

A GLIMPSE OF THE FUTURE – AI COACHING

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ABSTRACT

AI rapidly grew in recent years and brought improvement in all fields of work that engaged this technology. It really changed our world and if we think about all the medical implications of AI use, we can say that AI really impacts our lives. Coaching also grew rapidly in recent years and impacted the business world in a very powerful way. What if AI could help with coaching? Is AI competent enough to be a good coach? Starting with these questions we wanted to see the image of the research published on AI Coaching, trends and structure. We believe that bibliographical analysis is appropriate for this study, and we used Web of Science Core Collection as the main database. Using Biblioshiny instruments and reports we discovered a moderate interest on the subject and still scarce study material although there is an increasing trend and a few instruments developed in order to measure the results of AI coaching.

KEYWORDS: *AI, bibliometric, coaching.*

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1. INTRODUCTION

Coaching is a dynamic and transformative practice aimed at promoting self-reflection to drive change. Like other helping professions, it offers a supportive structure for personal growth, where coaches guide clients in creating their own solutions to (professional) challenges (Moos & Spranz-Fogasy, 2024).

The history of artificial intelligence (AI) is marked by periods of hype and exaggerated expectations. Nevertheless, AI is increasingly being integrated into various areas of human life, including the rapidly expanding field of coaching (Terblanche et al, 2022).

Coaching is effective but expensive or hard to reach. There is significant evidence for the efficacy of coaching on goal attainment, psychological wellbeing, stress perception and resilience. At the same time in recent years more and more research results gather to prove AI effectiveness.

What if coaching could be affordable and easily available? What if AI algorithm could learn to be a good coach?

There is scarce research on this topic, and it is a real challenge to see if AI as a coach not as an algorithm to find a good coach really works. It would make a lot of difference if this is possible and could redefine the coaching and business world.

Recent advancements in coaching technology have improved its accessibility and affordability for a wider audience. Amid the rapid economic growth and increasing demand for extensive coaching interventions for executives, artificial intelligence (AI)-based coaching emerges as a potential solution. Although evidence supporting the effectiveness of AI coaching is growing, a thorough understanding of the field remains limited (Plotkina & Sri Ramalu, 2024).

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Researchers have tried to understand if coaching could be performed by chatbots. Even though AI coaching seems to face great difficulties in problem identification and feedback it generally appears capable of going through many steps in the coaching process and can establish working alliances (Graßmann & Schermuly, 2021).

There are also studies that tried to discover how traditional chatbots and generative AI chatbots can be used for coaching and the results showed that generative AI improves coaching outcomes for structured interactions such as goal attainment (Terblanche, 2024).

We have performed a bibliometric analysis of the research level on this topic. Using the web of science core collection and Biblioshiny tool we found out that this is a topic for further research and has multiple ramifications for studies both form the technological and coaching fields.

2. METHODOLOGY

2.1 Goal, literature search and data collection

The goal of our research was to reveal the level of research published on AI coaching in the largest scientific database as a starting point for further research on this topic and the challenge to see if coaching could be performed by an AI algorithm with satisfactory results making coaching both easily available and affordable.

The research question aims to see if there is enough scientific material published worldwide to prove that AI coaching work. Do we have instruments developed to measure and scale the results of AI coaching?

We performed a bibliometric analysis using PRISMA Preferred Reporting Items for Systematic Reviews and Meta-Analyses) for data collection.

Science mapping aims at displaying the structural and dynamic aspects of scientific research (Börner et al., 2003).

Web of Science is widely recognized as the most reputable global research database with research gathered from over 250 countries. The Web of Science Core Collection was the source of our database on the research topic.

The research was conducted by topic, using relevant keywords such as (“coaching”) AND (“AI”) OR (“artificial intelligence and business coaching”) OR (“artificial intelligence and coaching”) OR (“ai coaching”) OR (“ai life coaching”) OR (“ai team coaching”) OR (“ai coaching management”) OR (“ai coaching efficiency”).

The database search focused on articles, proceeding papers and early access.

The data was gathered from the period spanning 1997 to September 2024. Although for 2024 we don't have a full year coverage we consider that it is important to study the literature published as recently as possible.

It was important to search by very specific keywords to exclude articles on other topics or not related to AI Coaching. It was a challenge to have answers only on coaching performed by AI chatbots not on coaching or AI in general.

We searched mainly for English written papers but we have not excluded the results published on other languages.

The search for “executive coaching” didn't return any results mainly because the term used in most countries is “business coaching”

PRISMA mapping displayed surprising results and conclusions right from the start of the analysis.

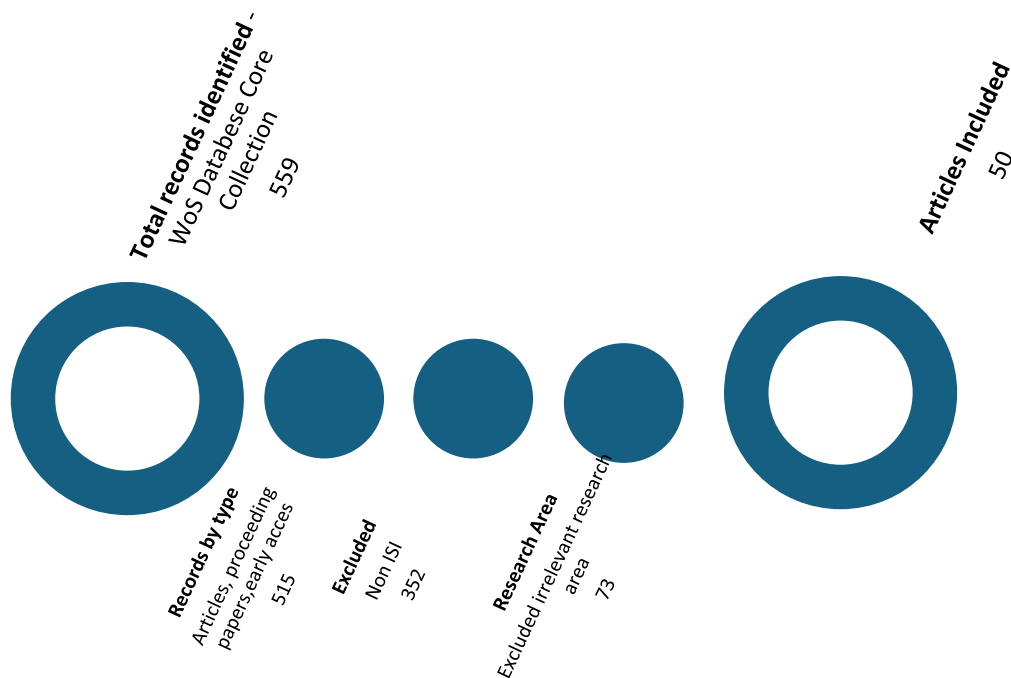


Figure 1. PRISMA for eligibility

Source: Author's own research

2.2 Data analysis and visualization

The analysis was conducted using the Bibliometrix R-package, specifically its visual interface, Biblioshiny. Bibliometrix is widely recognized as an effective tool for science mapping analysis, offering a structured and recommended workflow for bibliometric studies (Aria & Cuccurullo, 2017). Biblioshiny was employed to visualize the analyzed data, enabling a clearer understanding of the relationships among publications and concepts within the field.

Our analysis included an examination of leading countries, key sources, influential authors, and significant documents. Additionally, we conducted document analysis using clustering and thematic mapping, which yielded intriguing insights.

The data was primarily analyzed using representative tables and figures generated by Biblioshiny. Complementary statistical tools from the Web of Science platform by Clarivate were also utilized for further analysis.

This bibliometric analysis highlighted research gaps and suggested future directions for advancing the field. The findings provided deeper insights into the current body of research and identified opportunities for further exploration.

The reports used were relevant and showed a good image of the research level on Web of Science Core Collection on this topic.

The limited results included in the analysis show that there is almost no published research on coaching performed by AI chatbots and the number of non-ISI articles is important also to reveal that the relevant research on this topic is still to come in the following years. The latest research results on coaching and AI will encourage more and more researchers to focus on the combined topic of AI Coaching and its characteristics.

3. RESULTS AND DISSCUSIONS

The research revealed the complete published research image on the AI coaching topic from WoS from 1997 till 2024. The main information on the selected records is showed in Tabel 1 presented below:

Table 1. Main Information of the bibliometric research

Description	Results
Timespan	2011:2024
Sources (Journals, Books, etc)	46
Single-authored docs	5
review; early access	1
References	2204
Proceedings paper	14
MAIN INFORMATION ABOUT DATA	
Keywords Plus (ID)	138
International co-authorships %	34
Documents	50
DOCUMENT TYPES	
DOCUMENT CONTENTS	
Document Average Age	2.64
Co-Authors per Doc	5.36
Average citations per doc	6.64
Authors of single-authored docs	5
AUTHORS COLLABORATION	
AUTHORS	
Authors	255
Author's Keywords (DE)	213
article; early access	2
article	33
Annual Growth Rate %	24.9

Source: Author's own research. On the results obtained by Biblioshiny

The analysis had 50 documents studied from 46 sources and 255 authors from all around the world. There is a 5.36 average co-authorship per document and most of the studied documents are journals and books.

There is a 34 % of international co-authorship that reveal strong international relations on this type of research. There are only 5 single authored documents.

In the selected time range the AGR is 24.9 that indicates a good increasing trend in this research field. The first recorded document was published only in 2011 and from this year on the structure of the annual scientific production is shown in Figure 2 presented below:

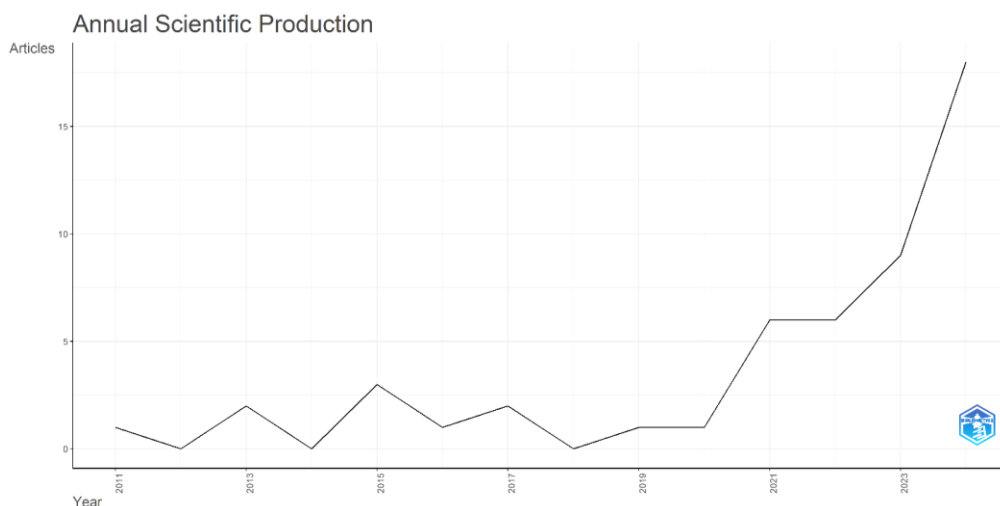


Figure 2. Annual scientific production

Source: Author’s own research on the results obtained by Biblioshiny

The increasing research trend can be seen in the graphic representation. From one article per year in 2011 to 18 documents/ year in 2024. The data was collected until September 2024 so that leaves the possibility of more published research until the end of the year.

3.1 Authors analysis

We analyzed 255 authors from 50 documents. Only 5 documents were single authored, and we found a very strong international collaboration on this topic with a 34 % international co-authorship rate and 5,36 co-authors per document.

There is an equal distribution of the publications/author with an average of 2 articles. The most relevant author is Peter H.M.P. Roelofsma from The Hague University of Applied Sciences / Rotterdam.

The second most relevant author is DILLER SJ. The most relevant authors’ results documented with Biblioshiny instruments is presented bellow in Figure 3.

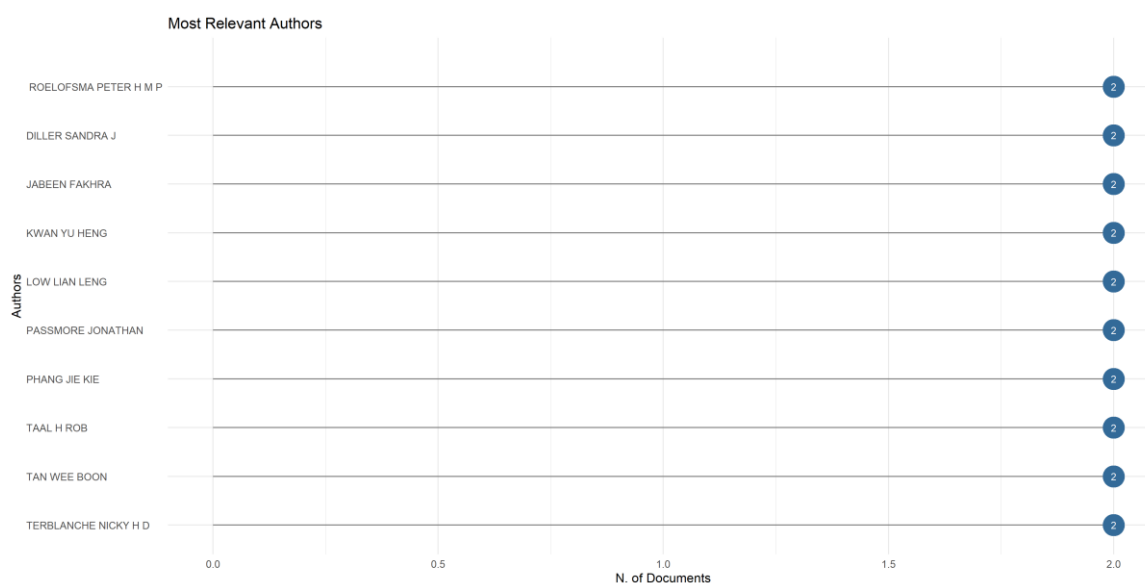


Figure 3. Most relevant authors

Source: Author’s own research on the results obtained by Biblioshiny

The most local cited author is Diller S.J. from Seeburg Castle University Austria with an average of 5 citations. The complete report on the most local cited authors is presented in Figure 4.

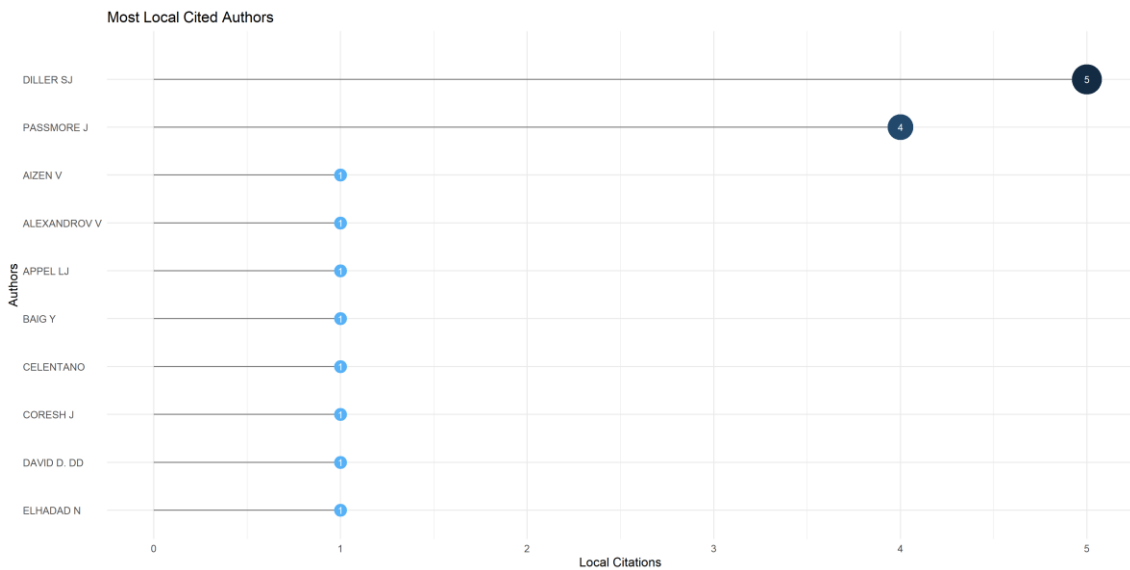


Figure 4. Most local cited authors

Source: Author's own research on the results obtained by Biblioshiny

The local impact of the authors is presented below in figure 5.

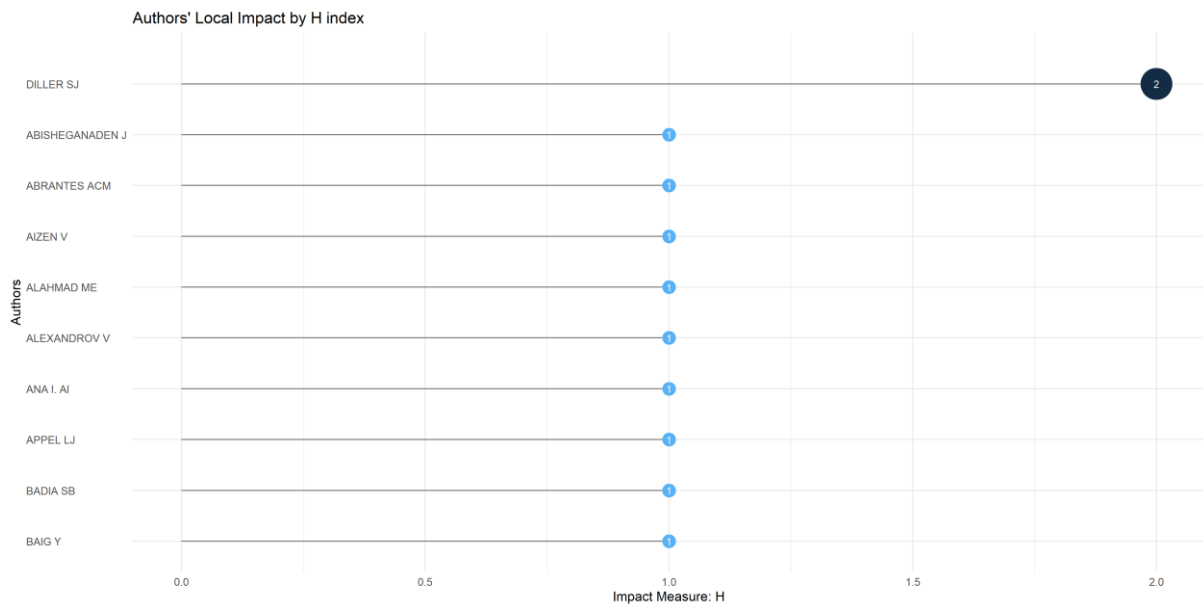


Figure 5. Authors' local impact by H index

Source: Author's own research on the results obtained by Biblioshiny

Diller S.J has an H index of 2 and is the author with the biggest local impact. The rest of the authors have a H index of 1 or lower.

Lotka's Law report is not relevant for this research due to the limited number of documents and authors found in the database.

3.2 Sources analysis

We analyzed 46 sources in the database retrieved from WoS Core Collection. These are the main sources for research in AI coaching topics and on coaching in general. The report on the most relevant sources is presented in Table 2.

Table 2. Most relevant sources

HUMAN RESOURCE DEVELOPMENT INTERNATIONAL	3
COACHING-AN INTERNATIONAL JOURNAL OF THEORY RESEARCH AND PRACTICE	2
COGNITIVE SYSTEMS RESEARCH	2
2ND GLOBAL CONFERENCE ON BUSINESS, ECONOMICS, MANAGEMENT AND TOURISM	1
ADJUNCT PROCEEDINGS OF THE 36TH ANNUAL ACM SYMPOSIUM ON USER INTERFACE SOFTWARE \& TECHNOLOGY, UIST 2023 ADJUNCT	1
ADVANCES IN ARTIFICIAL INTELLIGENCE	1
AI MAGAZINE	1
AI \& SOCIETY	1
ARTIFICIAL INTELLIGENCE IN EDUCATION: POSTERS AND LATE BREAKING RESULTS, WORKSHOPS AND TUTORIALS, INDUSTRY AND INNOVATION TRACKS, PRACTITIONERS AND DOCTORAL CONSORTIUM, PT II	1

Source: Author's own research. On the results obtained by Biblioshiny

The most relevant source is Human Resource Development International (HRDI). HRDI is a prominent academic journal that focuses on advancing the field of human resource development (HRD). The journal serves as a platform for scholarly discussion and dissemination of research, theory, and practical insights related to the development of individuals, organizations, and societies. The sources production over time is presented in Table 3.

Table 3. Sources production over time

Year	Human Resource Development International	Coaching-An International Journal Of Theory Research And Practice	Cognitive Systems Research	2nd Global Conference On Business, Economics, Management And Tourism	Adjunct Proceedings Of The 36th Annual Acm Symposium On User Interface Software & Technology, Uist 2023 Adjunct
2021	0	0	0	1	0
2022	0	0	0	1	0
2023	0	0	0	1	1
2024	3	2	2	1	1

Source: Author's own research. On the results obtained by Biblioshiny

Due to the limited number of sources the reports are limited. The most relevant source HRDI has published 3 articles in 2024 but had no published research from 2021 until 2023.

The 2nd Global Conference on Business, Economics, Management and Tourism had a constant number of articles every year with one article per year on the topic researched. The Global Conference

on Business, Economics, Management, and Tourism was scheduled to take place at the University of Barcelona in Spain in 2023.

The first three sources published on the researched topic only in 2024 with no previous publishing in previous years.

3.3 Affiliations

The search for the affiliations is very important to see alongside the main sources what is the origin of the research on the topic of AI Coaching.

The graphical representation of the most relevant affiliations report is presented in Figure 6.

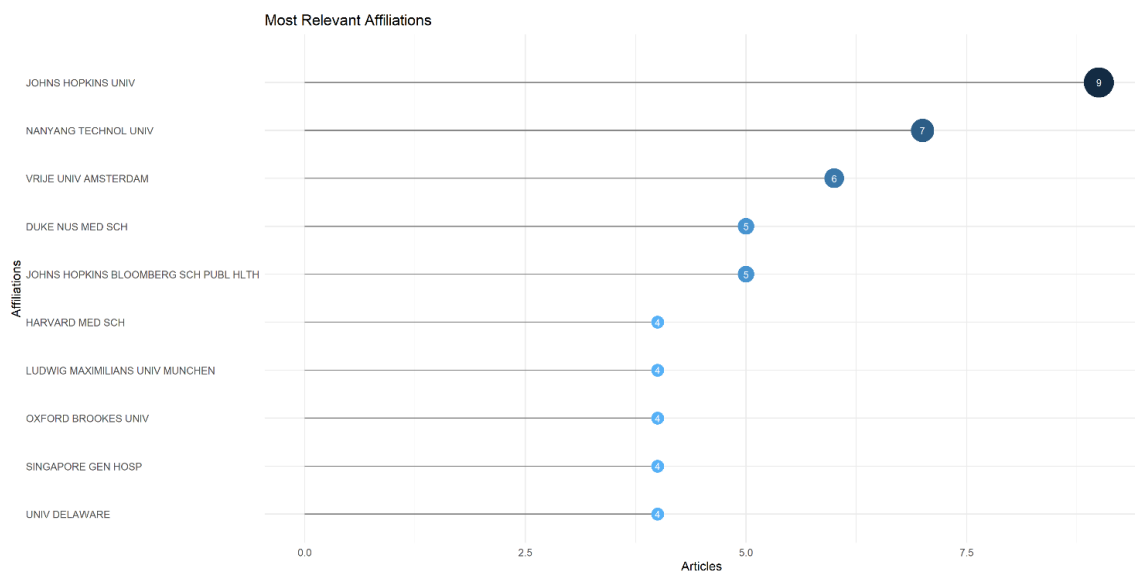


Figure 6. The most relevant affiliations

Source: Author’s own research on the results obtained by Biblioshiny

Most affiliations are from the academic community, but it is important to point out that also hospitals appear in the report because a lot of research on coaching is discussed in the medical field.

The affiliations production over time is presented in Figure 7.

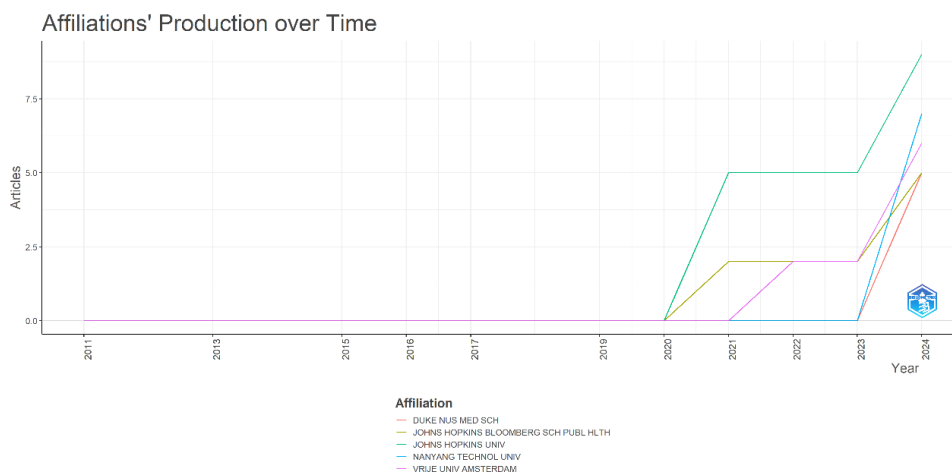


Figure 7. Affiliations’ Production over Time

Source: Author's own research on the results obtained by Biblioshiny

Most of the research is realized and published between 2020 and 2024. After the Covid 19 pandemic the interest in coaching has increased and the need to document it.

3.4 Countries scientific production

The analysis of the countries' scientific production revealed a predictable result. USA remains the main country for research on coaching.

Table 4. Countries' scientific production

Country	Freq
USA	52
SINGAPORE	31
NETHERLANDS	26
CHINA	19
UK	15
GERMANY	12
SPAIN	7
SOUTH AFRICA	6
AUSTRIA	5
INDIA	4

Source: Author's own research. On the results obtained by Biblioshiny

Asian and European countries are also leading in the increasing trend of the research on coaching. It is important to see that South Africa appears on this report because it has the fastest growing scientific production on coaching in the recent years.

3.5 Countries' Collaboration World Map

Alongside scientific production, the study of countries' collaboration network is equally important to map the existing collaboration between scientists worldwide on AI coaching.

Country Collaboration Map

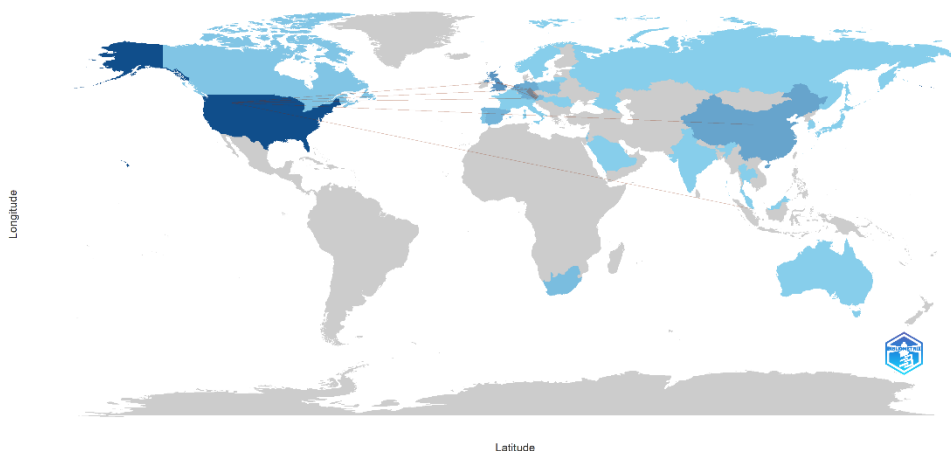


Figure 8. Countries' Collaboration Map

Source: Author's own research on the results obtained by Biblioshiny

The research revealed a strong collaboration between USA and Europe and USA – CHINA or SINGAPORE. USA is the main source for the study of coaching worldwide.

4. CONCLUSIONS

Coaching is growing fast, offering well- documented benefits to individuals and businesses alike (Athanasopoulou & Dopson, 2018; Blackman et al., 2016; Grover & Furnham, 2016). However, coaching remains expensive (Terblanche et al., 2021) and hardly accessible (Shoukry & Cox, 2018) and the introduction of AI might change the world of coaching by confronting exactly price and accessibility (Acemoglu & Restrepo, 2018).

Our research revealed that there are few ISI documents published, around 50 in 14 years, but there can be noticed an increasing trend on the AI coaching topic.

For the moment there is an equal distribution of publications/ author with an average of two. The most relevant source comes from the UK and the leading country on coaching remains USA who has also a strong collaboration network on this topic.

The literature review study revealed a few interesting facts such as the fact that AI coaching chatbots were able to assist participants with increased goal attainment and sustain the results for a short period of time after the research was finished but they did not enhance participants' resilience, psychological well-being, or reduce their perceived stress.

AI coaching represents a niche theme for further research with multiple factors yet to studied and measured. Our research revealed that the coaching industry is changing rapidly as it grows and the its benefits will become more and more accessible.

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