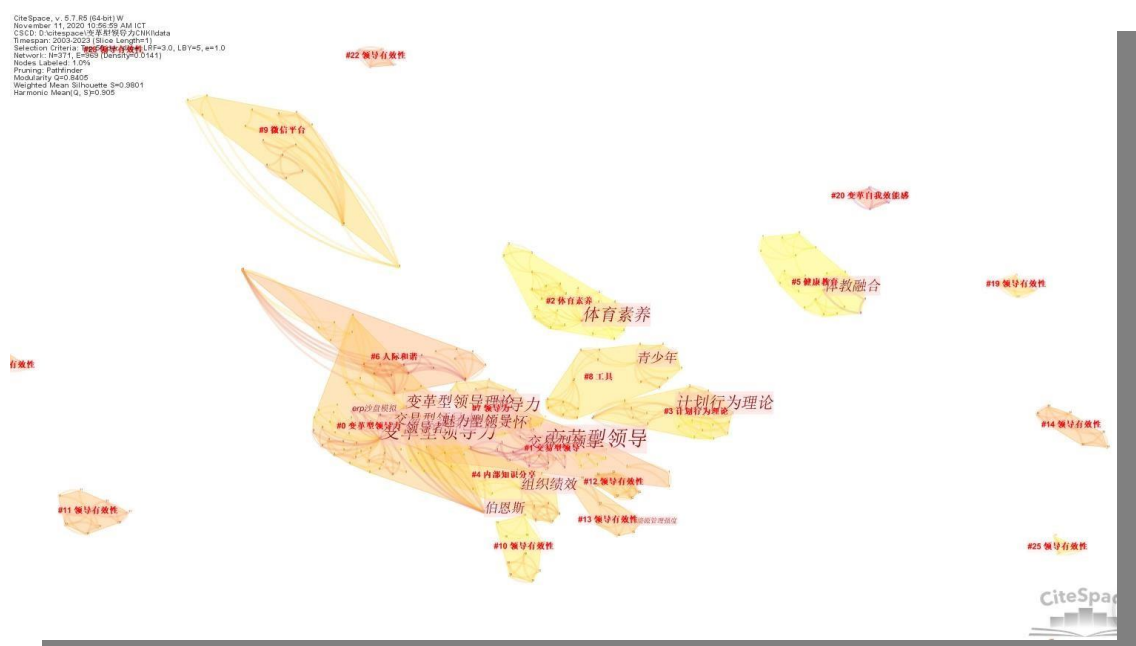


Figure 4. Keywords co-occurrence mapping of the research on the transformational leadership

Table 2. Top 10 keywords of published articles

Serial number	Count	Centrality	keywords
1	27	0.67	Transformational leadership
2	21	0	Change self-efficacy
3	21	0	Learning inertia
4	21	0	Openness to digital transformation
5	21	0	Digital transformational leadership
6	18	0.28	The level of transformational leadership
7	7	0.01	Transactional leadership
8	7	0.01	Integration of physical education
9	5	0.07	Transformational leadership theory
10	4	0.11	Leadership behavior

Clustering is a calculation method of co-word clustering of keywords. Citespace software is used to calculate the correlation of keywords in the article, and the closely related words are grouped and classified, so as to achieve the purpose of mining hidden information (Chen et al., 2016). In this study, through the analysis of the clustering situation in Figure 4, each cluster is relatively scattered, and the corresponding characteristic value cannot be found well. E.g. Clustering o. Review of transformational leadership research; Transformational leadership and transactional leadership: Predictors of team performance; Transformational leadership, professional autonomy and professional development of social workers; Internal drive and External drive: The driving mechanism of rural governance from the perspective of hierarchy:

Based on the case study of "integration of village and community" in s village, Shiqian County, Guizhou Province; The innovation of leadership mode in Information Age based on transformational leadership theory | The innovation of leadership mode in Information age based on transformational leadership theory; Transformational leadership and transactional leadership: Predictors of team performance; Transformational leadership, professional autonomy and professional development of social workers; Internal drive and External drive: The driving mechanism of rural governance from the perspective of hierarchy: Based on the case study of "integration of village and community" in s village, Shiqian County, Guizhou Province; A review of transformational leadership research. Cluster 1: Meta-analysis of the impact of transformational leadership and transactional leadership on employee innovation behavior; Research on the correlation model of transformational leadership, organizational innovation climate and innovation performance; Leadership effectiveness in Chinese organizational contexts: a meta-analysis of transformational leadership, leader-subordinate exchange, and disruptive leadership; A study on improving innovative work behavior of primary school teachers in Myanmar: the role of transformational leadership and teacher trust; A comparative study of transactional leadership, transformational leadership and paternalistic leadership; Research on the influence of transactional leadership and transformational leadership on employee behavior; The Formation Mechanism of transformational leadership and its Influence on Duality of innovation, The influence of transactional leadership and transformational leadership on employee behavior; Research on the correlation model of transformational leadership, organizational innovation climate and innovation performance; Leadership effectiveness in Chinese organizational contexts: a meta-analysis of transformational leadership, leader-subordinate exchange, and disruptive leadership; A study on improving innovative work behavior of primary school teachers in Myanmar: the role of transformational leadership and teacher trust; A comparative study of transactional leadership, transformational leadership and paternalistic leadership; A meta-analysis of the impact of transformational leadership and transactional leadership on employee innovation behavior; The formation mechanism of transformational leadership and its influence on the duality of innovation. Cluster 2: The background, construction, application and future development of sports literacy assessment system for Chinese children and adolescents; A Study on the construction mechanism of Youth Sports Literacy Cultivation System, A Study on the construction mechanism of youth Sports Literacy Cultivation system; The background, construction, application and future development of sports literacy assessment system for Chinese children and adolescents. Cluster 3: Research on grazing use decision behavior of herdsmen based on planned behavior theory; Study on the intention of continuous participation of volunteers in sports events based on the theory of extended planning behavior. Cluster 6: Research on the relationship between growth leadership behavior and firm performance of Chinese private entrepreneurs. Cluster 7: A survey on transformational leadership of head nurses in 18 Grade III and Class A hospitals in Hubei Province; Development and reliability and validity test of the transformational Leadership Self-rating scale for head nurses.

#### **4.3 Temporal evolution analysis of transformational leadership**

When using citespace software for data analysis, we can take time as the line, dynamically analyze the changes of keywords in each time zone, and predict and guide the future development (Wang & Lu, 2020). This study collected a total of 20 years of data from 2004 to 2023, selected keywords as nodes, set the threshold value of nodes to TOP N=20, and output the results in the form of "time zone" to obtain the time zone distribution of research hotspots of transformational leadership (see Figure 5).

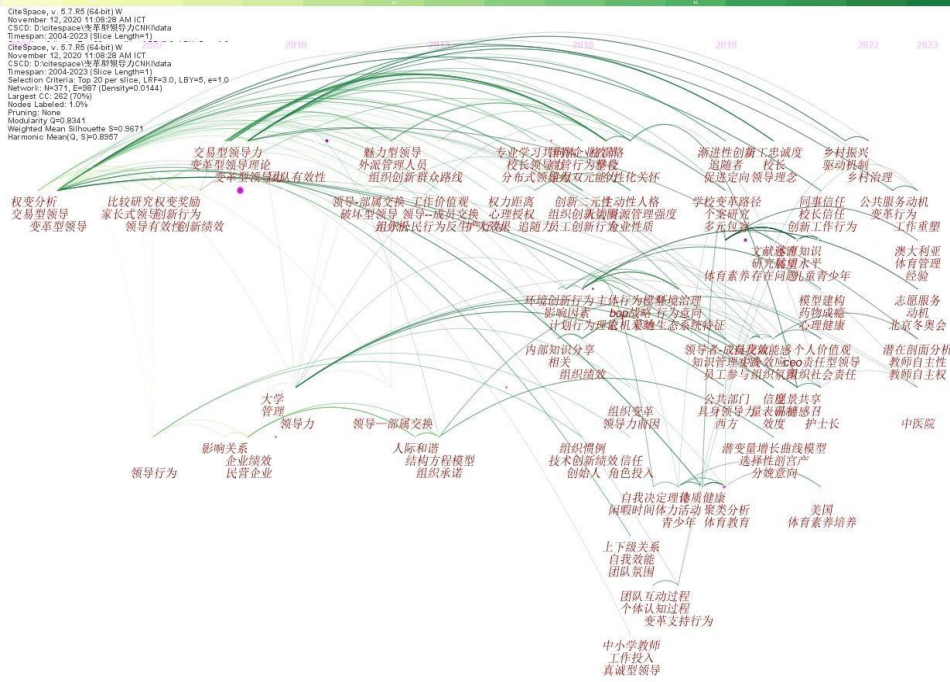


Figure 5. Timeline of the research hotpot on the transformational leadership

Figure 5 shows how transformative leadership development topics have changed over the past 20 years, with each time zone forming a hot research topic. The early research on transformational leadership mainly focused on the theory of transformational leadership. The research period from 2004 to 2007 was the initial stage, and the relevant research was relatively scarce. The research from 2008 to 2010 mainly focuses on the effectiveness of leadership and leadership behavior, leadership behavior in university management and business management; 2011-2013 is the application period of the research, focusing on leadership charisma, organizational performance, and the verification of leadership behavior with the result equation model; From 2014 to 2019, transformational leadership research came into people's attention, and the number of researchers and publications increased rapidly. The research mainly focused on the relationship between leadership behavior and organizational performance, and the relationship between leadership and followers. From 2020 to 2022, the research will focus on the application and development of leadership in schools, social undertakings, medicine and sports, and in 2023, the research will focus on management experience, volunteer service, leading teacher behavior and education.

#### 4.4 Frontier analysis of transformational leadership

Research frontiers can provide researchers with the latest evolution of disciplinary research, predict the development trend of the research field and identify the problems that need to be further explored in the future. In this study, CiteSpace software is used to analyze the keywords of transformational leadership in CNKI database, and on the basis of the analysis of the emergence of keywords, comprehensive analysis and judgment are made to study the emerging theoretical trends and emerging new topics. This study takes keywords as nodes, and the threshold of nodes is set as TOP N=50. A total of 25 Keywords with the Strongest Citation Bursts are obtained by using the "burshness" method (see Figure 6). Further analysis is carried out by combining the relevant literatures with high emergent values. This paper probes into the frontier issues and evolution trends of the transformational Leadership Research Institute. The study will analyze the change of transformational leadership from three aspects: the early stage, the middle stage and the latest research frontier.



### Top 25 Keywords with the Strongest Citation Bursts



Figure 6. Visualization of keyword burstness

The emergence time of the early frontier was from 2004 to 2014, during which the research frontiers in the field of transformational leadership mainly focused on the aspects of leadership effectiveness, transactional leadership, leader, organizational commitment, intermediary variables, and scientific research team. Early on, I studied how to implement effective leadership, starting from the transformational leadership theory, the influence of the leader's style on organizational performance, the influence of intermediary variables on organizational performance, and the scientific research team.

The emergence time of the mid-term frontier is from 2014 to 2018, during which the frontier of transformational leadership research focuses on "job performance", "organizational innovation", transformational leadership style, psychological empowerment, employee innovation behavior and differentiated leadership behavior. At this stage, there was an explosive increase in the number of papers, because the research on transformational leadership moved from the theory to the application stage, focusing on the development of employees, the cultivation of confidence empowerment and innovative ability of employees, the realization of organizational innovation through the improvement of employees' work performance, and a large number of empirical studies were conducted in enterprises and public institutions.

The emergence time of the latest frontier is from 2019 to 2023, during which the frontier of transformational leadership research focuses on green change leadership, active change behavior, organizational support, transformational leadership, social-emotional competence, etc. With the continuous evolution of the research on transformational leadership, in recent years, researchers have realized the importance of leadership level to organizational performance level, which is closely related to the leadership of social enterprises, government units, and higher education organizations. The formation of leadership styles in units of different natures is

conducive to the improvement of organizational performance. At the same time, how to change leadership behaviors and how to better adapt to economic and social development will become the trend in the future.

## 5. Conclusion and suggestion

By referring to the relevant literature on transformational leadership research and using the CiteSpace knowledge graph, this study visually analyzes hot topics and research frontiers. It is concluded that the research results in this field are abundant, but the distribution of core authors and research institutions is scattered, and the trend of cooperative research has not yet formed. There are many theoretical articles, but few empirical studies. Research hotspots of transformative leadership: transformative leadership theory, organizational performance, leadership style, empirical application, etc. The frontiers of research on transformative leadership are the influencing factors of leadership performance, the influencing factors of transformative leadership styles, transformative leadership in educational administration and business management, transformative leadership, organizational support, transformational leadership in higher education, and related topics.

Based on the research conclusions of this paper, combined with the actual situation of the current study of China's transformational leadership, the following suggestions are put forward:

1) Establish an interdisciplinary perspective and strengthen cross-institutional and cross-field cooperative research.

The field of transformational leadership requires the participation of different disciplinary areas, involving management, psychology, law, education and other theoretical knowledge. For example, in psychology, the mental health development of leaders and followers is enhanced; In terms of management, how to reduce management costs and improve organizational performance is considered; In the aspect of law, from the perspective of mechanism and system, we should ensure the legalization of leadership and promote the harmonious and orderly operation of various industries. In pedagogy, systematic development and development of human resources. At the same time, research institutions and researchers should strengthen cooperation, go deeper into the grassroots, carry out empirical research, and communicate with front-line practitioners to break the isolation between practice and theory. Management should strive to eliminate the negative factors that hinder and affect collaborative research and empirical research, and promote the development of leadership research in China through concrete and detailed front-line data.

2) Based on The Times, constantly adapt to and lead the social, technological and organizational changes. In the context of the goal of socialist modernization and great rejuvenation in the new era, transformational leadership should focus on the characteristics of digitalization and technological revolution, cross-cultural leadership, sustainable development, inclusiveness, flexibility, etc. Modern society is undergoing digitization and technological change, and leaders need to understand and adapt to these changes. For example, based on building a digital age to motivate teams, promote innovation, and be good at applying technology to improve work efficiency and organize innovation. As organizations are impacted by multiculturalism in the context of globalization, leaders need to consider and respect the values and ways of working of employees from different cultural backgrounds in order to build a more inclusive and cross-cultural working environment. Leadership should focus on the sustainability of the organization, considering social responsibility, environmental impact, and the overall well-being of employees in decisions to ensure the long-term sustainability of the organization. Leaders should encourage a culture of learning in their organizations, equip employees to adapt to change, provide training, development opportunities, and encourage continuous learning and growth. Support for flexible working patterns, including remote working and flexible working hours, helps improve employee job satisfaction and productivity. It encourages teams to innovate and experiment, including experimenting with new workflows, business models and technology applications. Building a strong team culture that emphasizes shared values, team cohesion and collaboration is transformational leadership, and building a positive team culture helps improve employee motivation and team performance.

3) Transformational leadership in sports disciplines should pay attention to innovative research, cooperative culture, social influence, and training of new leaders to promote the progress and development of disciplines. In higher education, transformational leadership can become a key factor to promote the development of disciplines. Sports disciplines should encourage innovation, establish a culture of cooperation, pay attention to the social impact of disciplines, advocate teaching innovation, international cooperation, scientific research projects, etc., so as to help transformational leadership gain a better foothold and development in college sports disciplines. It encourages teams to conduct innovative research, challenges traditional ideas, explores new research areas and methods, and supports interdisciplinary research to promote the integration of sports disciplines with other disciplines. Fostering a culture that encourages team members to collaborate and share resources and knowledge is at the heart of transformational leadership to advance the discipline as a whole. Pay attention to the social impact of disciplines, promote research results closer to social needs, and provide beneficial solutions for society. Provide training and support to help a new generation of scholars and researchers develop transformational leadership and drive the long-term sustainability of the discipline. Guide teachers to adopt new teaching methods, techniques and curriculum design in order to improve the teaching quality of subjects. Establish an international research cooperation and exchange platform to promote the

sports discipline to learn from the international advanced experience, improve the research level, and promote the international development of the discipline. Provide resources and support to teams to drive cutting-edge research and disciplinary innovation. Establish a positive, collaborative team culture that encourages team members to share ideas, enables the team to explore new directions in the discipline together, and makes members feel valued and supported.

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