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A SYSTEMATIC LITERATURE REVIEW OF PLACE ATTACHMENT IN ENVIRONMENTS, CITIES AND LANDSCAPES

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Abstract. People's place attachment to the environment, cities and landscapes is crucial to improving urban living environments and enhancing the meaning of place. Researchers are conducting theoretical analysis and case practice in this field. However, there is a lack of an overall review of the literature in this field. A systematic literature review can understand the research characteristics and development trends. Therefore, we obtained 1,808 literature data from the Web of Science core collection database and analysis the research status, evolution, research hot spots and development trends. We conduct visual co-authorship, co-occurrence, co-citation and emergence analyses using the bibliometric tools VOSviewer, CiteSpace and Scimago Graphica. This research found that the amount of literature in this area continues to grow and the topics continue to change, from an initial focus on classic topics such as behavioral intentions to more specific topics such as community attachment through more cases.

1.   Introduction

People's emotional connection to a place is referred to as place attachment (Altman & Low, 1992; Hidalgo & Hernández, 2001; Lewicka, 2011; Ramkissoon, Weiler & Smith, 2012). It is the emotional component of a person's place identification (Hidalgo & Hernández, 2001; Lewicka, 2011; Ramkissoon *et al*., 2012). It expresses a person's psychological preference to stay in a place where they feel safe and comfortable. (Hidalgo & Hernández, 2001). However, there is a crisis of attachment between people and places in many cities and regions (Zhu, 2020). In the context of globalization and urbanization, problems such as irrational land use in the process have threatened the man-land relationship and people's attachment to their place have become increasingly fragile (Relph, 1976b). The place attachment sustains people's values, sense of security and sense of belonging for their survival (Li, 2013), so people must pay more attention to them.

Among the many disciplines related to the field of place attachment, urban places, environments and landscapes are important objects of place attachment research (Zhang & Zhang, 2022). Because the living environment and urban space are important places for people's daily lives (Liu, 2020) and optimizing them is conducive to improving the urban environment and residents' lives (Long *et al*., 2017). Place attachment is an

important condition for the meaning, functionality and attractiveness of a place (Moulay & Ujang, 2021) and is key to a successful environment (Chang *et al*., 2023; Ge *et al*., 2022). In addition, place attachment plays an important guiding role in the design and construction of public spaces (Kyle *et al*., 2005; Moughtin *et at*., 1999). Those are the reasons why relevant studies and theories are increasingly focusing on people's place attachment to support and encourage future urban design.

Based on the existing research and review studies in the field of place attachment, we found that although more and more studies focus on place attachment in the environment, cities and landscapes, there is a lack of research to review or summarize such studies, especially systematic reviews. Using scientific methods, such as bibliometrics, to conduct a systematic review can provide a clear and objective understanding of the research (Donthu *et al*., 2021). Research that combines quantitative data statistics and visual analysis data can effectively analyze and summarize the characteristics, core and development trends of literature in a specific field (Donthu *et al*., 2021).
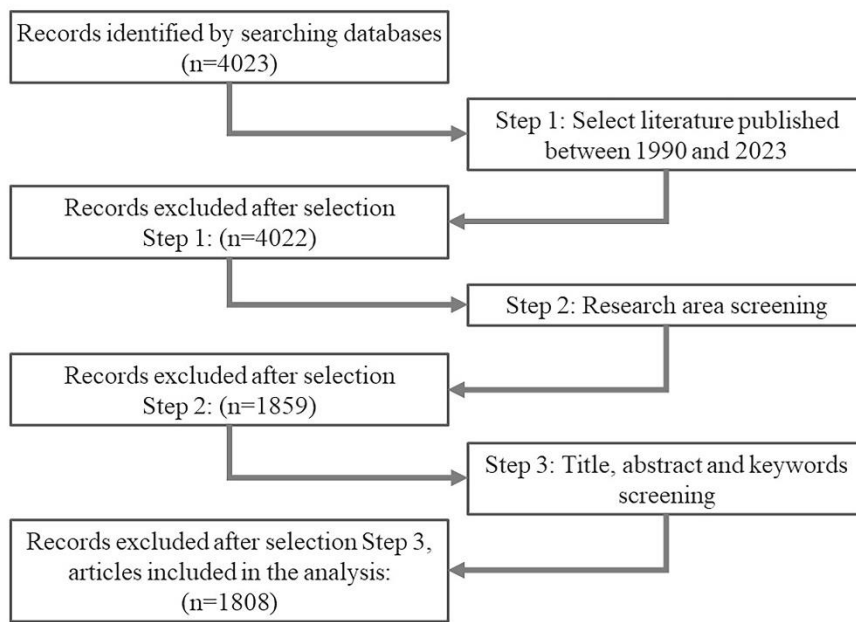
This research adopts the bibliometric method in the systematic literature review as the data collection and analysis method and systematically analyzes the literature on place attachment in environment, city and landscape. We mainly review the literature published in this field from 1990 to 2023. By combining quantitative data statistics and data visualization of the literature, the literature characteristics, research hot spots, themes and future development trends.

2.   Methodology

2.1. Data collection

This study starts from August to November 2023. The research uses a systematic literature review as the research method. Systematic literature review research method because is reliable and effective (Pickering & Byrne, 2014). Regarding the literature selection process, first, the researcher determines the topics and keywords. Then enter the keywords into the database to search and find relevant literature. Finally, the searched literature is evaluated and screened and relevant research literature matching the topic is selected.

The literature data of this research came from WOS Core Collection literature database. The search keyword content of the research is "place attachment" and the search keywords also include "attachment of place", "space attachment", "landscape attachment", "urban attachment", "building attachment" and "environmental attachment". Figure 1 shows the literature screening process, where "n" represents the number of literature data. The time range selects English language literature published from January 1990 to July 2023. A total of 4022 literature data were obtained. Because the data obtained from WOS searches may cover a wider research area. Therefore, to screen the data more accurately, we screened the research area of the searched literature data and selected the related topics: "Environmental Science", "Environmental Studies", "Green Sustainable Science Technology", "Urban Studies", "Regional Urban Planning", "Sociology", "Architecture". After screening the research fields, 1859 literature data were obtained. Since there may be mismatches between data and topics in the same field, we continue to read the literature's titles, abstracts and keywords. Then screen the literature that meets the research topic again. Finally, 1808 literature data were obtained.

Figure 1. An overview of the systematic literature review procedure

2.2. Data Analysis

We conducted data analysis on the characteristics, development trends and core literature. We use VOSviewer (Bukar *et al*., 2023; Padwiansyah *et al*., 2023), Scimago Graphica (Hassan-Montero et al., 2022; Liu *et al*., 2023) and CiteSpace (Wang *et al*., 2019; Zhang *et al*., 2023) bibliometric tools for analysis. The data analysis results are mainly visual analysis statistical charts and at the same time, the data is listed in tables for auxiliary analysis. Among them, Scimago Graphica is used to visualize statistics and analyze the countries and regions of literature in this field. Use VOSviewer to visualize statistics and analyze literature authors. In addition, to visually analyze the development trends and core knowledge in this field, we used CiteSpace software to conduct keyword co-occurrence analysis, keyword cluster analysis, reference co-citation analysis and reference co-citation cluster analysis.

Since in quantitative statistical analysis of literature data, quantity and frequency can reflect the popularity and attention of research (Liu *et al*., 2023), clustering and centrality can also reflect the topic and focus of research, Therefore, by using results of literature in countries and regions, authors and published journals, the characteristics of research and the distribution of research groups can be analyzed. Moreover, the number of citations and journal's impact factor can be used to analyze the literature's influence and quality. For keyword co-occurrence analysis, co-citation analysis and their cluster analysis, the hotpots, core topics and evolution can be analyzed. Detailed data analysis results are provided in subsequent chapters.

3.   Results

3.1. Performance analysis

3.1.1. Literature development mode

Among the 1808 papers selected for this research, totaling 90 countries and regions, with a total of 1,669 organizations and 4,538 authors, were published in 412 journals and were cited 67,148 times in 33,967 articles. During the 33 years period from 1990 to 2023, although some years have decreased compared to the previous year, the overall number of research publications has shown an upward trend, while the number of citations has shown a positive upward trend. In particular, research publications and citations saw explosive growth in 2019 and peaked in 2022. From the statistics, we can find that more and more research about place attachment to environment, city and landscape has been published and this field has gradually attracted more researchers' attention.

3.1.2. Journal bibliometric analysis

Table 1 lists the top ten journals according to the volume of publications. *Sustainability* published a total of 191 articles, making it the journal with the most publications. Although the *Journal of Environmental Psychology* has the second-highest number of publications (154). With a total of 18,636 citations, it is noteworthy that it has the most citations overall and far more than other journals. It also ranks first in terms of average citations at 121.01. It is also noteworthy that there are comparatively more publications in the *Journal of Sustainable Tourism* and *Tourism Management*.

Table 1. Top 10 journals in the field of place attachment for environment, city, landscape

Number	Journal	IF (2023)	Publication	Citation	Average Citation
1	Sustainability	3.9	191	2,250	11.78
2	Journal of Environmental Psychology	6.9	154	18,636	121.01
3	Journal of Sustainable Tourism	8.91	63	3,229	51.25
4	Tourism Management	12.7	61	6,806	111.57
5	Cities	6.7	48	1,022	21.29
6	Environment and Behavior	5.7	47	4,204	89.45
7	International Journal of Environmental Research and Public Health	1.8	47	431	9.17
8	Landscape and Urban Planning	9.1	37	1,496	40.43
9	Leisure Sciences	4	33	2,783	84.33
10	Journal of Rural Studies	5.1	32	743	23.22
11	Land	3.9	32	128	4

As a result, the majority of publications are found in periodicals including *Sustainability*, *Journal of Environmental Psychology*, *Journal of Sustainable Tourism*, *Tourism Management*, etc. The literature that attracts the most attention from researchers mainly appears in the *Journal of Environmental Psychology*, *Tourism Management*,

Environment and Behavior and *Leisure Sciences*. Based on the impact factor (IF) data of journals, the journals where high-quality literature mainly appears are *Tourism Management*, *Journal of Environmental Psychology*, *Landscape and Urban Planning* and *Journal of Sustainable Tourism*.

3.1.3. Author bibliometric analysis

This research first identifies the core authors in the field. The core author concept as defined by Xu et al. (2020). is the author whose work has a prominent influence in a research field. To sort out the data of the core authors, Price's law was applied (Liu *et al*., 2023; Price, 1963). This law determines the required minimum quantity of published core authors, the formula is as follows.
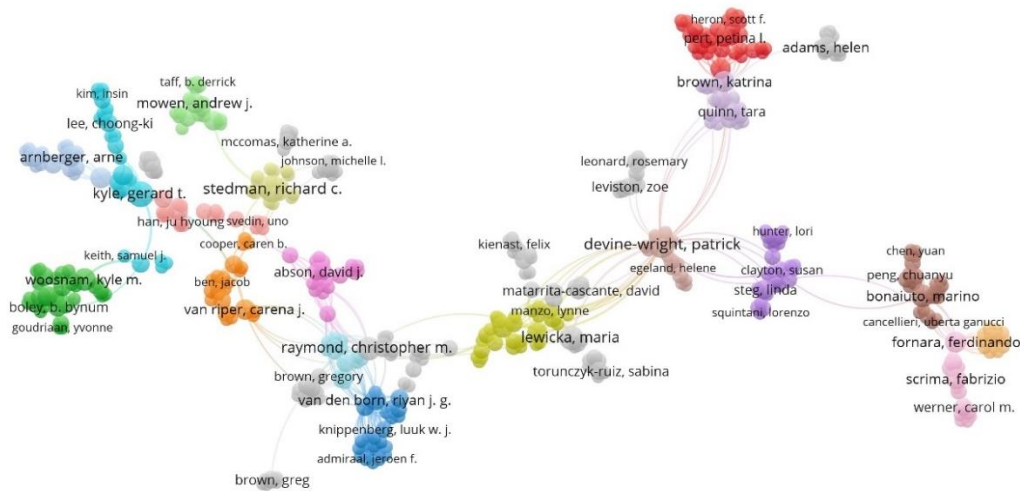
$$m = 0.749 \times \sqrt[2]{n_{max}}$$

In the formula, n_{max} refers to the number of publications by the most published authors and m refers to the bare minimum of core writers needed to publish. We found that the most published author in the field was Kyle, who published 26 articles. According to Price's Law (1963), by substituting the number of studies of this author into the formula, the publication value of the core author is 3.82, so the core author should meet the requirement of publishing at least four or more articles.

After data analysis, there are 95 core authors in this field and the number of core authors published 560 articles, accounting for 30.93% of all publications. Table 2 lists the relevant data for the top 10 core authors. From the results we found that Kyle published the most, including 26 papers that were cited 2,679 times. Stedman has published 18 papers and been cited 2,804 times. It is also important to highlight that Lewicka, Maria's publications have an average citation count of 245.55, significantly greater than other authors. The article she published has drawn the greatest interest.

Table 2. Top 10 authors in the field of place attachment for environment, city, landscape

Number	Author	Publication	Citation	Average Citation
1	Kyle, Gerard T	26	2,679	103.04
2	Stedman, Richard C.	18	2,804	155.78
3	Devine-Wright, Patrick	17	2,408	141.65
4	Woosnam, Kyle Maurice	12	686	57.17
5	Lewicka, Maria	11	2,701	245.55
6	Mowen, Andrew J.	10	511	51.1
7	Bonaiuto, Marino	10	809	80.9
8	Lee, Tsung Hung	9	1,259	139.89
9	Ujang, Norsidah	9	158	17.56
10	Haartsen, Tialda	9	241	26.78

From the analysis of author cooperation shown in Figure 2, it is evident that authors with a higher publication count tend to conduct their own research and collaborate with other writers less. It is worth noting that some small-scale author teams with small publications work very closely. It can be seen from the analysis of author cooperation relationships that authors with closer cooperation are authors from the same country or region. Consequently, the size of the author team in the author's region has more impact on the stability of author cooperation than the number of articles authored by the individual writers.

Figure 2. Author Cooperative Relationship Analysis

3.1.4. Analysis of international cooperation networks

Table 3 provides a summary of the top ten national publications and Figure 3 shows national cooperation in this area. Publications are dispersed differently throughout countries. In terms of publications, the United States, China, the United Kingdom, Australia and the Netherlands are among the top countries, with large networks of research cooperation.

Out of all countries, the United States has the highest number of publications (476) and citations (21,591), with an average citation count that is also among the highest. China is the country with the second-most publications, but both the average and total number of citations are not particularly high. In contrast, although the UK and Australia do not have the highest total publications, their total citations are high and their average citations are outstanding and exceed those of the United States. It's also worth noting that Canada has the highest average citations at 68.94. Overall, The United States, the United Kingdom, Australia and Canada have already conducted high-quality research in this field, with relatively mature outcomes and significant effects.

Table 3. Top 10 countries and regions in the field of place attachment for environment, city, landscape

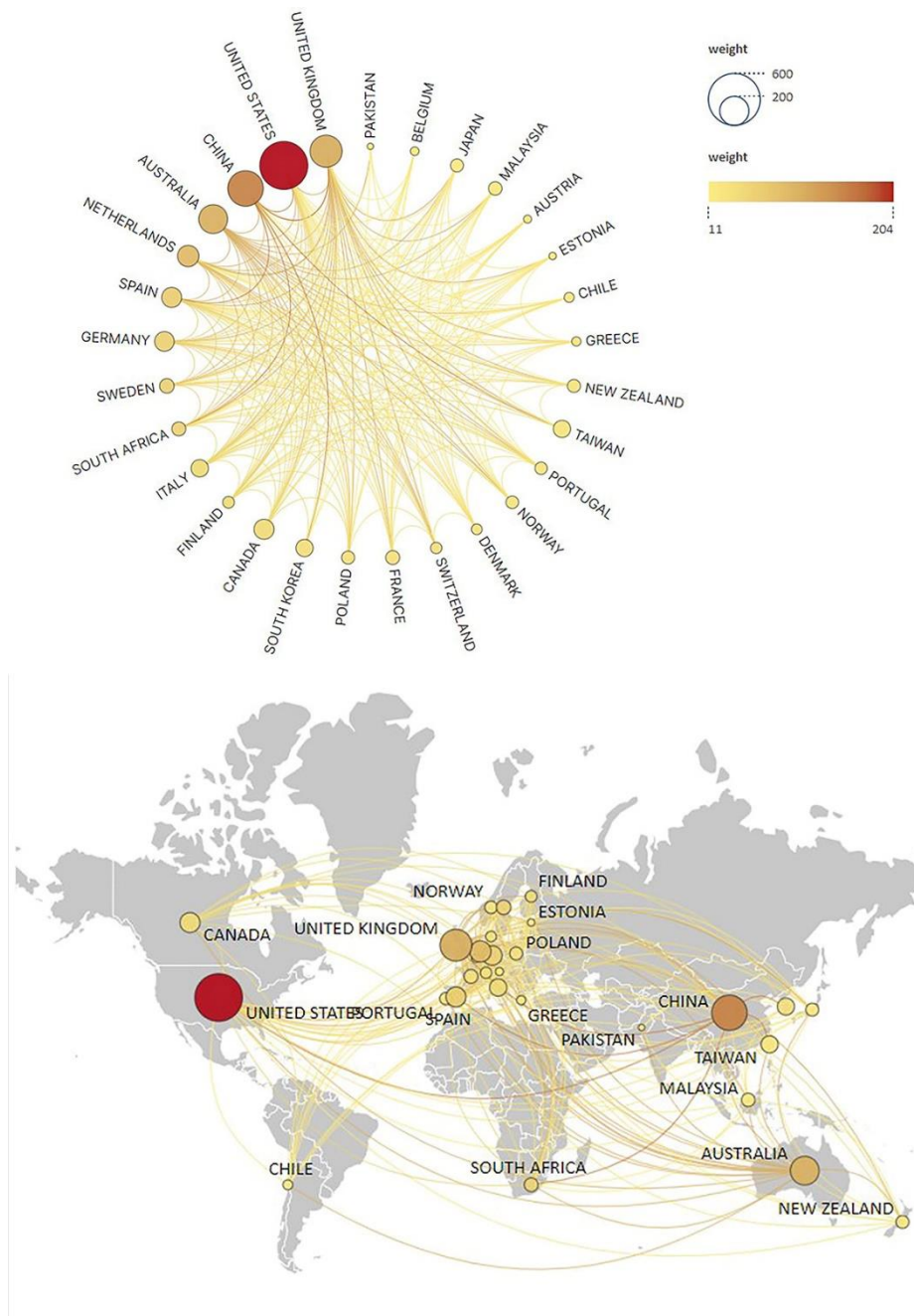| Number	Author	Publication	Citation	Average Citation
1	USA	476	21,591	45.36
2	China	257	4,450	17.32
3	England	182	9,918	54.49
4	Australia	171	9,224	53.94
5	Netherlands	93	3,688	39.66
6	Canada	83	5,722	68.94
7	Spain	81	3,695	45.62
8	Germany	78	1,746	22.38
9	Italy	62	2,478	39.97
10	South Korea	60	1,006	16.77

Figure 3. Analysis of international cooperation networks (1990–2023)

3.2. Co-occurring keywords network

Co-occurring keywords is visualized over time in Figure 4 from 1990 to 2023. Nine groupings are summarized based on the retrieved keywords; the clusters are themes and the terms within each cluster are presented chronologically. Significant modularity scores (Q=0.3638 > 0.3) and reasonable silhouette ratings (S=0.6713 > 0.6) both point to reliable outcomes. The topics include "#0 rural-urban migration", "#1 behavioral intention", "#2 subjective wellbeing", "#3 public attitude", "#4 adaptive capacity", "#5 social capital", "#6 public administration", "#7 environment", "#8 community"; the more keywords it contains, the more serial numbers in front Small. There are multiple keywords in this

cluster. These essential phrases can be found in several papers from various years. The year of the first occurrence is listed underneath the term when it first appears. Large nodes suggest that keywords are going to accumulate over time. Lines separating keywords show that there are links between co-occurrences. Additionally, based on the period, rising or classic themes can be recognized. According to the foregoing, themes #0, #1, #2 and #5 start earlier and have strong temporal continuity. After 2003, #3 and #4 mostly began to ascend and continue to get considerable attention.
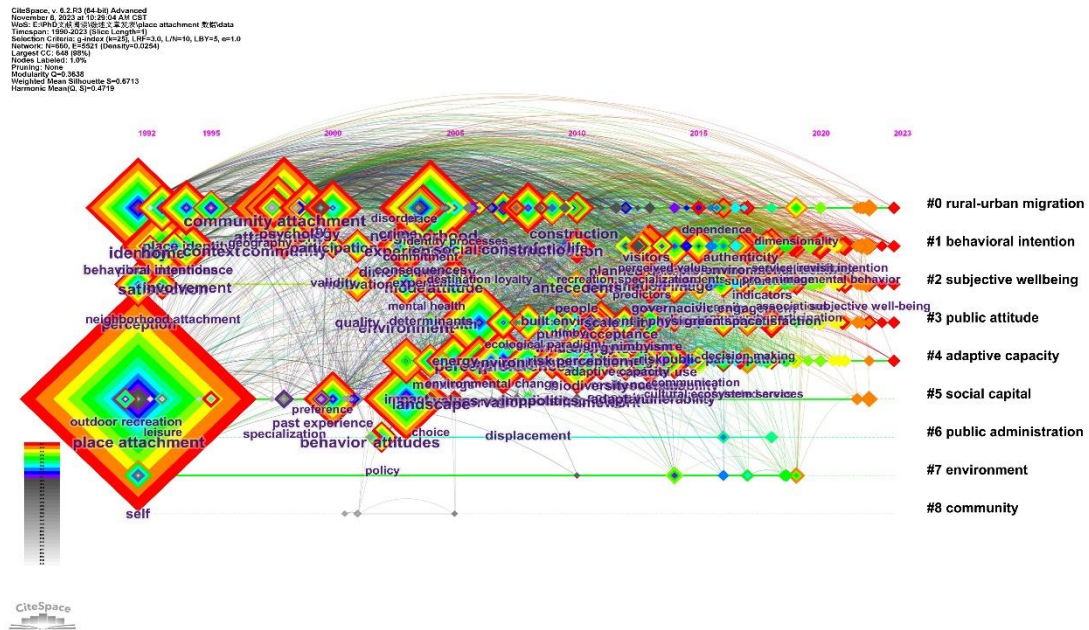

Figure 4. Co-occurrence keyword timeline visualization from 1990 to 2023

To more accurately represent the core keywords, we took the top 10 keywords (Table 4) based on centrality and included data about their frequency and year of beginning. High centrality keywords are the primary emphasis of the research topic and naturally hold a prominent place in the structure. The frequency of keyword occurrence can represent the frequency and scale of attention and the starting year of the keyword specifies the year when the category first appeared in the field. In addition, we extracted the top 10 keywords with the strongest citation bursts (Figure 5) and visually analyzed the co-occurrence keywords (Figure 6) for auxiliary and comparative analysis with the data in Table 4.

From the centrality data of keywords, we found that "Identity" has the highest centrality, which is 0.10 and its frequency of occurrence is also relatively high. At the same time, "Place attachment" has the highest frequency (1,406) and its centrality is relatively high. This shows that the most core and focused keywords are "Identity" and "Place attachment". The centrality and frequency of occurrence of the keywords "Attachment", "Attitudes" and "Perception" are also relatively high, so they are also core keywords and receive more attention. Other relatively high centrality keywords "Home", "Environment", "Context" and "Landscape" do not show particularly prominent co-occurrence frequencies, but these words are ranked among the strongest citation bursts in Figure 6. This shows that strong citation bursts can also improve the centrality of
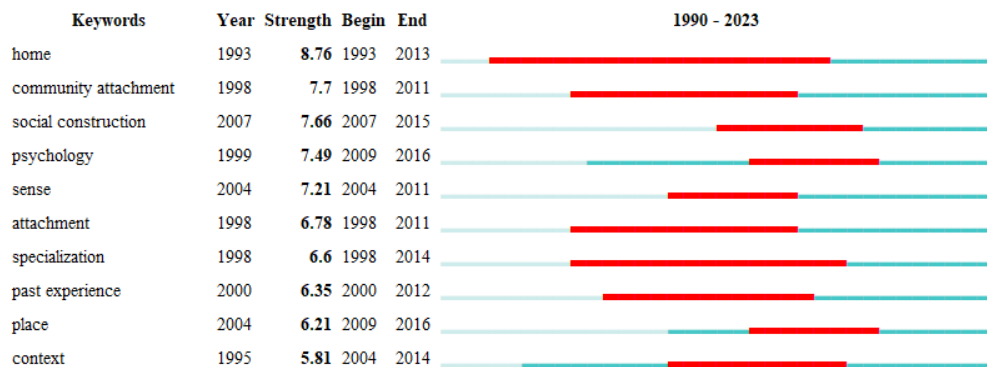
keywords with low co-occurrence frequency and these words can also be crucial in this field.

Table 4. Top 10 keywords in count/centrality

Number	Keyword	Centrality	Count	Year
1	Identity	0.10	338	1992
2	Attachment	0.09	159	1998
3	Place attachment	0.07	1,406	1992
4	Attitudes	0.07	212	2003
5	Perceptions	0.06	207	2006
6	Home	0.06	88	1993
7	Environment	0.06	74	2003
8	Context	0.06	51	1995
9	Landscape	0.06	47	2004
10	Community	0.05	338	1998

Judging from the appearance time data in Table 4, words such as "Identity", "Attachment", "Place attachment", "Home" and "Context" are all core keywords that start earlier. Words such as "Attitudes" and "Perception" are core keywords that appeared later. From this, we found that the co-occurrence frequency of keywords does not become higher as time begins. Looking at the time data of the citation explosion in Figure 5, long-term strong cited keywords also have comparatively high centrality, such as "home".

Keywords	Year	Strength	Begin	End	1990 - 2023
home	1993	8.76	1993	2013	
community attachment	1998	7.7	1998	2011	
social construction	2007	7.66	2007	2015	
psychology	1999	7.49	2009	2016	
sense	2004	7.21	2004	2011	
attachment	1998	6.78	1998	2011	
specialization	1998	6.6	1998	2014	
past experience	2000	6.35	2000	2012	
place	2004	6.21	2009	2016	
context	1995	5.81	2004	2014	

Figure 5. Top 10 Keywords with the Strongest Citation Bursts

Combining the co-occurrence keywords data in Figure 6, we find that "Identity", "Attachment", "Place attachment", "Community attachment" and "Attitudes" constitute the main keywords for the attachment field in the environment, city and landscape. "Identity" and "Attachment" appeared earlier and are well-known terms in this field. The accompanying term "place attachment" has also attracted much attention. In addition, through comparison, we found that the importance of terms such as "Community attachment", "Home", "Attitude" and "Perception" cannot be ignored and are also important terms in this field.
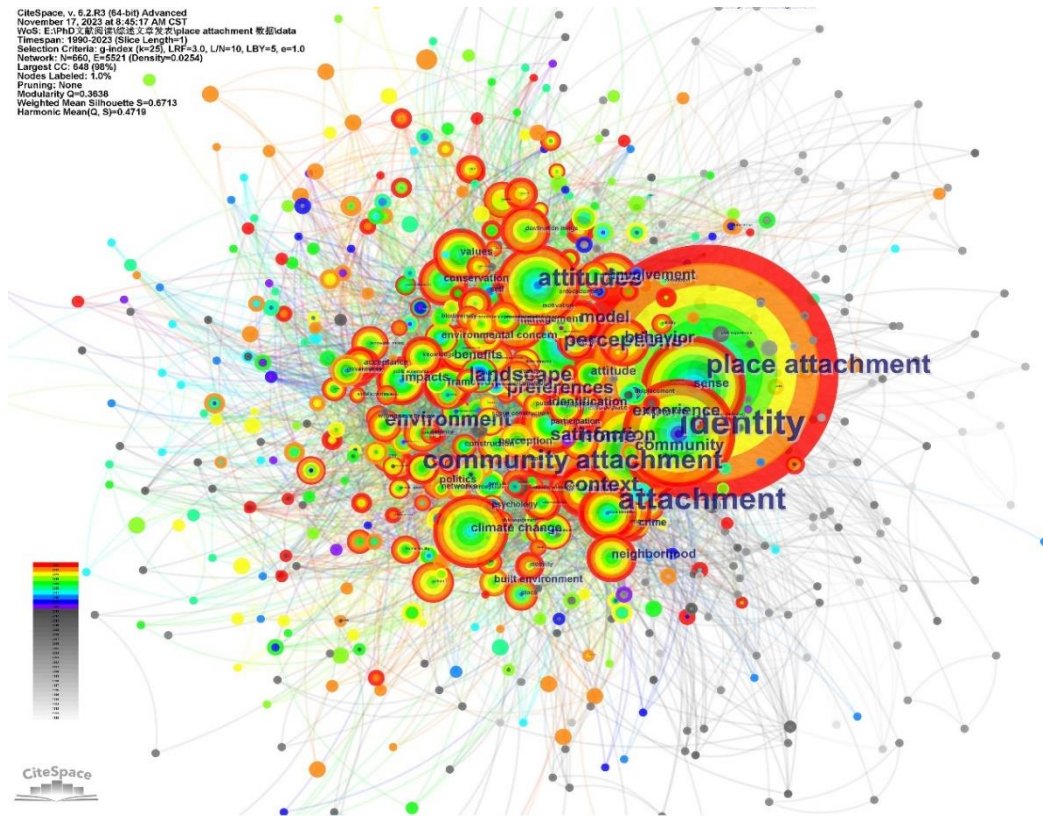
Figure 6. Visualization of co-occurrence keywords from 1990 to 2023

3.3. Co-cited references analysis

Co-citation references refer to multiple documents cited by the same research at the same time (Small, 1973). The content of the references is similar (Weinberg, 1974). Co-citation relationships between references also change as the field develops (Small, 1973). Co-citation references analysis and corresponding cluster analysis are effective methods to sort out reference relationships, research themes and evolution.

This study used CiteSpace software to conduct co-citation visualization and clustering visualization analysis, as shown in figure 7 and 8. In the reference co-citation analysis (Figure 7), nodes represent literature. The number of references mentioned increases with node size. Among them, the nodes with purple outer rings indicate that the centrality of the nodes is high (Figure 7A), while burst nodes are represented by red nodes (Figure 7B). We found the literature content that had a greater impact. In the cluster visual analysis (Figure 8), different color areas represent different clusters in the field (Figure 8A). The yellow circle in Figure 8B represents the centrality of the nodes in the cluster. The primary content as well as the development of themes and clusters were identified.
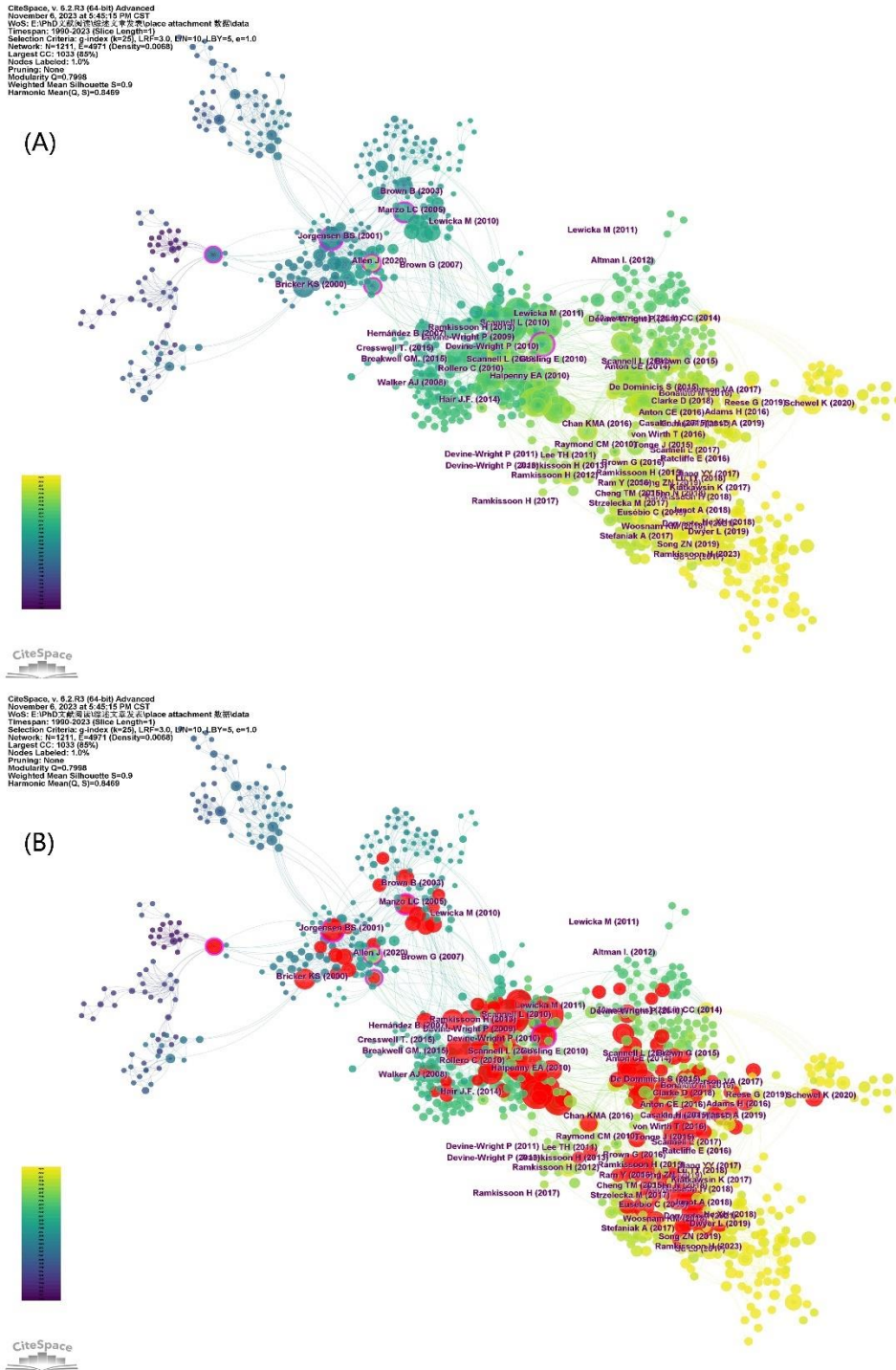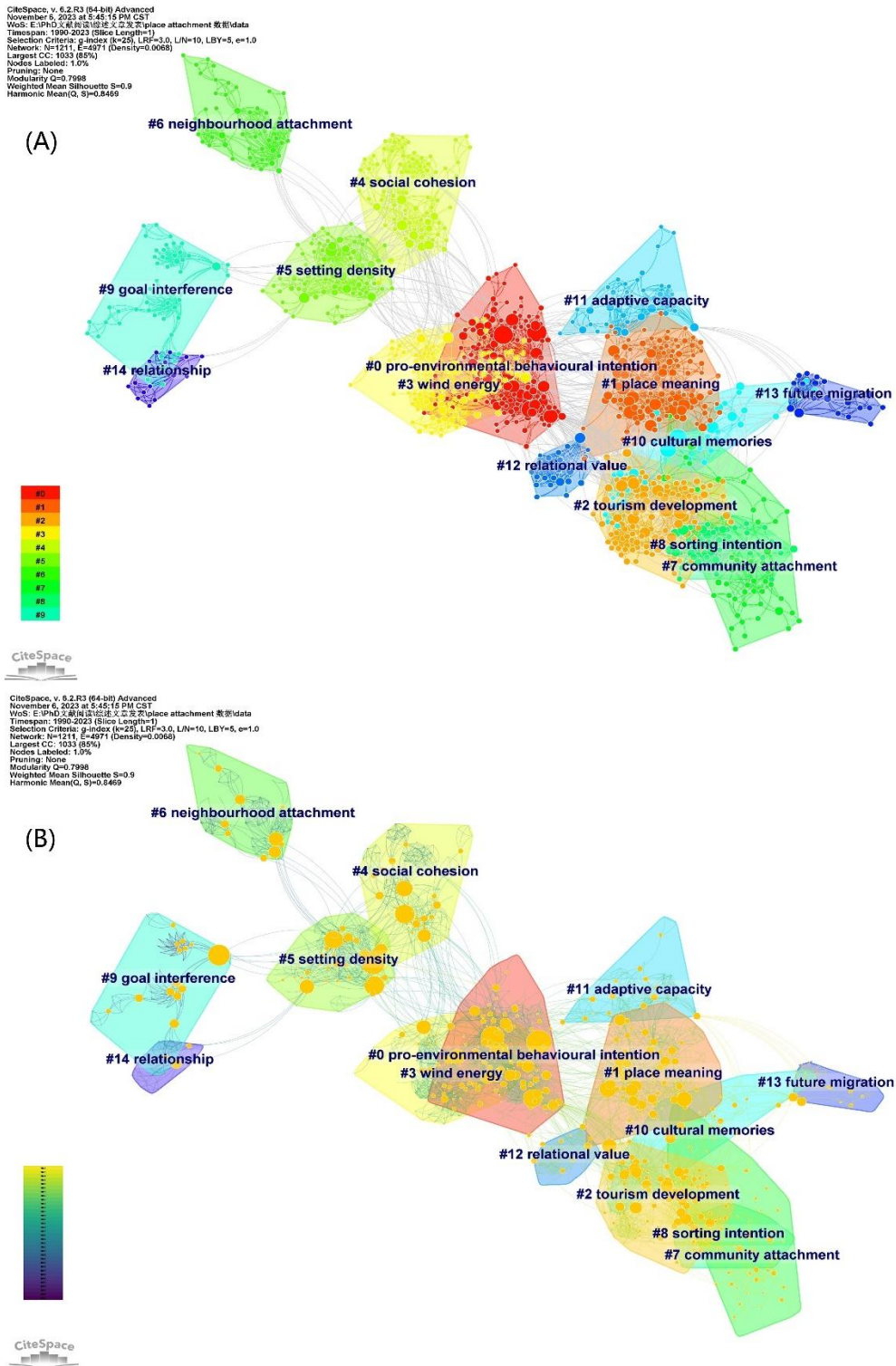
Figure 7. Co-citation reference network (1990–2023): (A) Co-citation reference network with centrality; (B) Co-citation reference network with burst of citation

Figure 8. Correspondent clustering analysis (1990–2023): (A) Visual analysis of the corresponding clusters, node by clusters; (B) Visual analysis of the corresponding clusters, node by centrality

3.3.1. Clusters of research

According to the cluster visualization diagram (Figure 8A), there are 15 different clusters within the research scope and the numbers are represented by #0 to #14. The articles are represented by the number in clusters, among which the smaller the number

corresponding to the number of co-cited references larger. The modularity Q value in the research results is 0.7998, which is greater than 0.3. The contour S value is 0.9, which is greater than 0.7. This significantly proves the reliability of clustering data analysis. Clusters consist of name, number of papers, publication time and representative references. Judging from the time cycle of every ten years, from 1990 to 2023, it is essentially split into three stages.

The first stage is from 1990 to 2000 and the reference topics are mainly community, behavior, attachment, psychology etc. The earliest (Feldman, 1990) and some earlier (Altman & Low, 1992) co-cited references appear in cluster #9 goal interference. The themes that emerged earlier were place attachment, identity, perception, satisfaction, self, outdoor recreation etc. Starting from 1994, themes such as neighborhood attachment, relationships, social cohesion and setting density began to appear in the co-cited literature (Bricker, 1998; Harris *et al.*, 1996; Moore & Graefe, 1994; Pritchard *et al.*, 1999) and the subject content began to appear in behavioral intention, place identity, preferences, past experiences etc.

The second stage is from 2001 to 2010. Topics include neighborhood, attitudes, behavior, perception, identification, construction etc., appeared early in co-citation references at this stage. The relevant references of cluster #9 and cluster #4 have not been paid attention to and cited in research in this field after 2003 and 2008 respectively. Cluster #0 and cluster #3 had co-citation literature in 2005 (Brown *et al.*, 2005) and 2004 (Easthope, 2004) respectively. And topics that appeared at this time include meanings, values, landscape, mental health etc. In addition, topics such as construction, building, identification and people also appeared in 2009 (Cresswell, 2009) and 2008 (Hess *et al.*, 2008).
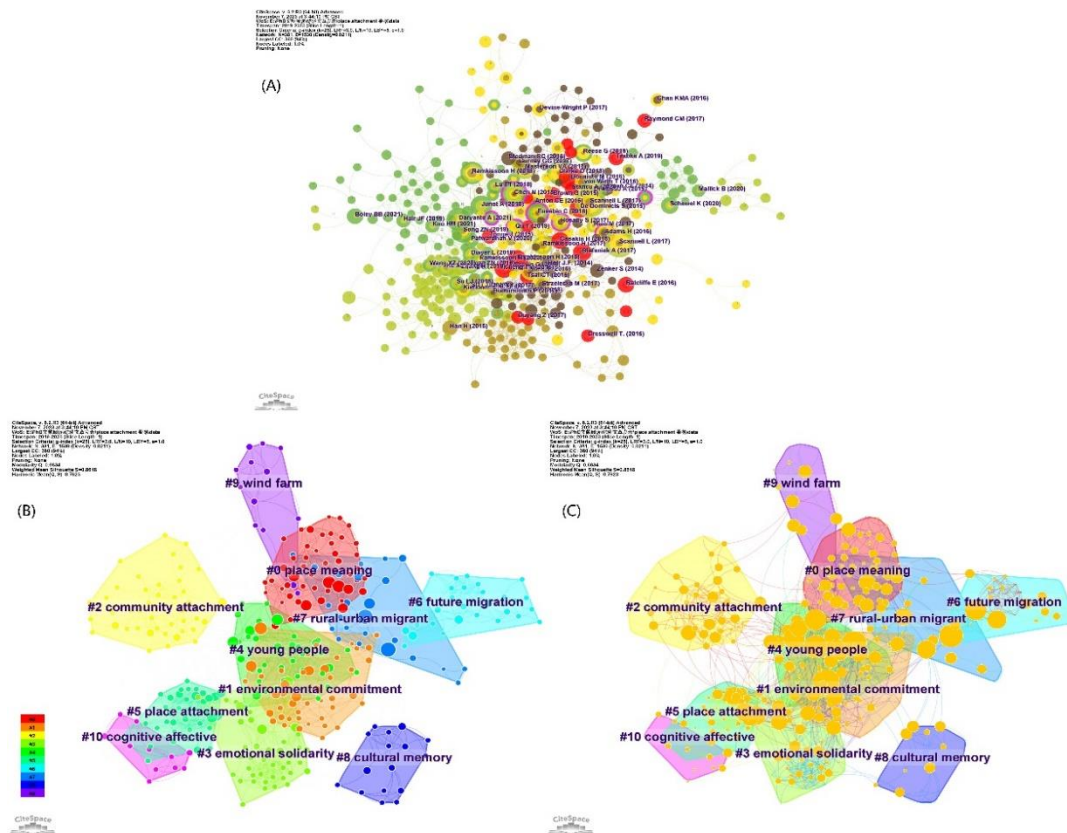
The third stage is from 2011 to 2023. In addition to the contents of the first and second stages, the main topics of the literature also include visitors, green space, dependence, authenticity, participation etc. The co-cited references of cluster #2tourism development, cluster #10 cultural memories and cluster #12 relational value all started to appear in 2013 (de la Barre, 2013; Ramkissoon *et al.*, 2013; Scannell, 2013). The co-citation references of cluster #7 community attachment and cluster #8 sorting intention appeared in 2015 (Brownlee *et al.*, 2015; Han, 2015). The latest co-cited references appear in cluster #13future migration, which only started to appear in 2017 (Call *et al.*, 2017).

Based on the past three stages from 1990 to 2023, goal interference-related content was the first to be paid attention to in this field. And the content related to neighborhood attachment has been paid attention to in this field for the longest time. The clusters that have received the most citations and attention are pro-environmental behavioral intention, place meaning, tourism development and cultural memories.

To study the latest topic trends in this field, we conducted additional co-citation references analysis on literature in the past five years, as shown in Figure 9. The modularity Q of this analysis result is 0.6834>0.3 and the weighted mean silhouette S is 0.8618>0.7. Therefore, the cluster analysis results are reliable. Comparing with the co-citation analysis between 1990 and 2023 (Figure 9A, Figure 9B), it is found that the clustering in the past five years has added #1 environmental commitment, #3 emotional solidarity, #4 young people, #7 rural-urban migrant, #10 cognitive affective. Combined with the cluster centrality analysis results (Figure 9C), it can be seen that in addition to the topics of place meaning that continue to receive major attention, the related topics of environmental commitment, emotional solidarity and young people have received

attention and importance in recent years. The above themes become the future development trend of this field.

Figure 9. Co-citation reference network and correspondent clustering analysis, from 2019 to 2023: (A) Co-citation reference network with burst of citation; (B) Visual analysis of the corresponding clusters, node by clusters; (C) Visual analysis of the corresponding clusters, node by centrality

3.3.2. Core literatures

Core literatures are documents cited by high-frequency words in co-citation documents. Therefore, they are essential to the corresponding topics and knowledge framework and are the focus of attention in the research field.

This study analyzes the co-citation situation of place attachment in the target field. Table 5 lists the 5 references with the highest citation frequency. Among them, the most cited article is Scannell et al. (2010). Scannell and Gifford (2010) reviewed the relevant concepts of place attachment and organized the theoretical framework of the three dimensions of people, processes and places. The quantitative operational definitions and qualitative interview structures of many subsequent studies refer to and cite this reference. The second most cited reference is Lewicka (2011). It is also an article that has attracted more attention and has a wider impact on other research. In this article, Lewicka reviewed three aspects of research, methods and theory in this field. She found that the human dimension has received more attention and proposed environmental aesthetics, phenomenology, social capital and other contents can better fill the theoretical source of this field (Lewicka, 2011). The third most cited work is "Multivariate Data Analysis" (Hair *et al*., 2014). It shows that a lot of research in this field needs to draw on multivariate data processing and analysis methods.

Table 5. The cited references sorted by citation

Number	Citation	Centrality	Year	Cited References
1	60	0.04	2010	Scannell (2010) DOI 10.1016/j.jenvp.2009.09.006
2	59	0	2011	Lewicka (2011) DOI 10.1016/j.jenvp.2010.10.001
3	47	0.1	2014	Hair (2014)
4	45	0.02	2017	Scannell (2017) DOI 10.1016/j.jenvp.2017.04.001
5	43	0.03	2017	Scannell (2017) DOI 10.1177/0013916516637648

In addition, we also analyzed the centrality of co-citation references, because references with high centrality are also likely to become co-citation relationships (Chen, 2006) and also represent core references in the field. We list the top 5 references with the highest centrality in Table 6. Among them, the references with the highest centrality are Altman and Low (2012). Altman's establishment of three dimensions of emotion, behavior and cognition in the concept of emotional attachment (Altman & Low, 2012) has become the conceptual framework that is the focus of research in this field. Allen and O'connell (2020) who ranks second in centrality, focused on research on Australian immigration in 2020 to explore immigrants' place attachment. This has been cited and borrowed from many studies on similar topics in this field and has inspired more researchers to explore the intrinsic factors of immigrants' attachment to their new homeland. Breakwell's article (2015) on identity threat is the third most central reference among co-cited documents. He proposed a strategic framework for coping with identity threats at three levels: psychological, individual and group (Breakwell, 2015). This content has also been paid attention to and quoted many times by researchers and has encouraged and inspired researchers to investigate the connection between identity and place attachment.

Table 6. The cited references sorted by centrality

Number	Citation	Centrality	Year	Cited References
1	21	0.18	2012	Altman (2012) PLACE ATTACHMENT, V0, P1
2	15	0.16	2020	Allen (2020) ARCHAEOL OCEAN, V55, P1, DOI 10.1002/arco.5207
3	13	0.15	2015	Breakwell (2015) COPING THREATENED ID, V0, P0
4	10	0.13	2001	Tuan Yi-Fu., (2001) SPACE PLACE, V0, P0
5	16	0.11	2005	Manzo (2005) J ENVIRON PSYCHOL, V25, P67, DOI 10.1016/j.jenvp.2005.01.002

4. Discussion

4.1. Main findings

Based on our literature review using bibliometric methods in the field of place attachment to the environment, cities and landscapes, in the past thirty years, research and literature in this field have shown an overall rising and developing trend. In terms of published journals, the top five core journals in this field are the Journal of Environmental Psychology, Tourism Management, Sustainability, Journal of Sustainable Tourism, Landscape and Urban Planning. At the national and regional levels, we find that the United States is far ahead in research and most influential countries also include the United Kingdom, Canada and Australia. Overall, European and American countries generally have a stronger influence than other continents. Regarding authors and research teams, core authors in this field do not generally form stable research team relationships. Therefore, this field needs to strengthen research cooperation and exchanges.

In the keyword co-occurrence analysis, hot spots of research are concentrated on "Identity", "Attachment", "Place attachment", "Attitudes", "Home", "Perception", "Landscape", "Environment", "Community". In analysis of co-citation literature, the field is roughly divided into three stages, one for each decade. The first stage mainly focuses on the formation principles and related theoretical analysis of place attachment. The second stage focuses more on place attachment between people and their living environment. The third stage applies more place attachment theories to specific cases and events and derives more specific theories, such as community attachment.

According to the clustering generated by the co-occurrence of keywords, the top topics of concern in terms of keywords are "rural-urban migration", "behavioral intention", "subjective wellbeing". In terms of reference co-citation cluster analysis, the top topics are "pro-environmental behavioral intention", "place meaning", "tourism development". At the same time, based on the cluster analysis of co-citation references in the past five years, we found that the topics of concern in recent years are "place meaning", "environmental commitment" and "community attachment". Comparatively analyzing the two data sets of co-occurrence keywords and co-cited references, we found that "behavioral intention" was valued and had a longtime continuity. It is a core classic theme in this field. "Rural-urban migration" has different attention levels and timelines. It is focused on earlier in the keyword co-occurrence analysis and later in the co-citation analysis. The subject thus remains mentioned in the field but became central later. In addition, "community attachment" is an emerging topic that appeared late but quickly attracted attention and represents the future development trend of this field. Therefore, we selected three representative topics: "behavioral intention", "rural-urban migration" and "community attachment" for detailed discussion.

4.2. Behavioral intention

According to the place attachment theoretical model constructed in core literature by Scannell and Gifford (2010), behavior is an important component of place attachment. According to the cluster analysis of co-occurring keywords and co-citation documents in this study. We found that behavioral-related topics are the most concerning and core topics in this field. The behavioral part of place attachment is the connection and attachment between people and places generated by people's actions and activities (Hidalgo & Hernández, 2001; Scannell & Gifford, 2010). Therefore, many researchers

have found that factors in the place attachment process affect people's behavioral intentions. As Scannell summarized, the emotional connections people form with places ground and protect us within wider physical and social contexts, connect us to our past and influence our behavioral intentions (Scannell & Gifford, 2010).

At the same time, some hot topics are also closely related to the theme of behavioral intention in place attachment. First, behavioral intentions can influence people to form behavioral attachments, people maintain ties to places by choosing habits of life and activities that are similar to those in the past (Michelson, 1976). Life and experience are also closely related hot topics, the relationship between people and places created through behavioral intentions is the key to lived experience (Altman & Low, 1992; Manzo & Perkins, 2006; Proshansky et al., 1983; Tuan, 1977). Some researchers have also reached similar conclusions, such as people's attachment to place motivates people to preserve their old way of life and choose to stay nearby (Manzo & Perkins, 2006). In addition, life experience is also closely related to humanized places. Good self-experiences are important characteristics of a humanized place (Ujang, 2008). Therefore, it is very important to improve and optimize the environment so that people have good behavioral intentions and attachments. Some studies have also found that environments and spaces with attachment potential shape users' positive behavioral intentions (Majeed & Ramkissoon, 2020).

4.3. Rural-urban migration

This topic has been mentioned since early times, has gradually been paid attention to and valued over time and is one of the cores of future research in this field. Rural-urban migration is affected by many factors, including environmental, economic, personal and other factors (Lee, 1966). The personal factors involved have been the focus of more and more research in recent years (Dandy et al., 2019; Pedersen, 2018). More and more new studies have found that place attachment is a very important factor affecting urban and rural migration (Hidayat et al., 2022).

In earlier studies, some researchers found that the strength of people's attachment to their hometown can affect or reduce their willingness to migrate (Relph, 1976a). Regarding rural-urban migration, researchers have found through practical studies that factors such as residence time (Hidayat et al., 2022), childhood memories (Berg, 2020) and cultural identity (Njwambe et al., 2019) are all factors that influence the strength of hometown attachment. The higher the attachment strength, the lower the likelihood of migration. Therefore, in many rural areas, young people are less attached to their hometowns than older people and are more willing to migrate to cities (Priatama et al., 2019). At the same time, some researchers have found that infrastructure and information sources also affect people's attachment to the countryside and their willingness to migrate to cities (Hidayat et al., 2022). A rural environment with better infrastructure makes villagers more satisfied with their living environment. Some researchers have also found that the phenomenon of urban-rural migration is still very common (Njwambe et al., 2019). It can be seen that many villagers still choose to migrate to cities for goals such as a better life and many rural infrastructures, information acquisition etc. still need to be improved and optimized.

On the other hand, some research conclusions also show that people who migrate from rural areas to cities generally do not consider this place to be their home, even if they have lived here for a long time (Berg, 2020; Njwambe et al., 2019). It can be seen that some people who have a strong desire to move to the city also have a strong

attachment to their rural hometown. The familiar life in the countryside, the rural environment and the landscape gave them a sense of identity, happiness and belonging (Njwambe *et al*., 2019). Regarding the current situation of urban and rural immigrants, most studies indicate that there are still many existing problems that need to be improved. It mainly includes two aspects. One is about villages. More villages need to improve their living environment and infrastructure to provide better livelihoods and living environment for villagers (Berg, 2020; Hidayat *et al*., 2022) and reduce the situation where villagers are forced to migrate to cities for life and livelihood. On the other hand, cities need to do more to maintain and provide citizenship for migrants (Njwambe *et al*., 2019) and lift more restrictions on identity and household registration (Wu *et al*., 2019). It can make them feel like citizens of this city.

4.4. Community attachment

Based on the results, community attachment is the most popular emerging topic and also represent future hot spots and development trends in this field. According to researchers' summary of this topic, community attachment is the emotional connection that residents have with their neighbors at both material and spiritual levels (Bailey *et al*., 2012; Corcoran, 2002). Community attachment can improve neighborhood cohesion and meaning (Bailey *et al*., 2012; Lu *et al*., 2018; Pan & Cobbinah, 2023). However, in earlier studies, fewer researchers focused on the human scale of communities (Moulay & Ujang, 2021), many relevant studies have neglected the crucial aspect of the psychological connection between places and residents (Manzo & Perkins, 2006). In recent years, an increasing number of studies have begun to focus on residents' community attachment.

Many researchers have consistently found that community attachment is mainly affected by social connections in place attachment (Brown *et al*., 2003; Qiu *et al*., 2020). Residents' attachment to the community comes from the social connections in the community established by their greater participation in social interactions and activities (Fried, 2000; Lewicka, 2011; Lu *et al*., 2018). An important factor influencing place attachment is the strength of community ties (Lewicka, 2011). Place attachment also promotes more social interaction among residents in the community (Woldoff, 2002). Residents feel proud of their community due to its long history and culture and being their birthplace (Pan & Cobbinah, 2023). No matter how much the community is updated, most residents still consider their community as their "home", simply because they have developed a strong place attachment to it (Pan & Cobbinah, 2023). At the same time, researchers have also discovered that a hot issue is the attachment crisis caused by the continuous renewal of communities in cities (Pan & Cobbinah, 2023; Shaw & Hagemans, 2015). Changes to neighborhood living spaces can disrupt residents' emotional connection to the place (Fullilove, 1996; Manzo, 2014). The radical change in the living space of the residents and the change in the living position will destroy the original social relationship (Afriyanti *et al*., 2021; Manzo & Devine-Wright, 2013; Popkin, 2004).

Based on the researchers' suggestions for improving the above problems, we found that they can consider them from two aspects. On the one hand, when governments and builders implement community renovation or renewal, they need to fully consider the complex relationship between residents and communities and the contradictory relationship between space regeneration and reconstruction (Pan & Cobbinah, 2023). On the other hand, community spaces need to be planned and designed through resident participation (Cresswell, 1996). These factors influence whether people are marginalized or empowered to participate in community renewal efforts. Relevant researchers

establish critical links between place attachment, place meaning and rights and sociopolitical realities, while linking action (Manzo & Perkins, 2006).

5. Conclusion

In this research, we conduct a systematic literature review in place attachment to the environment, cities and landscapes using a bibliometric approach. This research analyzes and summarizes the literature characteristics, research hotspots and development trends in this field. Through journals, authors and countries, we found that the characteristics of literature in this field are uneven development around the world and cooperation between different researchers and research teams needs to be strengthened. From the keyword co-occurrence analysis and co-citation analysis, we found the research has gradually evolved from initially focusing on discussing theory to combining and verifying practical cases and theory, integrating the field and connecting more new words or phenomena. In addition, we found from their corresponding cluster analysis that topics related to "behavioral intention" have always been classic hot topics in this field. Some topics, such as "rural-urban migration", have always been mentioned but have only been mentioned in recent years. Focus on "community attachment" and other more specific topics combined with actual cases, which is the future development trend in this field.

There are large differences between different studies and there is also a phenomenon of mutual criticism. However, basically, all studies support the importance of considering place attachment in the environment, city, landscape etc. and all emphasize that place attachment is an important factor and prerequisite for forming local meaning and optimizing urban space renewal design. It can be seen that research in this field is of great significance for improving the emotional connection between people and places, environmental quality, urban renewal, spatial design etc. At the same time, according to our findings, the field is gradually being associated with more new words or phenomena. Therefore, the future development trend of place attachment in this field will be associated with more disciplines and fields.

In addition, we found that this research still has limitations that need to be improved. The literature data mainly comes from the WOS Core Collection literature database. Although the WOS Core Collection literature database is a representative research database, after all, there are literature exist in other databases. Therefore, the literature data in this research cannot represent all literature data in this field. We will continue to research and analyze data from other databases in future research. On the other hand, there is a time lag in the publication of literature and the co-citation analysis of literature. Therefore, although it not affects the analysis results of the overall hot spots and development trends, the actual time of the research topics and hot spots may not be completely accurate. We will continue to improve the analysis techniques and methods in future research.

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