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Mapping Global Research on Cognitive Style: A Bibliometric Analysis

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Abstract: Cognitive style refers to individual differences in how people perceive, process, and use information in learning and problem-solving. Understanding these differences is essential for designing effective and equitable instruction. However, no comprehensive bibliometric analysis has yet examined global research trends on cognitive style differences in educational contexts. This study aims to map the intellectual structure and development of research on cognitive styles from 2015 to 2024, identifying the most influential journals, authors, institutions, and countries, as well as emerging thematic trends. Data comprising 277 documents were retrieved from the Scopus database and analyzed using VOSviewer for co-authorship, co-citation, and keyword co-occurrence networks. The findings reveal a steady annual growth in publications, dominated by themes related to learning styles, metacognition, and adaptive learning. The United States and China emerged as the most productive countries, with Learning and Individual Differences as the leading journal. These results highlight the growing scholarly attention to cognitive styles and their implications for personalized learning and instructional innovation. The study contributes a comprehensive overview of the field, serving as a reference for future research, teacher professional development, and curriculum design aimed at improving learning equity and quality.

Keywords: Bibliometric Analysis, Cognitive Styles, Global Mapping, VOSviewer Application

A. Introduction

Research on cognitive style has long been a central topic in psychology and education, particularly in exploring individual differences in thinking, learning, and problem-solving (Albar et al., 2025; Beekman & Seo, 2023; Chan et al., 2023; Jayacyril et al., 2025). Cognitive style refers to an individual's characteristic way of organizing, processing, and responding to information from the environment (Bonavita et al., 2023; Perlman & Mor, 2022; Yin et al., 2025). Since the concepts of field dependence and field independence were introduced, numerous studies have demonstrated that cognitive style plays a significant role in determining the effectiveness of learning

strategies, creative thinking, and academic performance in educational contexts (Buzhinskaya et al., 2022; Stachoň et al., 2025). Cognitive style is identified as one of the psychological variables that significantly influences the learning process and academic achievement.

Existing knowledge on cognitive style remains fragmented and lacks a unified theoretical and empirical synthesis. Although research on cognitive style has been conducted across diverse contexts, educational levels, and disciplines, there is still no comprehensive mapping of its global development. It remains unclear who the most influential researchers are, which countries are most productive, which journals serve as major publication outlets, and which research themes dominate the field (Jones et al., 2020; Wu & Hou, 2015; Yecan & Çağiltay, 2006). This situation makes it difficult for new researchers to grasp current research directions and identify existing knowledge gaps. In other words, a clear gap exists in understanding the comprehensive scientific landscape of cognitive style research.

In the context of cutting-edge educational research, the bibliometric approach serves as an effective method to address this gap. Bibliometric analysis enables researchers to objectively examine the quantity, quality, and impact of scientific publications using indexed data from databases such as Scopus (Ibrahem et al., 2022; Lustyantie et al., 2022; Solihah et al., 2023; Yunfei et al., 2023). Through this method, it is possible to identify publication growth trends, collaboration networks among authors and institutions, geographic distribution, and the evolution of research themes within a specific field. Numerous studies in education have employed bibliometric techniques to map topics such as digital learning, self-regulated learning, and STEM education. However, bibliometric investigations focusing specifically on cognitive style research remain scarce, despite the increasing relevance of this topic in the era of personalized learning and adaptive technologies (Chen & Tseng, 2021; Mazza et al., 2018; Mertayasa et al., 2021; Sheehy & O'Connor, 2014).

The study of cognitive styles is of critical importance, as this concept underpins the understanding of individual differences in thinking, learning, and problem-solving. Amid the rapid advancement of educational science and technology, adopting learning approaches that accommodate diverse cognitive styles has become increasingly essential for enhancing learning effectiveness (Karimi Hajishoreh & Hatami, 2022; Wang et al., 2024). The urgency of this research lies in the need to establish a comprehensive understanding of the global knowledge base on cognitive style studies encompassing author productivity, international collaboration, key publication sources, and dominant thematic areas. Without a systematic mapping of this landscape, future research risks proceeding without conceptual coherence and may inadvertently replicate existing work. Therefore, a bibliometric analysis is warranted to provide a systematic, data-driven overview of the development, distribution, and emerging trends in cognitive style research worldwide (Bousbia et

al., 2009; Hodgkinson & Sadler-Smith, 2003). Specifically, this study pursues three main objectives: (1) to identify the most influential journals, institutions, and authors contributing to cognitive style research; (2) to examine the most productive countries and the patterns of international collaboration among researchers; and (3) to analyze the most prominent research themes and emerging trends through the co-occurrence of keywords, titles, and abstracts. The findings of this study are expected to offer valuable insights for educational researchers by providing a comprehensive overview of global cognitive style research trends and serving as a foundation for future investigations in this field.

Furthermore, the urgency of this research is closely linked to the ongoing paradigm shift toward personalized and AI-driven learning. In this context, understanding cognitive styles is relevant not only for psychologists and educators but also for developers of adaptive learning systems that tailor instructional content and strategies to individual learners. Consequently, bibliometric mapping of cognitive style research represents a strategic effort to assess how far this concept has been integrated into contemporary scholarship and modern educational technologies. Therefore, the present study—*Mapping Global Research on Cognitive Style: A Bibliometric Analysis*—is significant in addressing both academic and practical needs: (1) providing an empirical foundation for understanding the structure and dynamics of global cognitive style research; (2) enabling researchers to identify research gaps and opportunities for international and interdisciplinary collaboration; and (3) offering a scientific basis for designing learning innovations grounded in the understanding of individual cognitive differences.

B. Methods

This study utilised a conventional scientific mapping procedure encompassing the subsequent five systematic phases: research design, compilation of bibliometric data, analysis, visualisation, and interpretation. Bibliometry involves analysing data derived from scientific publications' bibliographic aspects through quantitative and statistical methods. One of these research studies aims to analyse the publication characteristics and determine research trends in mathematical abstraction through bibliometric analysis methods. The substantial volume of published articles poses challenges for researchers seeking to discern trends in cognitive styles. Therefore, a bibliometric analysis related to this research is needed. This research is a quantitative meta-analysis design research because this research aims to identify bibliometric data related to cognitive styles registered in the Scopus database.

This stage is related to retrieving data from the database and filtering the data. In this stage, researchers took data provided by Scopus as had been done by previous research in cognitive style. The material coverage in Scopus data is 70% wider than other data sources. Scopus data taken in research is limited to 2020-2025 (the last

6years) because generally papers cite the last 6 years of publication, but the researchers took 5 years to enrich the data. The literature search process was conducted in October 2025 using a combination of the following keywords in the field of Title, Abstract, and Keywords: TITLE-ABS-KEY ("CognitiveStyle") AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (EXACTKEYWORD , "Cognitive Style")).

This stage is related to the software used to analyse the data. To analyse data from the Scopus database, Scopus has provided analysis and visualisation results such as the number of article publications in Scopus-indexed journals each year, sources of Scopus indexed journals, influential authors, and productive universities. However, more than bibliometric analysis is needed based on the Scopus analysis, so auxiliary software is required to analyse and visualise it. This paper uses VOSviewer software to analyse and visualise bibliographic data using RIS data. Nevertheless, VOSviewer can be edited according to the author's needs, making it more practical. Apart from that, analysing the novelty of research using VOSviewer is more accessible than using the R application. The study's novelty can be seen enough by Network Visualisation, Overlay Visualisation, and Desity Visualisation in the VOSviewer application.

C. Results and Discussion

General Information and Growth Trends

This study utilized data from the Scopus database covering the years 2020 to 2025 (a six-year period). Although bibliometric studies commonly analyze publications from the past decade, the authors limited the time frame to the most recent six years to ensure a focused and manageable dataset. Moreover, the substantial number of publications on cognitive styles during this period was considered sufficient for comprehensive analysis. Figure 1 presents general information derived from 277 articles published between 2020 and 2025.

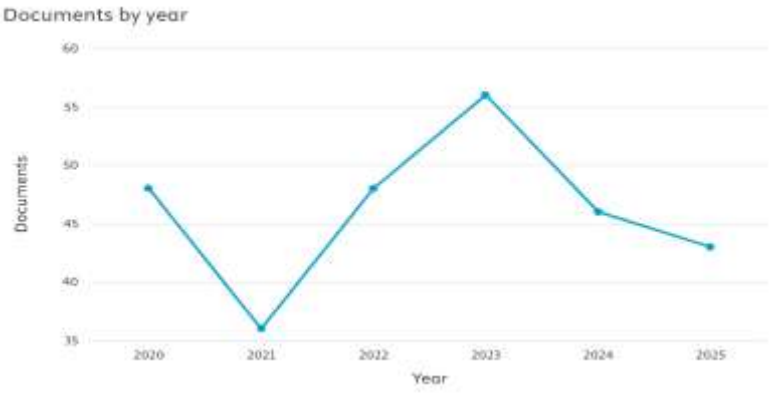

Figure 1. General information and growth trends of articles Publication of Articles Per Year

The annual growth of articles can also be seen in Figure 1. Based on the results of journals indexed by Scopus, the publication of published articles fluctuates over the past six years. In 2020, 48 articles (17,33) were published. This number then dropped sharply in 2021 to 36 articles (13%), the lowest point during this period. Thereafter, a significant increase occurred in 2022 with 48 articles (17,33), reaching a peak of 56 articles (20,22%) in 2023. However, the trend declined again in 2024 (46 articles) and 2025 (43 articles).

In general, publication trends indicate that research interest in cognitive styles increased rapidly until 2023, then experienced a moderate decline in the following two years. This pattern indicates that, despite fluctuations, the topic of cognitive styles remained a consistent focus for international researchers during the 2020–2025 period. The data indicates that cognitive style research has been a popular topic among cognitive style researchers despite fluctuations in interest over the years, and it should be further developed through continued research and publication.

Contribution by Journals

There are 160 journals contributed to publishing papers related to cognitive style. Figure 1 shows the distribution of the top 5 journals that publish the most articles.

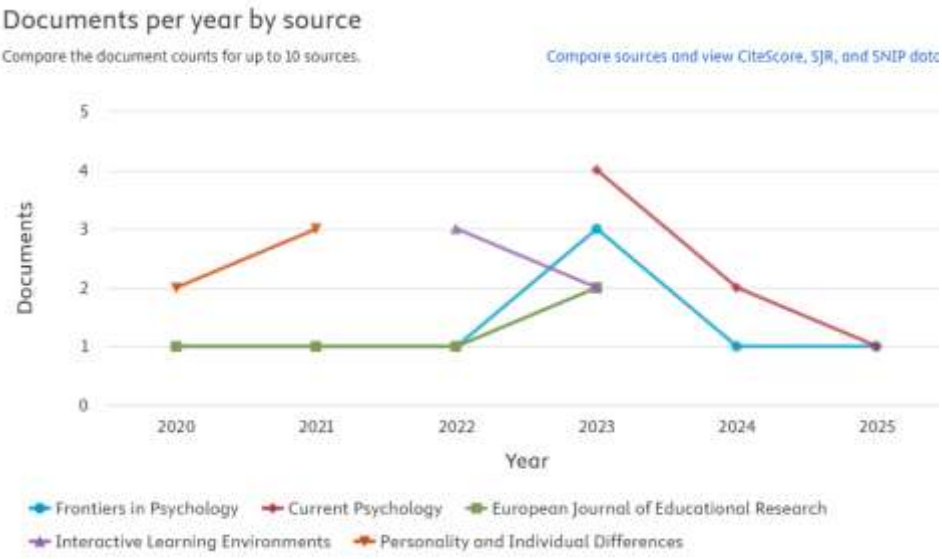

Figure 2. Contribution by journals to articles Distribution of articles based on Scopus-indexed journal sources

In Figure 2, journal sources indexed by Scopus publish themes related to cognitive style. The highest number of publications was published in Frontiers in Psychology, with 8 articles published. The top five journal sources can also be a reference for

publishing papers related to this theme. The five journals are Current Psychology (7 articles), European Journal of Educational research (5 articles), interactive learning environments (5 articles), and personality and individual differences (5 articles). Although there are many other journal sources, these five journals have the most significant number of articles published compared to other journals.

Table 1. Top Five Journals

Source Title	Cite Score	Highest percentile	% Cited	SJR	Publisher	The number
Frontiers in Psychology	6.3	(83%) Q2	79	0.872	Frontiers Media SA	8
Current Psychology	5.2	(77%) Q1	73	1.024	Springer	7
European Journal of Educational research	3.7	(71%) Q3	72	0.369	Eurasian Society of Educational Research	5
interactive learning environments	13.8	(98%) Q1	88	1.976	Taylor and Francis Ltd.	5
personality and individual differences	9.3	(91%) Q1	84	1.419	Elsevier B.V.	5

Table 1 shows the top five journals publishing the most research on cognitive styles, based on bibliometric analysis. These journals generally fall within the upper quartiles (Q1 – Q3) of the Scopus database, indicating high scientific quality and influence. Frontiers in Psychology ranks first with a Cite Score of 6.3 and 8 related articles, followed by Current Psychology (Cite Score 5.2) and the European Journal of Educational Research (Cite Score 3.7). Furthermore, Interactive Learning Environments has the highest Cite Score of 13.8 (Q1) with a citation rate of 88%, followed by Personality and Individual Differences with a Cite Score of 9.3 (Q1). These results indicate that the topic of cognitive styles is highly sought after and published in highly reputable journals in psychology and education, reflecting the relevance and significant contribution of cognitive styles research to the development of global knowledge.

Contributions by Authors

There were 160 authors from various countries. Figure 3 shows the distribution of the top 10 authors who have published the most papers and cites in the field of cognitive style.

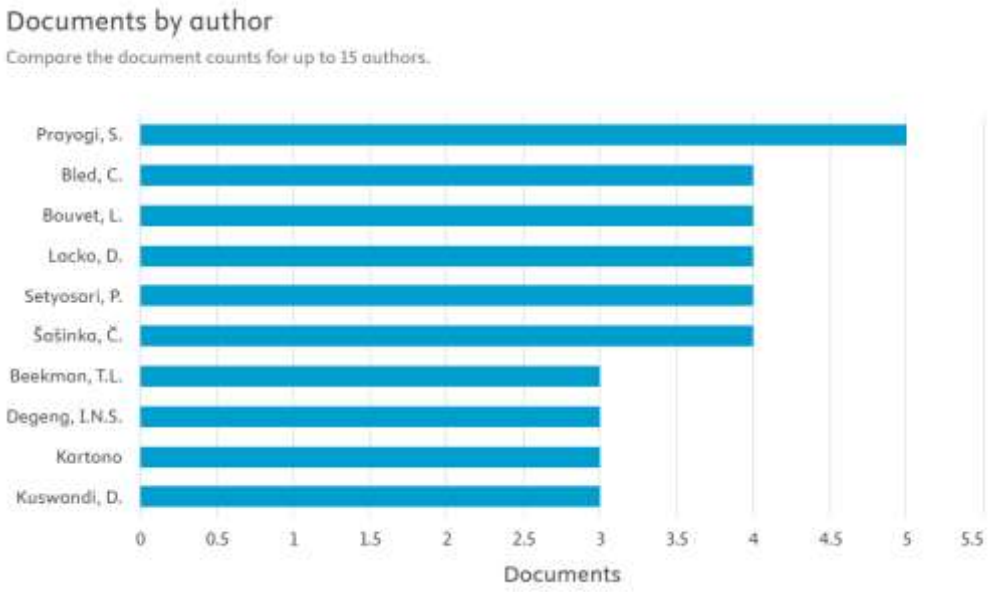

Figure 3. Contributions by authors to articles Distribution of articles based on the author

Based on Figure 3, the most influential author related to cognitive style is Prayogi S. from Indonesia. This means that the authors are productive people and can be a reference in cognitive style research. The focus of Prayogi S.'s study is a cognitive style differences in mathematics.

Distribution by Subject Area

There were 20 subjects about cognitive style. Figure 4 shows the distribution of the top 5 subject area who have published the most papers and cites in the field of cognitive style.

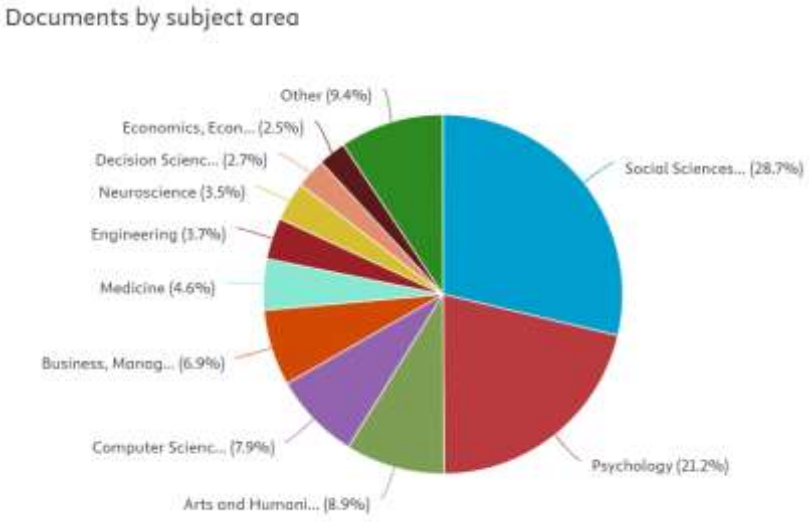

Figure 4. Distribution of Articles about Subject Area

Figure 4 shows that research on cognitive style is distributed across various scientific fields. Some of these include Social Sciences (28.7%), Psychology (21.2%), Arts and Humanities (8.9%), Computer Science (7.9%), Business, Management and Accounting (6.9%), Medicine (4.6%), Neuroscience (3.5%), Engineering (3.7%), Decision Sciences (2.7%), Economics, Econometrics and Finance (2.5%), and other fields (9.4%). This distribution indicates that cognitive style is a multidisciplinary concept that is not only relevant to psychology but also extends to education, technology, management, and neuroscience. The dominant focus in Social Sciences and Psychology suggests that human and behavioral dimensions remain the central aspects in the study of cognitive style.

Contributions by Institutions

One hundred sixty universities from various countries were obtained. Figure 5 shows the distribution of the top 10 universities that publish the most papers in the cognitive style.

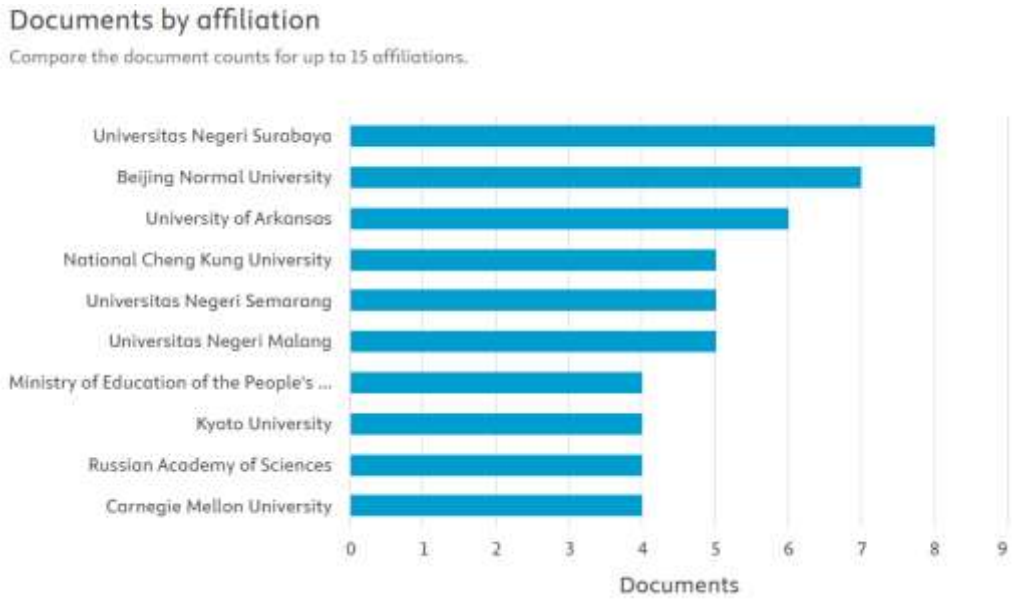

Figure 5. Distribution of Articles Per the University

Figure 5 shows the university that contributed to publishing articles related to the cognitive style. The top ten campuses are Universitas Negeri Surabaya, Beijing Normal University, University of Arkansas, National Cheng Kung University, Universitas Negeri Semarang, Universitas Negeri Malang, Ministry of Education of the People's Republic of China, Kyoto University, Russian Academy of Sciences, and Carnegie Mellon University. These ten campuses can be a reference for authors who study cognitive style.

Distribution by Country

Fifty countries contributed to the publication of this article. Figure 6 shows the distribution of the top 10 countries that publish the most papers in the cognitive style research.

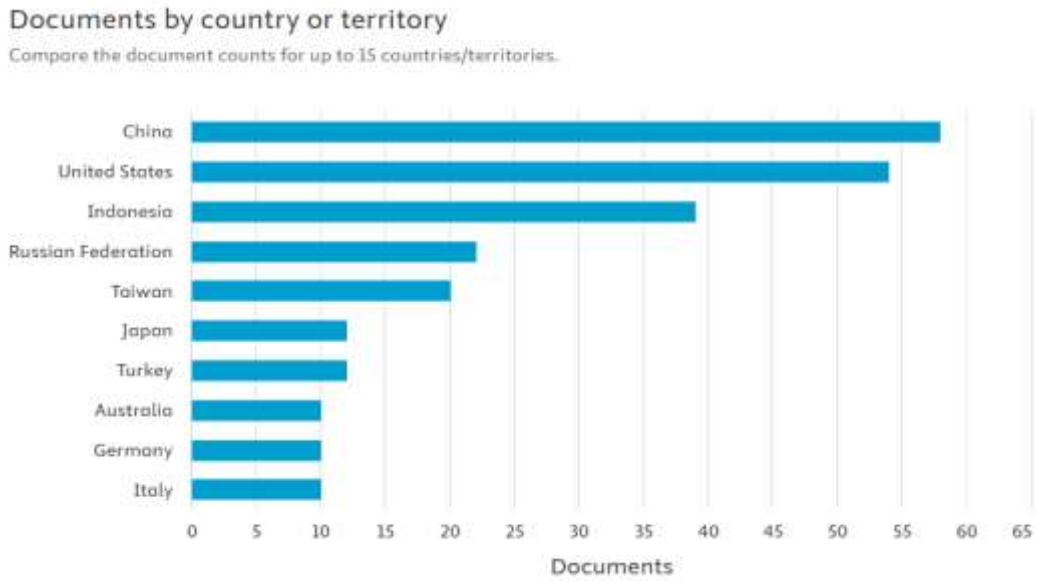

Figure 6. Distribution by country to articles Distribution of articles per country

Based on Figure 6, the country that contributed the most articles published on cognitive styles was China with 20.94% (58 articles), followed by United States, with 19.49% (54 articles). Eight of the top 10 authors were, respectively, Indonesia (14.08%), Russian Federation (7.94%), Taiwan (7.22%), Japan (4.33%), Turkey (4.33%), Australia (3.6%), and finally, Germani (3.6%). Thus, cognitive styles are more dominant and productive in China, especially at Beijing Normal University. Therefore, authors from Indonesia have conducted extensive research on the differences in students' cognitive styles.

Keywords and Terms Analysis

Based on the word cloud results, the words that often appear in keywords are cognitive style. Cognitive style appeared 41 times in articles published from 2020 to 2025 on the theme of cognitive style difference in learning and cognitive style difference, based on the relationship between keywords that appear can be seen in Figure 7.

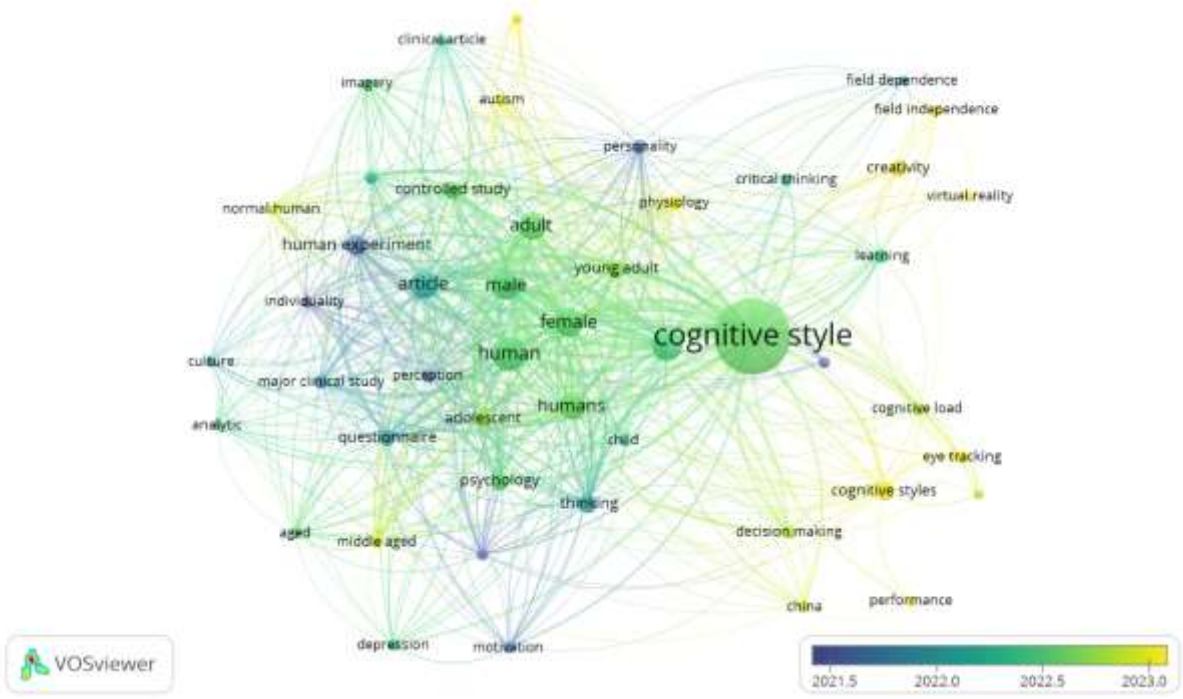

Figure 7. Overly Visualization

Based Figure 7, The figure illustrates a bibliometric network visualization of the keyword "cognitive style" generated using VOSviewer. Each node represents a keyword that co-occurs in the analyzed literature, while the size of the node indicates its frequency of occurrence. The color gradient (from blue to yellow) reflects the temporal evolution of research topics from 2021 to 2023. The central position and large size of the "cognitive style" node indicate that it is the most dominant and widely connected term within the research network. The clusters surrounding it such as "learning," "decision making," "creativity," "virtual reality," "personality," and "critical thinking" demonstrate the multidisciplinary connections of cognitive style research, spanning psychology, education, and neuroscience. This visualization suggests that recent studies have increasingly focused on the relationship between cognitive style and emerging themes like creativity, learning environments, and virtual reality applications.

D. Conclusions

This research shows that cognitive style research is exciting because it will still trend until 2025. Moreover, the papers published are also, on average, in the Scopus database with quartile one to quartile three. Therefore, the results of this research can be used as a reference by future researchers who wish to conduct cognitive style

research based on the research trends reported in this paper. This research uses bibliometric analysis from the Scopus database to investigate the cognitive style research published in the last 6 years. Significant findings from this research are as follows: There were 277 publications during the previous 6 years, but the article citation index still needs to be improved. This means that high citations of articles do not follow the high number of publications; Educational Studies in learning is the journal that contributes the most to publishing articles in the field of cognitive style; Saiful Prayogi from Universitas Mataram is the most influential author in publishing articles, especially reflective cognitive style in mathematics. The China is the most productive country compared to other countries and is among the countries with the most authors, while the China is the country with the highest multiple country publications.

The publications in the cognitive trend to be of high quality, as a significant number of articles are published in journals with high percentile rankings. Thus, the future direction of this research can be focused on geometry, gesture, computational thinking, mathematical concepts, and preschool children, but the possibility of this being done at a higher level, for example, with undergraduate students, still needs to be considered. The results of this research can provide an overview of future research related to trends in cognitive style research so that more abstraction research is reviewed, especially the latest cognitive style studies. In addition, this study provides information that cognitive style research still needs to be further researched, both based on research trends and the still minimal research results. This data only uses the Scopus database, so further research can be combined with the scopuss database. In addition, the papers taken from Scopus data are only from the last 6 years.

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References

Albar, M., Masitoh, S., Kristanto, A., & Rajiman, W. (2025). Effect of Google Sites-assisted Flipped Classroom Discovery Learning Model and Cognitive Style on Mathematics Problem-Solving Skills and Student Learning Independence. *Ianna Journal of Interdisciplinary Studies*, *7*(2), 236–249. https://doi.org/10.5281/zenodo.15462037

Beekman, T. L., & Seo, H.-S. (2023). Development and validation of a food-related analysis–holism scale (F-AHS). *Journal of Food Science*, *88*, 205–226.

https://doi.org/10.1111/1750-3841.16504

Bonavita, A., Bellagamba, M., Verde, P., Boccia, M., & Guariglia, C. (2023). The Effect of Cognitive Style on Individual Differences in Prismatic Adaptation: A Pilot Study. *Brain Sciences*, *13*(4). https://doi.org/10.3390/brainsci13040641

Bousbia, N., Labat, J.-M., Rebai, I., & Balla, A. (2009). Indicators for deducting the learners' learning styles: Case of the navigation typology indicator. *Proceedings - 2009 9th IEEE International Conference on Advanced Learning Technologies, ICALT 2009*, 385 – 389. https://doi.org/10.1109/ICALT.2009.220

Buzhinskaya, N. V, Vaseva, E. S., & Shkabara, I. E. (2022). Cognitive Style Of A Future It Specialist In A Teamwork Process. *Obrazovanie i Nauka*, *24*(4), 79–111. https://doi.org/10.17853/1994-5639-2022-4-79-111

Chan, H.-S., Chu, H.-Y., & Lin, M.-T. (2023). Effect of Cognitive Style and Working Memory on Floral Design Ability. *Horticulturae*, *9*(5). https://doi.org/10.3390/horticulturae9050595

Chen, S. Y., & Tseng, Y.-F. (2021). The impacts of scaffolding e-assessment English learning: a cognitive style perspective. *Computer Assisted Language Learning*, *34*(8), 1105 – 1127. https://doi.org/10.1080/09588221.2019.1661853

Hodgkinson, G. P., & Sadler-Smith, E. (2003). Complex or unitary? A critique and empirical re-assessment of the Allinson-Hayes Cognitive Style Index. *Journal of Occupational and Organizational Psychology*, *76*(2), 243 – 268. https://doi.org/10.1348/096317903765913722

Ibrahem, U. M., Alsaif, B. S., Alblaihed, M., Ahmed, S. S. I., Alshrif, H. A., Abdulkader, R. A., & Diab, H. M. (2022). Interaction between cognitive styles and genders when using virtual laboratories and its influence on students of health college's laboratory skills and cognitive load during the Corona pandemic. *Heliyon*, *8*(4). https://doi.org/10.1016/j.heliyon.2022.e09213

Jayacyril, C. M., Kuttalam, M., Michael, A. R., Velnadar, R., & Parayitam, S. (2025). Unfolding the Relationship Between Entrepreneurs' Cognitive Style and Performance: Experiential Learning as a Mediator and Responsibility and Risk-taking as Moderators. *Journal of Entrepreneurship*, *34*(1), 33–73. https://doi.org/10.1177/09713557251326530

Jones, N. A. R., Webster, M., Newport, C., Templeton, C. N., Schuster, S., & Rendell, L. (2020). Cognitive styles: speed–accuracy trade-offs underlie individual differences in archerfish. *Animal Behaviour*, *160*, 1 – 14. https://doi.org/10.1016/j.anbehav.2019.11.019

Karimi Hajishoreh, N., & Hatami, J. (2022). The Role of Cognitive Style in Moral Judgment. *Frontiers in Biomedical Technologies*, *9*, 13–16. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85173431891&partnerID=40&md5=99088de37a2bf0152a8b29c873ff4708

Lustyantie, N., Supriyati, Y., Isnan, F. N., Ramli, n., & Yudha, R. P. (2022). The Effect of Cognitive Style, Critical Thinking, And Digital Literature on Argumentative Writing Skills. *Educational Sciences: Theory and Practice*, *22*(1), 27–35. https://doi.org/10.12738/jestp.2022.1.0003

Mazza, V., Eccard, J. A., Zaccaroni, M., Jacob, J., & Dammhahn, M. (2018). The fast and the flexible: cognitive style drives individual variation in cognition in a small mammal. *Animal Behaviour*, *137*, 119 – 132. https://doi.org/10.1016/j.anbehav.2018.01.011

Mertayasa, I. N. E., Subawa, I. G. B., Agustini, K., & Wahyuni, D. S. (2021). Impact of cognitive styles on students' psychomotoric abilities on multimedia course practicum. In K. M.W.A., A. K.Y.E., A. H., S. I.M.G., P. I.M., & M. I.M.D. (Eds.), *Journal of Physics: Conference Series* (Vol. 1810, Issue 1). IOP Publishing Ltd. https://doi.org/10.1088/1742-6596/1810/1/012056

Perlman, B., & Mor, N. (2022). Cognitive bias modification of inferential flexibility. *Behaviour Research and Therapy*, *155*. https://doi.org/10.1016/j.brat.2022.104128

Sheehy, N., & O'Connor, R. C. (2014). Cognitive style and suicidal behaviour. In *Suicide: Strategies and interventions for reduction and prevention*. Taylor and Francis. https://doi.org/10.4324/9781315820132-16

Solihah, S., Kartono, n., Mariani, S., & Dwijanto, u. (2023). Analysis of Students' Mathematical Creative Thinking Process Based on Cognitive Style. *Journal of Higher Education Theory and Practice*, *23*(17). https://doi.org/10.33423/jhetp.v23i17.6538

Stachoň, Z., Čeněk, J., Lacko, D., Krajňáková, L., Hanus, M., Lu, W.-L., Šašinková, A., Ugwitz, P., Shen, J., & Šašinka, Č. (2025). A comparison of performance using extrinsic and intrinsic bivariate cartographic visualizations with respect to cognitive style in experienced map users. *Cartography and Geographic Information Science*, *52*(1), 55–68. https://doi.org/10.1080/15230406.2023.2264752

Wang, S.-L., Lin, J. J. H., & Su, P.-C. (2024). The roles of self-efficacy and cognitive styles in reading behaviors and reasoning performance: An eye movement perspective. *Educational Technology and Society*, *27*(3), 165–184. https://doi.org/10.30191/ETS.202407_27(3).RP10

Wu, S.-Y., & Hou, H.-T. (2015). How cognitive styles affect the learning behaviors of online problem-solving based discussion activity: A lag sequential analysis. *Journal of Educational Computing Research*, *52*(2), 277 – 298. https://doi.org/10.1177/0735633115571307

Yecan, E., & Çağiltay, K. (2006). Cognitive styles and students' interaction with an instructional web-site: Tracing users through eye-gaze. *Proceedings - Sixth International Conference on Advanced Learning Technologies, ICALT 2006*, *2006*, 340 – 342. https://www.scopus.com/inward/record.uri?eid=2-s2.0-34247178060&partnerID=40&md5=8cbbb33342b03bd33f285e4993e1d0ec

Yin, L., Shi, Z., Liu, M., & Chen, H. (2025). Effect of hit rate and cognitive style on Bayesian reasoning: evidence from eye movements. *Frontiers in Psychology*, *16*. https://doi.org/10.3389/fpsyg.2025.1485283

Yunfei, G., Jiaqun, G., Mingyuan, W., Xiaoqi, J., & Li, L. (2023). Effect of cognitive style on time-based prospective memory. *Quarterly Journal of Experimental Psychology*, *76*(12), 2680–2689. https://doi.org/10.1177/17470218231156022