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Hotspots and Trends in Inclusion Research -A Bibliometric Analysis

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Abstract. To elucidate the research hotspots and evolutionary trends in the field of inclusion studies, and anticipate future directions in inclusion management, this paper utilizes the relevant literature on inclusion research indexed in the Web of Science from 2000 to 2023 as the data source. CiteSpace 6.1.R6 software was used to construct co-occurrence, clustering, and co-citation networks. This study holds significant value in advancing in-depth inclusion research in globalization and enhancing inclusion management practices within organizations and among managers.

Keywords: Inclusion; inclusive climate; inclusive practices; CiteSpace; bibliometric analysis.

1. Introduction

In the contemporary era, the significance of a diverse and inclusive workplace is growing. As economic globalization accelerates, cultural exchanges among nations increase, and immigrant populations expand, establishing a multicultural and highly inclusive work environment has emerged as a trend in organizational management.

Inclusiveness is defined as a state where members of organizations or teams with diverse backgrounds, cultures, genders, religions, or races feel respected, accepted, and treated fairly [1]. An inclusive work environment significantly enhances talent attraction and retention. When employees perceive respect and equality, their sense of belonging is strengthened; conversely, a lack of inclusiveness increases turnover intentions. Multicultural identity represents a key competitive advantage.

In recent years, diversity and inclusion management has become a global issue. Research on themes such as perceived inclusion [2], inclusion climate [3], and inclusion practices[4-6] has been increasing in the academic community. Increasingly, researchers and managers are focusing on creating inclusive work environments. Inclusion research has emerged as an intrinsic need for organizations to effectively manage diversity and has

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become a significant focal point in the field of management. Accordingly, this study utilizes CiteSpace 6.1.R6 to organize and analyze the literature on inclusion research sourced from the Web of Science (WOS). Visual knowledge maps are employed to facilitate intuitive bibliometric analysis, thereby revealing the research hotspots and evolutionary trends in this domain.

2. Research design

2.1. Data sources

The literature data for this study was sourced from the Web of Science Core Collection database, using search terms such as “perceived inclusion”, “inclusion climate”, “inclusion practices” and “organization”. The publication date range was set from 2000 to 2023. Initially, 447 articles were identified. After removing 171 duplicates, 276 articles remained. Excluding an additional 8 articles unrelated to the field resulted in a final dataset of 268 articles for visualization analysis.

2.2. Research methodology

Citespace-based knowledge graph analysis has been extensively applied across various disciplines, enabling co-occurrence, clustering, emergence, and co-citation analyses of authors, institutions, and keywords. These analyses are typically visualized as knowledge graphs. Accordingly, this study employs the CiteSpace 6.1.R6 software to conduct bibliometric analyses in the field of inclusion research. The analyses generate network knowledge graphs of authors and institutions, keyword co-occurrence maps, clustering diagrams, and co-citation networks. The objective is to identify research hotspots and evolutionary trends within the domain of inclusion research.

3. Bibliometric analysis

3.1. Annual publication volume

Research on the topic of inclusion first began with Schein's study of individual-level perceptions in 1971, but the field was not generally focused on by many scholars until the 20th century.

Around the year 2000, research on various dimensions of the sense of inclusion [7], inclusive climate [8], and inclusive practices [9] also gradually emerged. During this period, research on inclusion by many scholars was not yet mature, with varying understandings and research directions. The publication trend was stable and the number of publications was not high. It was not until around 2010 that the number of inclusion-related publications began to rise slightly, increased significantly in 2015, and reached a considerable volume by 2016. Since then, the number of publications on inclusion has been on an upward trend. We also added a trend line for the cumulative annual publications: $y = 0.4487e^{(0.2761x)}$ ($R^2 = 0.9888$), which shows an excellent fit. This implies that the cumulative number of publications is projected to continue increasing according to the exponential model in the foreseeable future, suggesting that the research is in a phase of continuous growth. Given that our literature is sourced exclusively from the Web of Science Core Collection for CiteSpace analysis, it does not encompass all research in this field by the international academic community. Nevertheless, through knowledge mapping analysis, we can broadly identify the overall trends and focus areas of this research field.

3.2. Status of research

3.2.1. Authors' analysis

The authors of publications are the main body of scientific research, and the structural characterization of the authors of publications and their collaborative networks can reflect the core group of authors and their collaborative relationships in the field.

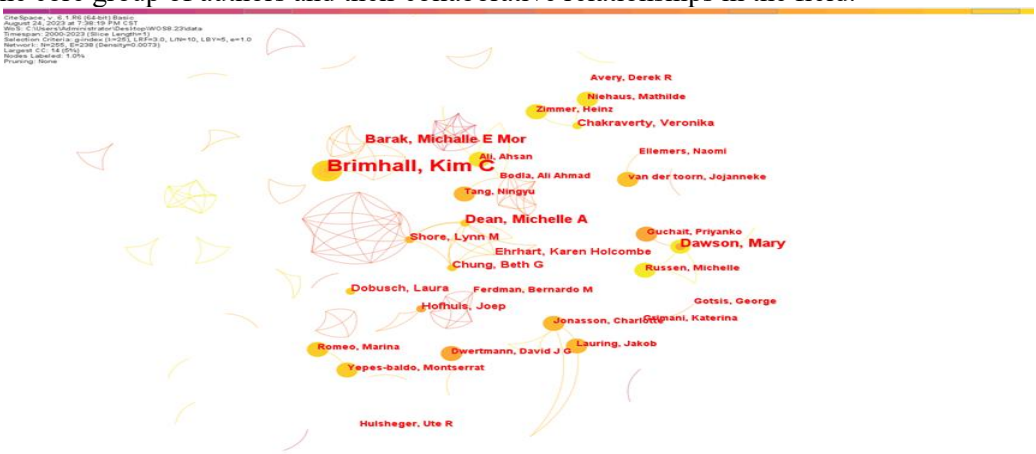


Figure 1: Collaborative network of authors in the inclusion research literature

The author collaboration network mapping of the inclusive research literature consists of 255 nodes with 238 connecting lines (as shown in Fig. 1), and from Fig. 1 we can see that the author with the greatest number of postings is Brimhall, Kim C from the State University of New York at Binghamton with a total of 9 postings. The density of author collaboration network is 0.0073, from the figure we can see that only a few research scholars are in independent research status, most authors have formed more stable research groups, but most of the research groups are less significant in terms of the number of publications, and the tightness of mutual cooperation among authors still needs to be further strengthened. Among the research groups with more links, the core authors with more significant publication volume include Shore (3 articles), Mor Barak (4 articles), Dean (4 articles), Dawson (4 articles), etc.

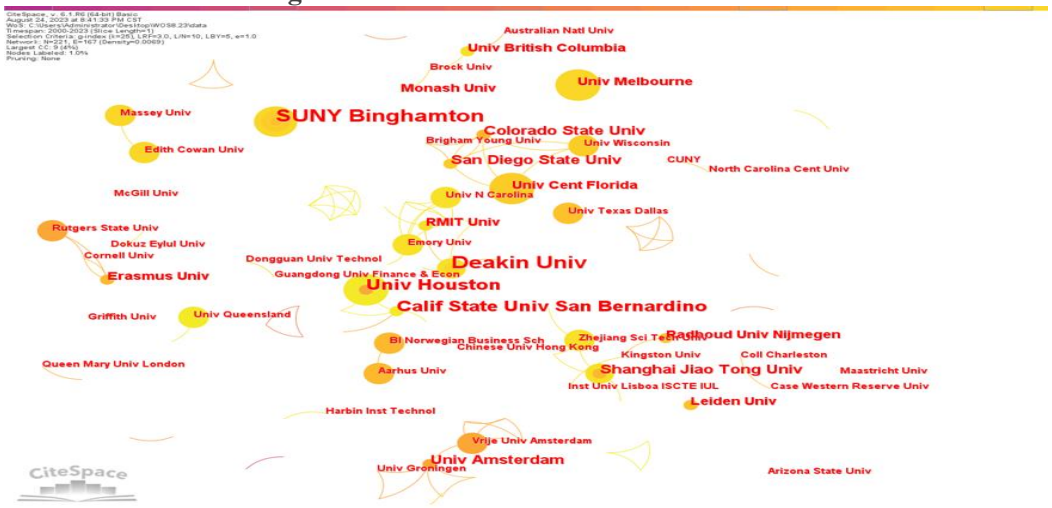
3.2.2. Institutional analysis

Figure 2 shows the mapping of the collaborative network of inclusive research institutions obtained from the sample data through Citespace, with 221 nodes and 167 connecting lines, and a network density of 0.0069.

From Figure 2, it can be seen that the institutions with a high number of publications are Deakin Univ (7), SUNY Binghamton (7), Calif State Univ San Bernardino (5), Univ Houston (5), Colorado State Univ (4), Univ Amsterdam (4), Shanghai Jiao Tong Univ (4), San Diego State Univ (4), and so on. Among all the issuing institutions, in terms of type, they are mainly dominated by higher education institutions. From the point of view of the region of the issuing institutions, most of them are foreign. More domestic research results are mainly from Shanghai Jiao Tong University, in addition, there is a cooperation and exchange relationship between Shanghai Jiao Tong University and Zhejiang University of Science and Technology as well as Donghua University and other domestic universities. The analysis shows that there is less cooperation between domestic scholars

of inclusive research, low concentration, and the number of domestic issuing institutions in this research field is also low.

Figure 2: Institutional collaboration network



3.2.3. Country analysis

Figure 3 presents the country cooperation network map for the sample data, featuring 55 nodes and 91 connecting lines, with a network density of 0.0613. The United States leads in publication count with 120 articles, followed by Australia (32), England (31), China (31), the Netherlands (25), Canada (17), Germany (15), Pakistan (8), Italy (7), and New Zealand (6), among others. These countries exhibit a certain degree of exchange and collaboration.

Figure 3: National cooperation network for inclusive research

3.3. Co-citation analysis

3.3.1. Authors

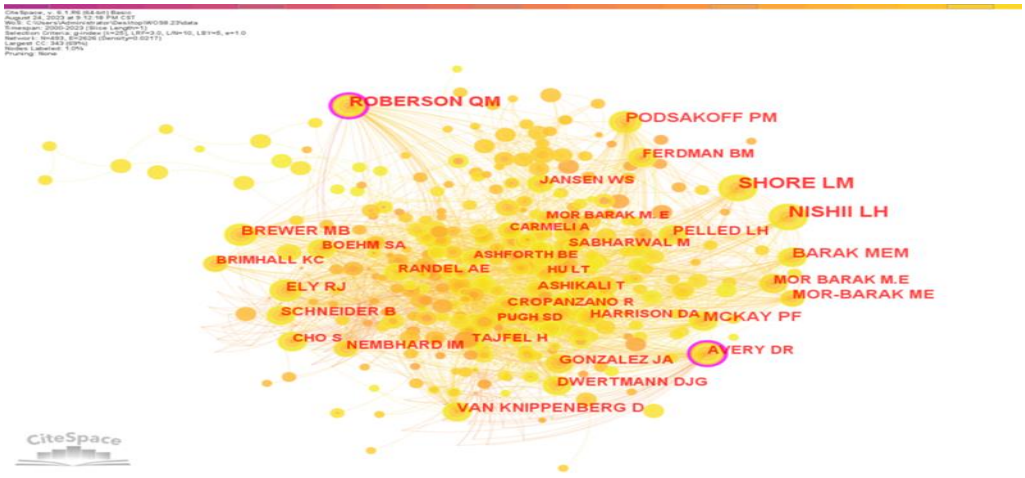


Figure 4: Co-citation network of inclusion study authors

The co-citation author network consists of 493 nodes and 2,626 links, with a network density of 0.0217. As shown in Figure 4, Shore is a highly cited author, indicating significant influence in the field of inclusion research. The top co-citation strengths are as follows: Shore LM (144), Nishii LH (117), Roberson QM (75), and Barak MEM (69), among others. Avery DR and Roberson QM have the highest degree centrality, at 89 and 68, respectively, making them the most connected nodes. Their centralities are 0.18 and 0.11, respectively, both exceeding 0.1, and they are also key nodes.

3.3.2. Institutions

As shown in Figure 5, the co-citation institution network consists of 462 nodes and 2,637 links, with a network density of 0.0248. The most highly cited institutions are the Journal of Management (185), followed by The Academy of Management Journal (182), The Journal of Applied Psychology (181), Academy of Management Review (156), The Journal of Organizational Behavior (156), and Group & Organization Management (135), among others. The institutions with the highest centrality rankings are American Psychologist (0.19), Journal of Public Health (0.11), Journal of Counseling Psychology (0.11), and The Academy of Management Journal (0.11), all with centrality values greater than 0.1, indicating that they are key nodes.

3.3.3. Co-cited literature

The co-citation document network consists of 452 nodes and 1,655 links, with a network density of 0.0162. Among them, Shore (2018) is a highly cited document, with the highest citation frequency of 56 times, indicating significant influence in the field of inclusion research. Other notable documents include Barak (2016) with 25 citations, Randel (2018) with 22 citations, and Nishii (2013) with 20 citations, among others.

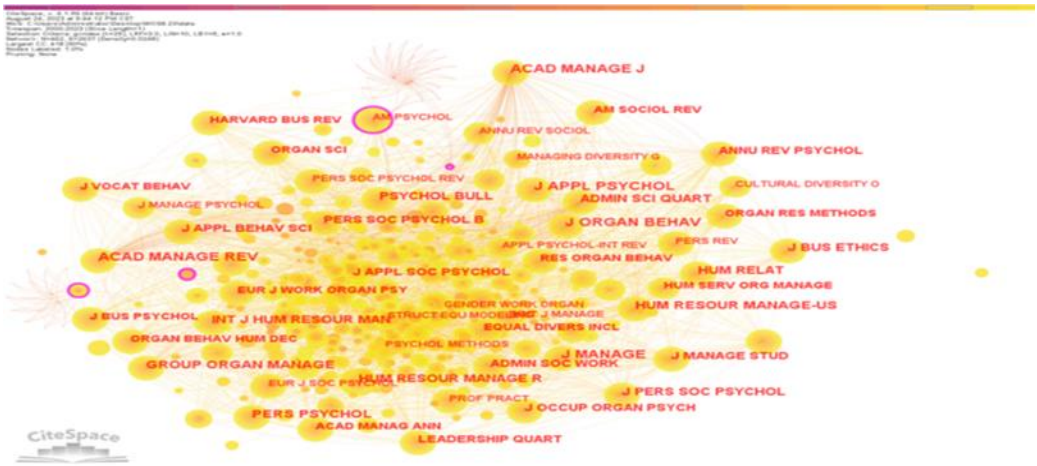


Figure 5: Inclusive research institutions co-citation network

3.3.4. Co-cited literature clustering

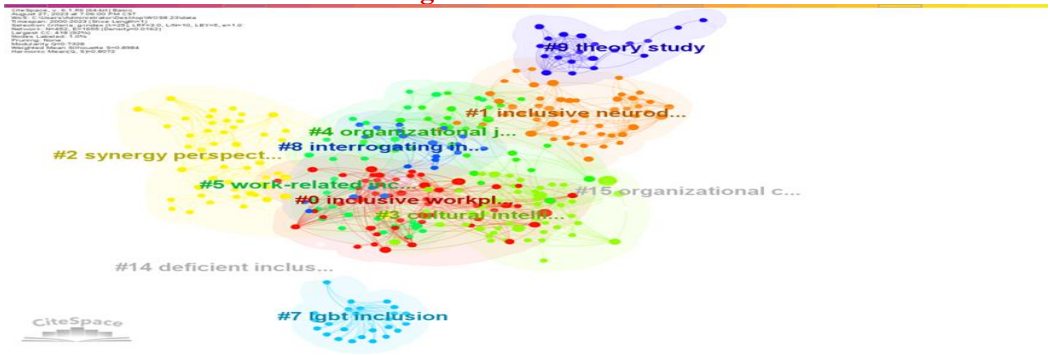


Figure 6: Clustered network diagram of co-cited literature on inclusion studies

Cluster analysis was conducted on the co-cited documents in Figure 6. Using the commonly employed LLR algorithm, 11 clusters were identified, with the largest cluster labeled as "inclusive workplace" (inclusive work environment), having a silhouette value of 53. Through the clustering analysis of co-cited documents, it is understood that the development of inclusion research will gradually focus on the inclusive workplace.

3.4. Hot topic of research

3.4.1. Keyword co-occurrence

By analyzing the keywords, we can grasp the research hotspots and directions in the field of inclusion. The Citespace keyword co-occurrence map (Figure 7) shows N=290 nodes, E=1658 lines, and a network density of 0.0396. More nodes mean more keywords, more lines indicate stronger keyword connections, and higher density reflects greater network connectivity. Larger nodes signify more frequent keyword appearances. The keywords “work,” “workplace,” and “diversity management” frequently appear in the literature, indicating that most studies focus on workplace-related issues of diversity and diversity management, examining aspects like employee performance and job satisfaction.

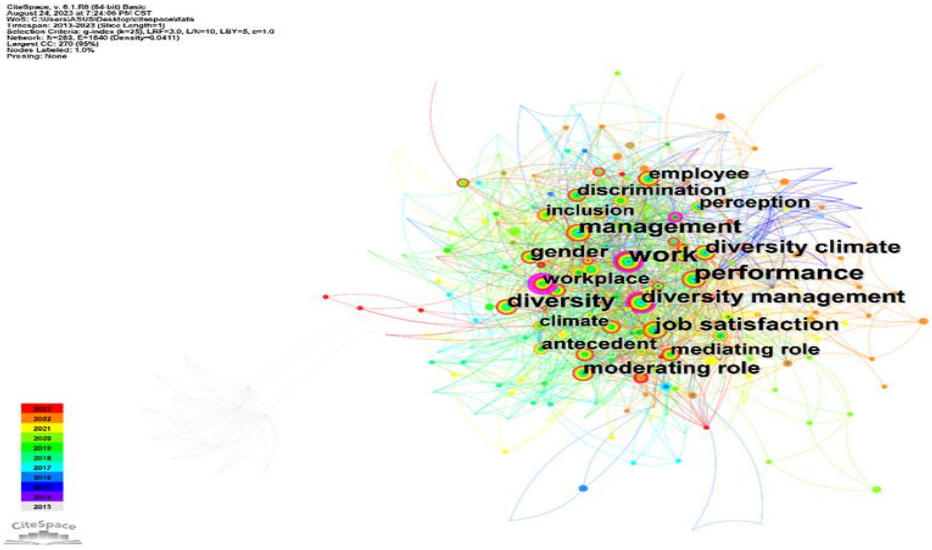


Figure 7: Keyword co-occurrence analysis for inclusive research

The centrality of keywords was calculated, and the top 20 keywords with a frequency higher than 20 were listed (Table 1). The five most frequent keywords are "work," "performance," "management," "diversity," and "diversity climate." Among these 20 keywords, "work," "diversity management," and "workplace" have a centrality exceeding 0.1, indicating strong centrality and significant influence in the field of inclusion. Additionally, 10 of the remaining 17 keywords have a centrality greater than 0.05, demonstrating some degree of centrality.

Based on the keyword analysis, the current focus of existing international research on inclusion primarily lies in exploring the influencing factors, antecedents and consequences, as well as improvement methods related to the above-mentioned keywords.

Table 1: High-frequency keywords for inclusion studies

Number	Keywords	Frequency	Centrality	Number	Keywords	Frequency	Centrality
1	work	76	0.11	11	employee	25	0.07
2	performance	63	0.08	12	workplace	24	0.2
3	management	49	0.06	13	impact	23	0.04
4	diversity	48	0.09	14	antecedent	22	0.04
5	diversity climate	42	0.07	15	mediating role	21	0.03
6	Job satisfaction	39	0.08	16	perception	21	0.05
7	diversity management	39	0.12	17	discrimination	21	0.08
8	model	37	0.08	18	inclusion	20	0.03
9	moderating role	31	0.06	19	climate	20	0.03
10	gender	29	0.07	20	consequence	20	0.04

3.4.2. Keyword clustering

The keyword co-occurrence results clearly show close connections among many keywords. Therefore, we can group keywords with the same or similar meanings, or

those with related connections, into one category (as shown in Figure 8) to form a thematic direction.

Figure 8: Keyword clustering network diagram for inclusion research

We kept the first through eighth keyword categories and eliminated the second ambiguous category, and the remaining seven categories are #1 “people with disabilities”, #3 “leader member exchange”, #4 “ethical leadership”, #5 “engineering”, #6 “sexual”, #4 “ethical leadership”, #5 “engineering”, #6 “sexual Harassment”, #7 “work environment”, #8 “human resource policy and practice”.

The clustering results indicate a modularity value Q provided by Citespace is 0.4024, and the average silhouette value S is 0.7012. Generally, the range of Q is [0, 1). When $Q > 0.3$, it indicates that the clustering structure is significant. If $S > 0.5$, the clustering is considered reasonable, and when $S > 0.7$, the clustering is highly concentrated and of practical research significance. Thus, the identified clustering structure is both significant and highly concentrated.

The keyword clustering analysis reveals several key areas of focus within inclusion research. The first cluster, “people with disabilities,” highlights research addressing exclusion or unfair treatment of this group within organizations. The third cluster, “leader-member exchange,” examines relationships between leaders and members, leadership competence, and job satisfaction, which are critical aspects of inclusion. The fourth cluster, “ethical leadership,” focuses on leadership-related factors such as leader support and inclusive leadership practices. The fifth cluster, “management (process),” is associated with public sectors, organizational development, team innovation, and employee engagement and performance. The sixth cluster, “sexual harassment,” covers inclusion research related to gender issues. The seventh cluster, “work environment,” emphasizes the creation of a shared organizational perception and an inclusive climate. Finally, the eighth cluster, “HR policies and practices,” involves HR initiatives that enhance employee valuation and inclusion. Collectively, these clusters reflect the diverse perspectives and focal points of inclusion research.

3.5. Research trends

Top 25 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2000 - 2023
cultural diversity	2014	3.17	2014	2018	
attitude	2014	1.51	2014	2016	
diversity outcm	2015	1.79	2015	2016	
organization	2015	1.78	2015	2017	
integrative model	2015	1.59	2015	2016	
relational demography	2016	3.28	2016	2017	
diversity climate	2016	2.8	2016	2017	
child welfare worker	2016	1.74	2016	2019	
racial difference	2016	1.74	2016	2019	
perception	2016	1.73	2016	2017	
authentic leadership	2016	1.44	2016	2018	
inclusive climate	2017	2.12	2017	2018	
identity	2017	2	2017	2018	
deep level diversity	2017	1.74	2017	2019	
employee creativity	2018	2	2018	2019	
discourse	2018	2	2018	2019	
firm performance	2018	1.82	2018	2020	
transformational leadership	2016	1.63	2018	2019	
discrimination	2016	1.45	2018	2019	
equality	2019	2.15	2019	2020	
member exchange	2016	1.85	2020	2021	
support	2020	1.62	2020	2021	
health	2021	2.03	2021	2023	
safety climate	2021	1.61	2021	2023	
satisfaction	2021	1.58	2021	2023	

Figure 9: Keyword bursts table for inclusion research

The keyword emergence analysis assessed the rise and application of keywords in specific years. With a γ value of 0.4, the top 25 keywords with the highest emergence intensity were identified and ranked by their appearance time. The emergence of keywords also can, to some extent, reflect shifts in research trends within a particular field. Notably, the first stage (2014-2016), emergent keywords contain “cultural diversity” “attitude” “diversity outcome” “relational demography” “diversity climate”. “Cultural diversity” had the second-highest emergence intensity and appeared earliest, emerging in 2014 and lasting until 2018. This indicates that cultural diversity was a significant factor influencing organizational inclusion during this period. The second stage (2017–2020), keywords such as “inclusive climate” “deep level diversity” “racial difference” and “discrimination” also emerged means that shift to inclusion research. The final stage (2021 to today), the latest keywords to appear were “safety climate” and “satisfaction” in 2021, which are still in use. This analysis reveals that keywords like “cultural diversity,” “relational demography,” “diversity climate,” and “inclusive climate” had significant emergence, reflecting primary research directions in inclusion studies in prior years. In contrast, the recent emergence of keywords such as “health,” “safety climate,” and “satisfaction” since 2021 suggests a shift in focus towards employee health, safety climate, and job satisfaction (as shown in Figure 9).

4. Conclusion and discussion

As evidenced by publication data, the increasing diversity in workforce, demographics, and age has significantly impacted work and employment. Brimhall who came from the State University of New York made a significant contribution. Meanwell, inclusive research is primarily driven by the United States, SUNY Binghamton was the most prolific institution. A growing number of scholars are investigating the intrinsic connections between diversity and inclusion, and exploring how to create more inclusive organizational climate through effective diversity management.

In the context of today's complex hotspots and trends of diversity and multiculturalism, inclusion research is particularly important [10] for improving overall organizational performance and employee motivation and creativity. Some studies have examined employee performance under highly inclusive climates, with findings indicating that an inclusive climate can lead to higher levels of affective commitment and organizational commitment among employees [11]. Other research has explored the creation of inclusive workplaces or environments through mediating variables such as team diversity and safety climates, with the inclusive climate serving as the outcome variable.

Overall, although inclusion research is on the rise and international scholars have deepened their theoretical understanding, further exploration is still needed to build highly inclusive mechanisms in the context of globalization and complex organizational environments. It must be emphasized that the data employed in this study were exclusively sourced from Web of Science (WoS), which may entail potential data omissions. Future research should incorporate additional databases such as EBSCO, WEILY, or CNKI to achieve more comprehensive datasets for in-depth investigations.

Acknowledgement. This study is funded by National/Municipal-Level Undergraduate Innovation and Entrepreneurship Training Program for 2023 "The Value and Cultivation of an Inclusive Climate in Scientific and Technological Innovation Teams" (S202310617037).

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