Journal of Architectural/Planning Research and Studies (JARS) Vol.21(1).2024
https://doi.org/10.56261/jars.v21.257992

Bibliometric Analysis of Publications Related to Sociopetal and Sociofugal Spaces

Badri Badri[1] and Chantanee Chiranthanut[2]*
[1, 2] Faculty of Architecture, Khon Kaen University, Khon Kaen, Thailand
Corresponding author e-mail: wchant@kku.ac.th
Received 15/8/2022 Revised 3/2/2023 Accepted 9/10/2023

Abstract

Sociopetal and sociofugal spaces are important aspects of urban planning and design. However, no study has examined these spaces systematically, using a bibliometric perspective. This study explored the status of sociopetal and sociofugal spaces through analysis of 869 papers obtained from Google Scholar. This study's results revealed an increasing number of publications focusing on sociopetal and sociofugal spaces over the last decade. The bibliometric analysis also showed that English was the dominant publication language and ProQuest was the most widely used source (database) for finding the papers. Besides, the most frequent keywords used were "Hall" and "chair." The most influential document was cited 111,336 times, while the greatest number of publications were produced by Robert Sommer. These results can help architecture, urban design, and environmental psychology professionals gain a comprehensive understanding of sociopetal and sociofugal space and their planning and design implications.

Keywords

Sociopetal; Sociofugal; Bibliometric Analysis; Google Scholar Database; VOSViewer; Environmental Behavior

1. Introduction

Sociopetal and sociofugal are space types that influence their users' interaction. Humphrey Osmond first introduced these terms in 1957 associated with research on the relationship between the environment and human behavior. The results revealed that sociopetal space encourages social interaction, while sociofugal space minimizes social interaction (Bechtel, 1997). Furthermore, Lawson (2001) explained that sociopetal is taken from the Latin centripetus, which means seeking the center. Thus, sociopetal space can be interpreted as a spatial setting that tends to attract people together. In contrast, sociofugal space tends to separate them just as centrifugal force pushes objects away from the center of the fracture axis. Research on these topics is crucial for architects, urban designers, environmental psychologists, and policymakers by demonstrating effective factors for increasing the level of quality in a space (Askarizad & Safari, 2020).

Regarding the importance of sociopetal and sociofugal space aspects, several studies have reported on the social impacts when these aspects do not match the needs and functions of spaces. For example, urban green open areas, which are supposed to be social spaces for the community, may not accommodate visitors

coming in groups because seating is dominated by a sociofugal design minimizing social interaction (Lesan & Gjerde, 2020). Similar findings were also found in campus public open spaces where the sociopetal space dominates seating facilities, so they are rarely used because they do not suit the needs of users who tend to seek public spaces for social activities (Susanti et al., 2019). On the other hand, cultural sites in Tongkonan Toraja Utara, where there should be minimal interaction because their cultural symbol are related to death, may have much social interaction due to a large number of sociopetal spaces (Tobing & Paembonan, 2018).

A search of the Scopus database using the keyword "sociopetal sociofugal" produced only five results, despite Scopus being one of the two primary and most comprehensive sources of publication metadata and impact indicators (Pranckutė, 2021). Bibliometric research on these themes has never been done previously. Therefore, this study aimed to map and visualize a collection of intellectual contributions to scientific knowledge regarding sociopetal and sociofugal spaces using the Google Scholar database. Google Scholar is a free online search engine that provides scientific content or publications from researchers worldwide. The search engine facilitates broad multidisciplinary searches (Hoseth, 2011) and as such, this study's outcome is expected to assist scientists in better understanding the theory of sociopetal and sociofugal spaces. Moreover, this research can enrich and improve the application of the theory both academically and practically.

More specifically, this study was intended to answer the following questions: (1) What is the trend of the number of studies on sociopetal and sociofugal spaces over time?; (2) What languages are frequently used in sociopetal and sociofugal spaces research?; (3) What source is most used to find papers in sociopetal and sociofugal spaces research?; (4) What are the frequent keywords applied to investigate sociopetal and sociofugal spaces?; (5) What is the most cited document in sociopetal and sociofugal spaces research?; and (6) Who is the most influential author in sociopetal and sociofugal spaces research?

2. Materials and Methods

This study involved the principle of the bibliometric analysis. This method analyzes massive amounts of data to examine the intellectual framework of an existing field, identify new trends in journal and article publishing, and identify collaboration and research component patterns (Donthu et al., 2021). Further, this study followed a sequence of steps: (1) data retrieval; (2) data analysis; (3) result (Wang et al., 2018) (Figure 1).

The data were scientific publication documents (Peer-reviewed journal articles, books, and book chapters) discussing sociopetal and sociofugal spaces. They were retrieved from the Google Scholar database in May 2021 using the Publish or Perish application by entering the keyword of "Sociopetal Sociofugal Space." In total, 869 documents were collected.

The documents were exported to an Excel file and RIS file format, including citation information, abstract, and keywords. Furthermore, the RIS files were processed using VOSviewer to generate a meta-analysis of the 869 publications as VOSviewer provides a text-mining feature. The software then exhibited and depicted detailed data regarding bibliometric graphic maps (Al Husaeni & Nandiyanto, 2021).

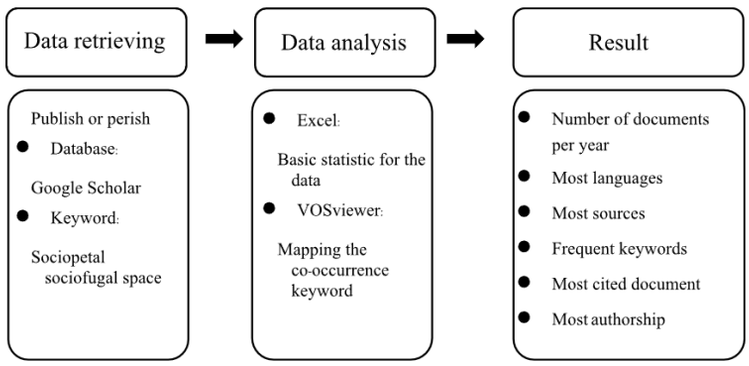

Figure 1 Research Methodology.

3. Findings

3.1 Publications: Year, Language, and Source

The 869 documents were classified into the number of papers published papers each year from 1957 to 2021, as presented in Figure 2. Based on the keyword, 1957 was the first year of publication, and a limited number of papers were found for that year (Weckowicz, 1957). There were no documents identified in the following years of 1958-1962 and 1964. As seen in Figure 2, the number of publications since 2005 increased from previous years. The year 2020 was the peak, with 42 documents obtained. The increased number of publications indicated an increasingly active interest in research on the subject.

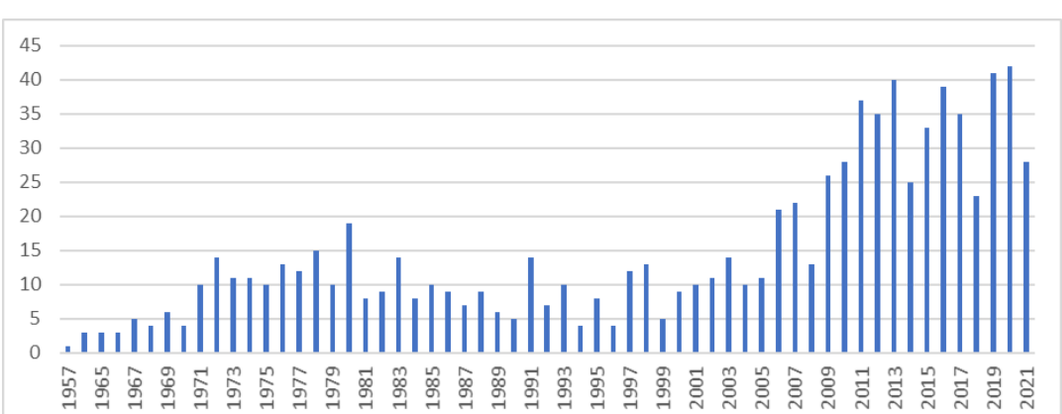

Figure 2 Number of documents per year.

According to Table 1, there were 18 languages found in the data with English being the primary language of publication, followed by Bahasa Indonesia, Portuguese, Spanish, Korean, and Japanese. English was applied in 755 papers denoting a considerable difference from other languages. Table 2 shows the top 10 sources (databases) employed to find articles related to sociopetal and sociofugal spaces. The number of papers included in these sources was close to half the total analyzed documents, namely 375 (42.56%). Other documents were found from 110 sources not presented, mostly with one or two papers for each source. ProQuest was the database providing the most documents related to sociopetal and sociofugal spaces, counting 45 papers, which is in line with other research reporting that ProQuest was the largest source of articles for review papers due to its international scope, comprehensive nature, and wide accessibility (Toraman et al., 2020; Mamikutty et al., 2021).

Table 1. Documents by languages used.

Language	Record Count	Percent
English	755	86.88
Bahasa	23	2.65
Portuguese	19	2.19
Spanish	14	1.61
Korea	12	1.38
Japan	8	0.92
Poland	7	0.81
Swensk	7	0.81
Turkey	7	0.81
Chinese	3	0.35
French	3	0.35
Greece	3	0.35
Finland	2	0.23
German	2	0.23
Italy	2	0.23
Thailand	1	0.12
Vietnam	1	0.12

Table 2. Most sources (databases) of documents

Source	Number of Documents
ProQuest	104
Google books	49
Springer	49
Taylor & Francis	45
SAGE Journals	29
JSTOR	24
Elsevier	21
Wiley Online Library	21
ACADEMIA	17
ResearchGate	16

3.2 Keyword Analysis

Keywords used in each document were analyzed to recognize the relation between the keywords and the clusters. This analysis required a minimum of 7 occurrences of a keyword. Thus, the results of VOSviewer visualized 61 keywords with 536 link strengths related to 1 topic (Figure 3) by forming 6 clusters represented by different colors: red, green, blue, yellow, purple, and cyan (Table 3). To build the clusters, VosViewer constructs a co-occurrence matrix (Ibekwe et al., 2021). The node and word size represented the node weight. The bigger the node and word, the larger the weight. More specifically, VOSviewer assumes that weight attributes have a ratio scale. To put it another way, if one item weighs twice as much as another, the former is thought to be twice as significant as the latter. The distance between two nodes described the strength of

the relationship between the two nodes. When VOSviewer calculates association strengths between related items, which are defined as "a proportion of total co-occurrences between items to the expected total co-occurrences between those items, assuming they are statistically independent," it can determine whether the two items are closely related. Hence, strong relationships were reflected through proximity, and vice versa, if the distance is far, the relationship is weak. A line between the two keywords indicated that they had appeared together. The more often they appeared together, the thicker the line would be (Liao et al., 2018). Additionally, nodes or keywords that did not have a network with other keywords have the potential to become new research topics in the future.

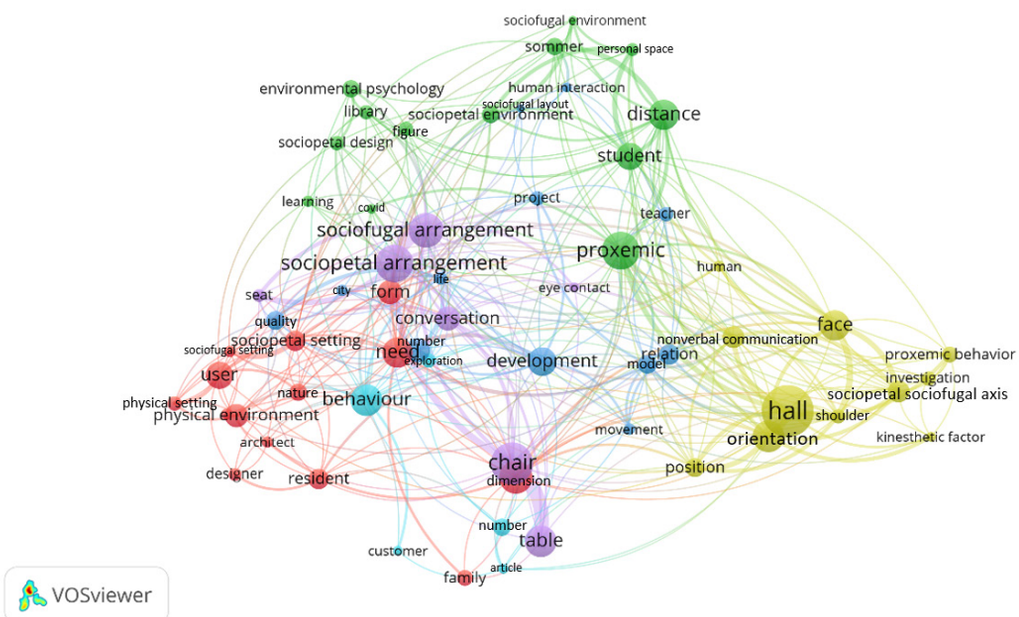

Figure 3 VOSViewer keyword analysis visualization.

Table 3. The keywords of each cluster

Cluster	Keyword	Strongest relationship	Weakest relationship
Red	Architect, physical environment, designer, resident, user, sociopetal setting, need, form, family, nature, sociofugal setting, physical setting, dimension	User and sociopetal setting	Physical setting and family
Blue	Development, movement teacher, project, relation, human interaction, quality, life, number, city, sociofugal layout, model	Model and relation	Human interaction and movemnt
Yellow	Hall, position, face, proxemic behavior, investigation, kinesthetic factor, nonverbal communication, orientation, shoulder, sociofugal sociopetal axis, human	Hall and orientation	Kinesthetic factor and human
Purple	Chair, table, sociopetal arrangement, sociofugal arrangement, conversation, eye contact, seat	Sociopetal arrangement and sociofugal arrangement	Sociofugal arrangement and table
Green	Learning, sociopetal design, library, environmental psychology, sociopetal environment, personal space, covid, sommer, sociofugal layout, figure, distance, student, proxemic	Environmental psychology and library	Learning and distance
Cyan	Behavior, customer, number, article, exploration	Behavior and exploration	Exploration and article

The top 10 keywords by their frequency and total link strength that indicates the number of item in which two keywords occur together are shown in Table 4. The keyword "Hall" had the highest frequency of hits (36) while the keywords "chair" (29), "sociopetal arrangement" (26), and "proxemic" (26) also appeared frequently. As such, these topics were the most discussed by researchers during the period 1957-2021. Many articles discussed Edward T Hall because of his strong intellectual influence on the paradigm of nonverbal communication concepts (Rogers et al., 2002). Hall's work was triggered by an interest in the interaction between cultures, eventually leading to a formal study of intercultural communication (Hart, 2016). The book Silent Language was Hall's first and most influential work, explaining the three dimensions of culture: time, space, and context (Kittler et al., 2011).

Table 4. Top 10 keywords of documents related to sociopetal sociofugal space

Keyword	Frequency	Total strength
Hall	36	38
Chair	29	37
Sociopetal arrangement	26	40
Proxemic	26	30
Sociofugal arrangement	24	40
Dimension	23	23
Orientation	22	36
Behavior	22	25
Table	22	20
Distance	21	30

Regarding sociopetal and sociofugal, Hall discussed sociopetal and sociofugal spaces in the book The Hidden Dimension (Monfared & Yazdanfar, 2015). The keyword "Hall" had a stronger relationship with the keywords "orientation," "position," and "sociopetal sociofugal axis" because of their proximity. Furthermore, the word "proxemic" and "Hall" often appeared together based on the line thickness. The word proxemic was associated with Hall since it was a term he coined to describe human relations with respect to the distance and space individuals manage in society that shape their behavior (Conlon, 2009). Most proxemics studies understood human spacing in a culture where body physicality played a role (Overhill, 2014).

The keyword with the second-highest frequency was "chair", indicating that chairs are objects most often studied in association with sociopetal and sociofugal spaces. Humphrey Osmond, a sociopetal and sociofugal pioneer, initially investigated the topic of chair arrangements in psychiatric wards (Brand, 2009), but chairs appear consistently as objects of study throughout the reference period (Mehrabian & Diamond, 1971; Kaye & Murray, 1982; Ibrahim et al., 2010; Meagher & Marsh, 2017; Gandawijaya et al., 2021). The keyword "chair" was strongly related to the keyword "dimension" because of the very close proximity. The dimension of a chair was one of the influential variables in dealing with sitting element comfort (Ihtiyar & Yücel, 2021). The keyword "table" also appeared often with "chair", demonstrating that the relationship between table and chair arrangements on human social interaction is a frequent research theme.

An overlay visualization of the yearly trends by for keywords could also be displayed with VOSviwer analysis. The colors of the keywords denoted the research period with the lighter colors indicating more recent introduction of that perticular keyword (Effendi et al., 2021). Figure 4 shows the latest research keywords on this topic could be associated with "city," "sociofugal layout," and "covid." These keywords could be a research opportunity because research on this topic is still evolving. The expansion of sociopetal and sociofugal space investigations into city space was conducted in 1966 by Hall to determine their impact on urban communities (Dehkordi & Soureshjani, 2017). In comparison, earlier research tended to study health center objects (Weckowicz, 1957; Lebensohn, 1963; Irwin, 1965) and Osmond Humphrey originally carried out his work at the health and research center in Saskatchewan (Hall, 1966). The city's spaces are where social interactions, informal interpersonal, and accidental relations are formed. Thus, these spaces became the main target of this research topic (Naghiloo & Falahat, 2016). In addition, the "sociofugal layout" was a keyword associated with recent studies that focusied on gaining a deeper knowledge about spaces which hinder and minimize social interactions. Furthermore, recent studies focused on covid (Mehta, 2020; Gramigna, 2020; Bergquist, 2020; Bil et al., 2021; Mahima et al., 2022). The emergence of this virus changed the use of spaces and interactions (Mehta, 2020), thus having a massive impact on the built environment (Mahima et al., 2022).

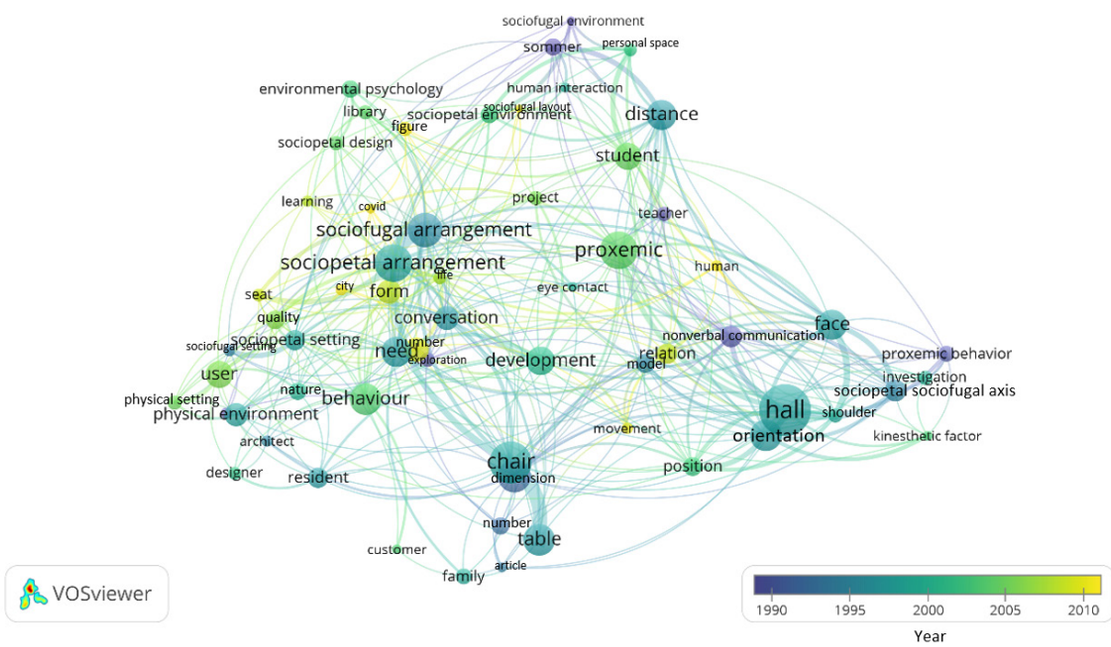

Figure 4 VOSviewer keyword overlay visualization.

Finally, analysis of keyword density can be done with VOSviewer. In this case, the keywords are assigned a color related to their density, identifying that the points' color is fixed depending on the item associated with other items (Cobo et al., 2011). Each object has a color that represents the density of objects nearby. Default color schemes include blue, green, and yellow. The color of a point is more similar to yellow as the number of nearby items increases and their weights increase. On the other hand, the closer a point's color is to blue, the fewer objects there are around it, and the lighter the weights of those objects are.According to Figure 5, a high density is associated with the keywords "Hall" and "orientation," "chair" and "dimension," and "need"

and “city.” In comparison, the keywords with low density were “kinesthetic factor,” “customer,” and “covid”. These lower density keywords can also present new opportunities for future research.

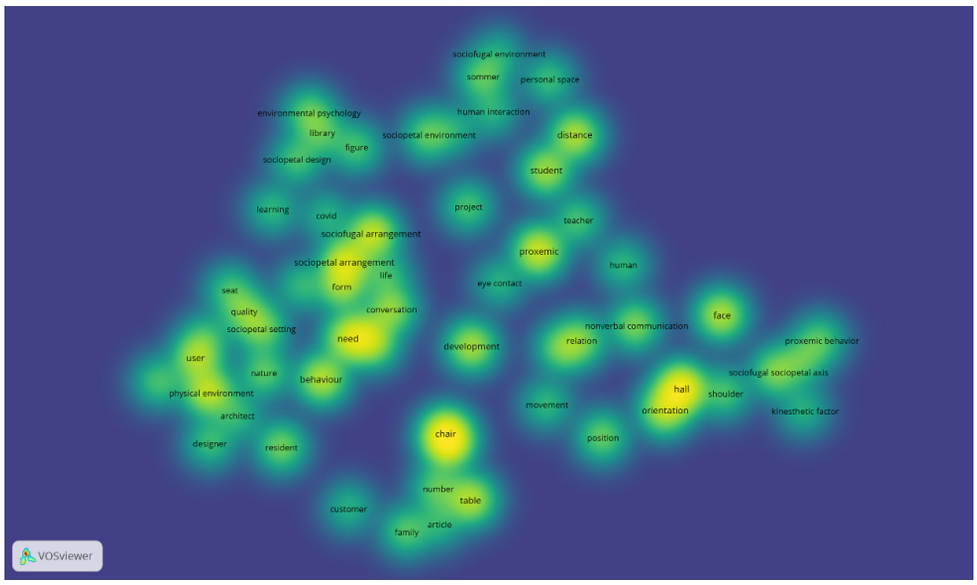

Figure 5 VOSviewer keyword density visualization.

3.3 Document and authorship

This study identified the top 10 most cited documents on Google Scholar, indicating the most influential publications related to sociopetal and sociofugal spaces. According to Table 5, the most cited document was the article “The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations.” published in 1986 by Baron, R.M, and Kenny, D. It was cited 111,336 times. This study attempted to distinguish between the properties of moderator (qualitative (e.g., sex, race, and class) or quantitative (e.g., level of reward)) and mediator variables (stimulus and response) at conceptual, strategic, and statistical levels to account for differences in people’s behavior (Baron & Kenny, 1986).

Table 5. Top 10 cited documents

Author	Document Tittle	Number of documents cited
Baron, R.M and Kenny, D. (1986)	The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations.	111,336
Mehrabian, A. (1971)	Silent messages	4,434
Hall, E.T. (1963)	A system for the notation of proxemic behavior	1,632
Hall, E.T, et al. (1968)	Proxemics [and comments and replies]	1,154
Coley, R.L, et al. (1997)	Where does community grow? The social context created by nature in urban public housing	913
Lawson, B. (2001)	Language of space	820
Kweon, B.S, et al. (1998)	Green common spaces and the social integration of inner-city older adults	755
Evans, G.W and McCoy, J.M. (1998)	When buildings don’t work: The role of architecture in human health	665
Duncan, S.J. (1969)	Nonverbal communication	635
Bonnes, M and Secchiaroli, G. (1995)	Environmental psychology: A psycho-social introduction	614

The most influential authors were identified based on number of publications, pointing to their expertise in this research area. The top 10 authors in this research area were determined based on the Google Scholar database. Table 6 shows the author with the most published documents on this topic was Robert Sommer. He was a pioneer in environmental psychology and his first book, Personal Space, has shaped the architecture and design profession (Becker, 2022).

Table 6. Top 10 authors with the most publications

Author	Number of published documents
Sommer, R.	15
Mataric, M.J.	7
Vizzari, G.	6
Holahan, C.J.	6
Tobing, M.M.	6
Minami, H.	6
Evans, G.W.	5
Preiser, W.F.E.	5
Mead, R.	5
Gifford, R.	5

4. Conclusion

This study documented trends in publications related to sociopetal and sociofugal spaces obtained from the Google Scholars database for the period 1957 to 2021. Specifically, the research revealed that (1) publications associated with sociopetal and sociofugal spaces have increased in the past decade, (2) among 869 papers, English was the predominant language of publication, (3) ProQuest was the most widely used source (database) for finding documents related sociopetal and sociofugal spaces, (4) “Hall” was the most dominant keyword found in the papers, and was closely related to other keywords, “orientation,” “position,” and “sociopetal sociofugal axis,” (5) the article entitled “The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations,” had the greatest number of citations at 111,336, and (6) the author with the most publications in this research area was Robert Sommer. According to the findings, keywords related to “city,” “sociofugal layout,” and “covid” were the most recent additions to keywords in this field of research. Besides, the keywords “kinesthetic factor,” “customer,” and “covid” were keywords with low density and may serve as indicators of pathways for future research.

Regardless of the interesting findings, we also emphasize some caution is needed in interpreting the results. For example, there is a risk of analyzing scientific results only in terms of quantitative criteria without providing a thorough qualitative interpretation of the content. The Google Scholar database using the Publish or Perish application could only display search results for a maximum of 1000 documents. There were still documents related to the topic that could not be accessed and analyzed. Nonetheless, this study confirms the research gaps and the potential for new study directions, considering the importance of sociopetal and sociofugal elements for the users and the spaces themselves in enhancing urban design.

Author Contributions

Conceptualization, B.B. and C.C.; methodology, B.B. and C.C.; investigation, B.B. and C.C.; data curation, B.B. and C.C.; writing – original draft, B.B. and C.C.; writing – review and editing, B.B. and C.C.; visualization, B.B. and C.C.; supervision. C.C. All authors have read and agreed to the published version of the manuscript.

Reference

Al Husaeni, D. F., & Nandiyanto, A. B. D. (2021). Bibliometric using vosviewer with publish or perish (using Google Scholar data): From step-by-step processing for users to the practical examples in the analysis of digital learning articles in pre and post Covid-19 pandemic. *ASEAN Journal of Science and Engineering, 2*(1), 19–46. https://doi.org/10.17509/ajse.v2i1.37368

Askarizad, R., & Safari, H. (2020). The influence of social interactions on the behavioral patterns of the people in urban spaces (case study: The pedestrian zone of Rasht Municipality Square, Iran). *Cities, 101*, 102687. https://doi.org/10.1016/j.cities.2020.102687

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182.

Bechtel, R. (1997). *Environment and behavior: An introduction.* Sage.

Becker, F. (2022). Robert Sommer (1929-2021). *American Psychologist, 77*(4), 622.

Bergquist, W. (2020). *Revisiting COVID-19 policy : A Psychological Perspective on Consideration and Compassion. Library of Professional Psychology*. https://library.psychology.edu/revisiting-covid-19-policy-a-psychological-perspective-on-consideration-and-compassion/

Bil, J. S., Buława, B., & Świerzawski, J. (2021). Mental health and the city in the post-COVID-19 era. *Sustainability, 13*(14), 7533. https://doi.org/10.3390/su13147533

Brand, R. (2009). *Written and unwritten building conventions in a contested city: The case of Belfast*. Urban Studies, 46(12), 2669–2689. https://doi.org/10.1177/0042098009345538

Cobo, M. J., López-Herrera, A. G., Herrera-Viedma, E., & Herrara, F. (2011). Science Mapping Software Tools: Review, Analysis, and Cooperative Study Among Tools. *Journal of the American Society for Information Science and Technology, 62*(7), 1382–1402. https://doi.org/10.1002/asi.21525

Conlon, S. (2009). Proxemics and the novel: An ecological approach. Asian Journal of Literature, Culture and Society, 3(2), 120–149.

Dehkordi, S. T., & Soureshjani, M. H. (2017). From sociopetal to sociofugal: a reverse procedure of Tehran urban spaces. *Journal of Urban Design and Mental Health, 3*(7).

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research, 133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Effendi, D. N., Irwandani, Anggraini, W., Jatmiko, A., Rahmayanti, H., Ichsan, I. Z., & Rahman, M. M. (2021). Bibliometric analysis of scientific literacy using VOS viewer: Analysis of science education. *Journal of Physics: Conference Series, 1796*(1). 1-10. https://doi.org/10.1088/1742-6596/1796/1/012096

Gandawijaya, R. A. A., Kirana, D. C., & Morika, D. (2021). Study of public seating facilities with behavior and activity approaches on pedestrian street Ir. H. Djuanda Bandung. *IOP Conference Series: Earth and Environmental Science, 794*(1), 1–11. https://doi.org/10.1088/1755-1315/794/1/012078

Gramigna, R. (2020). *Proxemics and " neo-proxemics " : The new meaning of space in the time of COVID-19 pandemic, 13*, 100-118. https://doi.org/10.15162/1827-5133/1266

Hall, E. T. (1966). The Hidden Dimension. Anchor Book.

Hart, W. (2016). Hall, E dward T. In K. B. Jensen, R. T. Craig, J. D. Pooley & E. W. Rothenbuhler (Eds.*), The International Encyclopedia of Communication Theory and Philosophy* (Vol. 2, pp. 15). John Wiley & Sons. https://doi.org/10.1002/9781118766804.wbiect205

Hoseth, A. (2011). Google scholar. *The Charleston Advisor, 12*(3), 36–39. https://doi.org/10.5260/chara.12.3.36

Ibekwe, F., Bochi, F., & Martínez-Ávila, D. (2021). Mapping the evolution of topics published by education for information: Interdisciplinary journal of information studies. *Education for Information, 37*(4), 545–563. https://doi.org/10.3233/EFI-211559

Ibrahim, F., Harun, W. M. W., & Samad, M. H. A. (2010). The waiting space environment: Perception by design. *American Journal of Engineering and Applied Sciences, 3*(3), 569–575.

Ihtiyar, T. N., & Yücel, G. F. (2021). Evaluations of urban seating design criteria in case of Zorlu Center and Margi Outlet Malls. *CAP-Public Art Journal, 3*(1), 72–93. https://journals.ap2.pt/index.php/CAP/article/view/469

Irwin, R. D. (1965). *Adaptive behavior and the proxemic study of a small group of severely mentally retarded children* [Master's thesis, Pittsburg State University]. PSU Library Services.

Kaye, S. M., & Murray, M. A. (1982). Evaluations of an architectural space as a function of variations in furniture arrangement, furniture density, and windows. *Human Factors, 24*(5), 609-618. https://doi.org/10.1177/001872088202400511

Kittler, M. G., Rygl, D., & MacKinnon, A. (2011). Beyond culture or beyond control? reviewing the use of hall's high-/low-context concept. *International Journal of Cross Cultural Management, 11*(1), 63–82. https://doi.org/10.1177/1470595811398797

Lawson, B. (2001). *The Language of Space*. Architectural Press.

Lebensohn, Z. M. (1963). Form and function in the general hospital psychiatric unit. *Psychiatric Services, 14*(5), 245–250. https://doi.org/10.1176/ps.14.5.245

Lesan, M., & Gjerde, M. (2020). A mixed methods approach to understanding streetscape preferences in a multicultural setting. *Methodological Innovations, 13*(2), 1-15. https://doi.org/10.1177/2059799120937233

Liao, H., Tang, M., Luo, L., Li, C., Chiclana, F., & Zeng, X. J. (2018). A bibliometric analysis and visualization of medical big data research. *Sustainability, 10*(1), 166. https://doi.org/10.3390/su10010166

Mahima, M., Priya, R. S., Rajagopal, P., & Pradipa, C. (2022). Impact of covid-19 on the built environment. *Frontiers in Engineering and Built Environment, 2*(2), 69–80. https://doi.org/10.1108/FEBE-09-2021-0040

Mamikutty, R., Aly, A. S., & Marhazlinda, J. (2021). Databases selection in a systematic review of the association between anthropometric measurements and dental caries among children in Asia. *Children, 8*(7), 565. https://doi.org/10.3390/children8070565

Meagher, B. R., & Marsh, K. L. (2017). Seeking the safety of sociofugal space: Environmental design preferences following social ostracism. *Journal of Experimental Social Psychology, 68*, 192–199. https://doi.org/10.1016/J.JESP.2016.07.004

Mehrabian, A., & Diamond, S. G. (1971). Seating arrangement and conversation. *Sociometry, 34*(2), 281-289. https://www.jstor.org/stable/2786417

Mehta, V. (2020). The new proxemics: COVID-19, social distancing, and sociable space. *Journal of Urban Design, 25*(6), 669–674. https://doi.org/10.1080/13574809.2020.1785283

Monfared, N. S. S., & Yazdanfar, S. A. (2015). Model of Perceptional Concept and related physical principles for participatory local center: Chizar local community in Tehran as a case study. *Procedia-Social and Behavioral Sciences, 170*(27), 78–88. https://doi.org/10.1016/j.sbspro.2015.01.017

Naghiloo, F., & Falahat, M. S. (2016). The effect of environmental factors on sociopetality of urban spaces. *European Online Journal of Natural and Social Sciences, 5*(4), 1111–1129. https://european-science.com/eojnss/article/view/4761

Overhill, H. (2014). Apple pie proxemics: Edward T. Hall in the kitchen work triangle. *Design Issues, 30*(2), 67–82. https://doi.org/10.1162/DESI_a_00263

Pranckutė, R. (2021). Web of science (Wos) and scopus: The titans of bibliographic information in today's academic world. *Publications, 9*(1), 12. https://doi.org/10.3390/publications9010012

Rogers, E. M., Hart, W. B., & Miike, Y. (2002). Edward T . Hall and The History of Intercultural Communication : The United States and Japan. *Keio Communication Review, 24*(24), 3–26.

Susanti, W. D., Pranoto, M. S., & W, S. S. Y. (2019). The Study of Public Space From The Sociofugal and Sociopetal Aspect (Case Study: Faculty of Architecture and Design, UPN "Veteran" Jawa Timur). *Nusantara Science and Technology Proceedings, 2018*, 75–81. https://nstproceeding.com/index.php/nuscientech/article/view/86/84

Tobing, M. M., & Paembonan, L. S. (2018). Building tourism and sociopetal cultural understanding through proxemics sharing of authentic artefacts from the Tongkonan of North Toraja, Indonesia. *International Journal of Engineering & Technology, 7*(4), 548–554. http://repository.uki.ac.id/id/eprint/1045

Toraman, S., Cox, K., Plano Clark, V. L., & Dariotis, J. K. (2020). Graduate students' current practices for writing a mixed methods research study abstract: An examination of doctoral dissertation and master's thesis abstracts in the proQuest dissertations and theses globalTM database. *International Journal of Multiple Research Approaches, 12*(1), 110–128. https://doi.org/10.29034/ijmra.v12n1a4

Wang, P., Zhu, F. W., Song, H. Y., Hou, J. H., & Zhang, J. L. (2018). Visualizing the academic discipline of knowledge management. *Sustainability, 10*(3), 682. https://doi.org/10.3390/su10030682

Weckowicz, T. E. (1957). Notes on the perceptual world of schizophrenic patients. *Psychiatric Services, 8*(4), 25–28. https://doi.org/10.1176/ps.8.4.25