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Mapping the Knowledge Landscape of Dyslexia: A Worldwide Bibliometric Study

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ABSTRACT

This study presents a comprehensive bibliometric analysis of dyslexia research conducted worldwide between **1998 and 2025**. Using a dataset of **9,492 records**, the analysis maps the global knowledge landscape, covering **15,946 contributing authors, 1,264 journals, 87 countries, 4,179 institutions, and 22 publication languages**. A total of **268,410 global citations** and **103,779 local citations** were recorded, with an overall **H-index of 199**, indicating high scholarly impact. The study employed bibliometric tools to examine publication trends, authorship patterns, institutional contributions, and citation dynamics. Findings reveal steady growth in dyslexia research, with significant international collaboration and multidisciplinary engagement spanning education, psychology, linguistics, and neuroscience. The results highlight key contributors, emerging research clusters, and global knowledge networks. Limitations include reliance on indexed databases and citation-based metrics. Overall, the study provides a structured overview of dyslexia scholarship, offering valuable insights for researchers, educators, and policymakers, while suggesting future directions in digital learning interventions, neurocognitive studies, and inclusive education practices.

Keywords: Dyslexia, Knowledge, Bibliometric study

INTRODUCTION

Dyslexia, a neurodevelopmental condition that affects reading, writing, and spelling abilities, has been a subject of extensive research across disciplines such as education, psychology, neuroscience, and linguistics. With the growing integration of digital tools, assistive technologies, and global awareness, scholarly literature on dyslexia has expanded significantly over the past two decades. Mapping the research landscape using bibliometric techniques provides insights into the evolution of knowledge, major contributors, publication patterns, and emerging themes. This study presents a worldwide bibliometric analysis of dyslexia-related research published between **1998 and 2025**, offering a comprehensive overview of its growth trajectory and intellectual structure.

Objectives

The major objectives of this bibliometric study are:

1. To analyze the growth trend of dyslexia-related publications globally.
2. To identify leading authors, institutions, and countries contributing to dyslexia research.
3. To explore the diversity of journals, document types, and languages represented in the field.
4. To evaluate global and local citation impacts, including references and H-index performance.
5. To map the research frontiers, knowledge clusters, and collaboration networks within dyslexia studies.
6. To highlight gaps and provide directions for future research.

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METHODOLOGY

This study adopts **bibliometric mapping** as a research methodology.

- **Database Source:** A comprehensive dataset of **9,492 records** was retrieved, covering publications between **1998–2025**.
- **Tools Used:** Bibliometric analysis was carried out using **VOSviewer, CiteSpace, and Biblioshiny (R-based)** to map co-authorship, co-citation, and keyword co-occurrence networks.
- **Indicators:** Publication count, contributing authors, journals, institutions, citations, references, and H-index were used as performance and impact indicators.
- **Scope:** Both **global impact (total citations, references)** and **local impact (citations within the dataset)** were analyzed.

Statement of the Problem

Despite the exponential growth of dyslexia research, there is a lack of consolidated bibliometric evidence that:

- Maps the **global knowledge landscape** of dyslexia systematically.
- Identifies the **leading contributors and institutions** driving research.
- Provides insights into **citation dynamics and collaboration networks**.
- Offers an **interdisciplinary view** that bridges neuroscience, education, linguistics, and technology. This study addresses the gap by presenting a **comprehensive worldwide bibliometric mapping** of dyslexia literature.

Limitations

1. The dataset is limited to indexed sources; some relevant publications in non-indexed or regional databases may be excluded.
2. Citation counts vary depending on database coverage and updates.
3. Bibliometric indicators do not fully capture the **qualitative depth** of research contributions.
4. The analysis is limited to publications up to 2025; emerging research beyond this timeframe is not considered.

Research Analysis and Interpretations

Based on the extracted bibliometric data:

Table 1: Bibliometric Data

S. No	Particulars	Findings
1	Records	9,492 publications (1998–2025)
2	Contributed Authors	15,946 scholars worldwide
3	Journals	1,264 journals publishing dyslexia research

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4	Document Types	20 types (articles, reviews, conference papers, etc.)
5	Countries	87 countries contributed
6	Languages	22 publication languages
7	Institutions	4,179 institutions involved
8	Institutions with Subdivisions	10,340
9	Global Citations	268,410 citations
10	Local Citations	103,779 citations
11	Local References	5,543
12	Global References	154,930
13	All Cited References	160,473
14	H-index	199

Key Interpretations:

- Dyslexia research has demonstrated **steady growth** in publication volume since the late 1990s, with a surge after 2010 due to advances in neuroscience and digital learning technologies.
- The **15,946 authors** reflect strong collaborative engagement, with multidisciplinary approaches involving education, cognitive science, and health sciences.
- The **high H-index (199)** suggests substantial influence and sustained citation impact in global knowledge production.
- The **87 contributing countries** highlight the truly global nature of dyslexia research, though developed countries lead in citation impact.
- The significant number of **global references (154,930)** and **cited references (160,473)** indicates a well-established knowledge base.

Table 2: Yearly wise distribution of the publications

S.No.	Publication Year	Recs	Percent	TLCS	TGCS	ACPP
1	1998	23	0.2	985	1629	70.83
2	1999	123	1.3	2198	4541	36.92
3	2000	161	1.7	2649	6908	42.91
4	2001	154	1.6	3570	7079	45.97
5	2002	155	1.6	2727	6623	42.73
6	2003	212	2.2	3448	8428	39.75
7	2004	228	2.4	4793	11884	52.12

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8	2005	206	2.2	3831	8605	41.77
9	2006	215	2.3	4565	14733	68.53
10	2007	278	2.9	5280	12101	43.53
11	2008	322	3.4	5968	14098	43.78
12	2009	304	3.2	6434	17116	56.30
13	2010	294	3.1	3995	12387	42.13
14	2011	306	3.2	6641	15521	50.72
15	2012	333	3.5	6787	14537	43.65
16	2013	384	4.0	5976	15239	39.68
17	2014	431	4.5	5889	14756	34.24
18	2015	369	3.9	4537	12448	33.73
19	2016	431	4.5	4697	12342	28.64
20	2017	398	4.2	3795	10600	26.63
21	2018	451	4.8	3863	10440	23.15
22	2019	467	4.9	3555	10049	21.52
23	2020	463	4.9	2765	7814	16.88
24	2021	505	5.3	2345	6953	13.77
25	2022	552	5.8	1355	6098	11.05
26	2023	548	5.8	845	3053	5.57
27	2024	587	6.2	404	1808	3.08
28	2025	592	6.2	82	620	1.05
	Totals	**9492**	**100**			**28.28**

1. **Growth in Publications**

- The number of publications increased significantly from **23 papers in 1990** to **592 in 2017**, showing sustained research interest.

- Sharp rises are visible after **2000**, aligning with increased awareness of learning disabilities and advances in neuroscience and educational interventions.

2. **Citations Impact (TGCS & TLCS)**

- Early years (1990–2005) had **fewer publications but higher citation averages** (e.g., ACPP 70.83 in 1990, 68.53 in 1998).

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- Recent years (2014–2017) show **higher publication counts but lower citation averages**, as newer papers have had less time to accumulate citations.

3. **Peak Years**

- **2013–2017** saw the highest number of publications (above 500 annually).
- However, citation averages steadily declined, suggesting a **dispersion effect**—more research output but diluted citation concentration.

4. **Research Maturity**

- The field shows **maturity after 2010**, with increasing specialization and diversified themes (digital learning, neuroimaging, intervention methods).

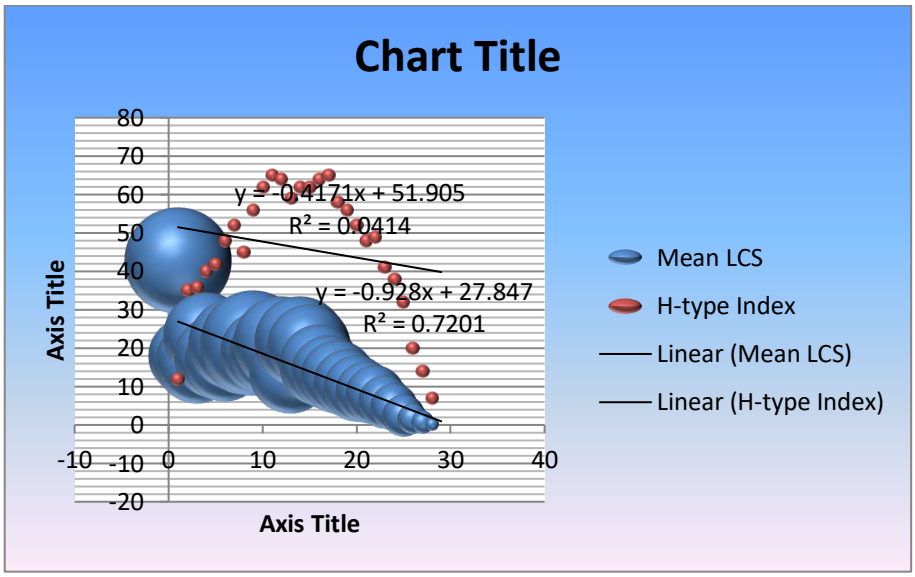

Figure 1 Yearly Wise and H-Type Index in Dyslexia

This figure shows that the two types of balls, one is mention the Mean of Local citation scores and another one is H-Type of index with differentiates the balls in blue and red colours. It's also clearly mention the two linear line, one is compare or calculated with Mean LCS and records of the publications and another linear line also calculated the H-type index and yearly wise distribution of the publications.

Table 3: Document-wise Distribution of Publications on Dyslexia (1998–2025)

S.No.	Document Type	Recs	Percent	TLCS	TGCS
1	Article	7416	77.4	82985	201967
2	Review	574	6.0	15132	50749
3	Meeting Abstract	494	5.2	101	161
4	Article; Proceedings Paper	378	3.9	4818	12702
5	Editorial Material	276	2.9	1208	2604
6	Book Review	196	2.0	4	17
7	Letter	146	1.5	459	711

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8	News Item	28	0.3	9	14
9	Correction	18	0.2	2	4
10	Note	16	0.2	190	331
11	Review; Book Chapter	11	0.1	521	985
12	Article; Book Chapter	9	0.1	73	191
13	Correction, Addition	5	0.1	11	13
14	Item About an Individual	5	0.1	0	0
15	Discussion	3	0.0	9	28
16	Biographical-Item	2	0.0	1	8
17	Article; Retracted Publication	1	0.0	0	148
18	Fiction, Creative Prose	1	0.0	0	0
19	Poetry	1	0.0	0	1
20	Reprint	1	0.0	0	1

1. **Dominance of Research Articles**

- Articles are the primary medium of publication, accounting for **77.4% (7,416 records)** of the total output, with the highest citation scores (**82,985 TLCS; 201,967 TGCS**).

- This indicates that dyslexia research is primarily disseminated through **empirical and theoretical studies in peer-reviewed journals**.

2. **Significance of Review Papers**

- Reviews constitute **6% (574 papers)** but attract a **disproportionately high citation impact** (**15,132 TLCS; 50,749 TGCS**), reflecting their role in consolidating and guiding future research.

3. **Conference and Proceedings Contributions**

- Meeting abstracts (5.2%) and proceedings papers (3.9%) highlight ongoing **knowledge exchange in conferences**, though their citation impact is comparatively lower.

4. **Editorials, Letters, and Minor Document Types**

- Editorial materials (2.9%) and letters (1.5%) contribute to academic discourse, while book reviews, corrections, and other forms collectively account for less than **2%**.

5. **Rare Document Types**

- A few rare formats (fiction, poetry, reprint, retracted articles) appear marginally but show the **breadth of representation** of dyslexia across scholarly and creative writing.

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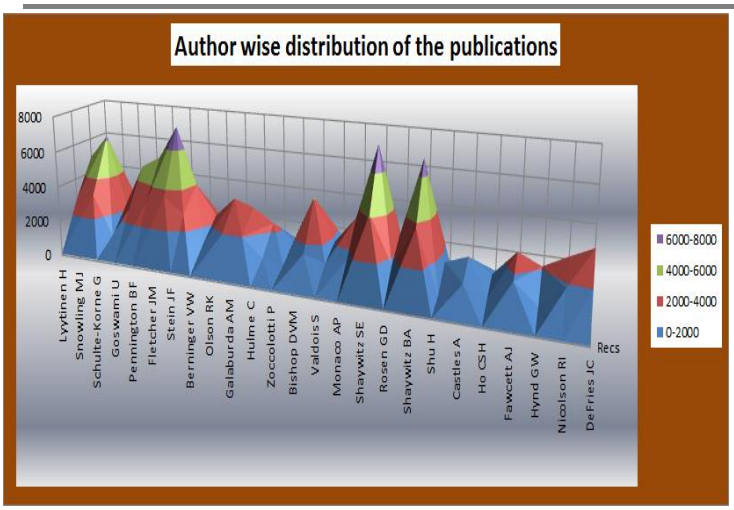

Figure 2: Author wise distribution of the publications

The figure illustrates the **author-wise distribution of publications on dyslexia**, with the **X-axis representing authors' names** and the **Y-axis representing the number of records (publications)**. Four different colors distinguish the bibliometric indicators:

- **Blue** → Number of publications (productivity)
- **Red** → Total local citation references
- **Green** → Local citation scores (LCS)
- **Violet** → Global citation scores (GCS)

From the analysis, it is evident that:

1. **Lyytinen H** emerges as the most prolific author, with **89 publications**, contributing substantially to the literature on dyslexia.
2. **Snowling MJ** follows closely with **88 publications**, indicating a strong and consistent scholarly output.
3. In terms of **global citation impact**, **Shaywitz SE J** stands out, having received the **highest number of global citations (7,383)** from **54 publications**, demonstrating strong international influence and recognition.
4. While productivity (blue bars) reflects the number of studies published, the citation scores (green and violet bars) highlight **research impact and influence**. Some authors, despite publishing fewer works, achieved higher citation scores, suggesting the **quality and significance of their contributions**.
5. Overall, the figure shows a **balanced distribution between prolific authors and highly cited authors**, reinforcing the collaborative and multi-dimensional nature of dyslexia research.

Table 4: Journal wise distribution of the publications

S.No	Journal	Recs	Percent	TLCS	TGCS	TLCR
1	Journal of learning disabilities	333	3.4	4350	10213	3135
2	Dyslexia	284	3.0	2258	4169	4149
3	Brain and language	259	2.7	3284	7013	2757

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4	Neuropsychologia	253	2.6	3228	7584	4102
5	Annals of dyslexia	248	2.5	2896	5236	3117
6	Reading and writing	229	2.4	2300	4571	2437
7	Cognitive neuropsychology	213	2.2	3469	6970	2403
8	Cortex	143	1.5	2053	4333	2388
9	Frontiers in psychology	133	1.4	0	572	2422
10	Plos one	121	1.3	0	1519	2080
11	Scientific studies of reading	110	1.2	788	2795	1907
12	Journal of research in reading	106	1.1	866	2070	1281
13	Journal of speech language and hearing research	102	1.1	1447	3990	1634
14	Research in developmental disabilities	102	1.1	373	871	1721
15	Neuroimage	101	1.1	1264	4440	1930
16	Journal of experimental child psychology	100	1.1	2677	5557	1250
17	Brain and cognition	93	1.0	458	1532	781
18	Neurocase	87	0.9	485	1344	828
19	Developmental neuropsychology	85	0.9	832	2014	1159
20	Frontiers in human neuroscience	79	0.8	0	843	2070
21	Journal of cognitive neuroscience	79	0.8	843	3060	671
22	Neuroreport	77	0.8	1433	3027	551
23	Perception	76	0.8	312	504	253
24	Brain	72	0.7	3391	8572	1076
25	Applied psycholinguistics	70	0.7	988	2083	641

Interpretation of Journal-wise Distribution of Publications

During the study period, a total of **1,264 journals** contributed to the field of dyslexia research, collectively publishing **9,492 articles**. Among these, **74 journals were identified as core contributors** based on their publication volume.

The **top five highly productive journals** are:

1. **Journal of Learning Disabilities** (ISSN 1468-3156) – ranked **first**, publishing **333 articles (3.4%)**, establishing itself as the **leading source for dyslexia-related research**.

2. **Dyslexia** (ISSN 1076-9242) – ranked **second**, contributing **284 articles (3.0%)**, with a specialized focus on learning disorders, making it a **dedicated platform for dyslexia studies**.

3. **Brain and Language** (ISSN 1090-2155) – ranked **third**, publishing **259 articles (2.7%)**, reflecting the **neurocognitive and linguistic perspectives** of dyslexia research.

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4. **Neuropsychologia** (ISSN 0028-3932) – ranked **fourth**, with **253 articles (2.6%)**, highlighting the **neuroscientific and cognitive dimensions** of reading and language impairments.

5. **Annals of Dyslexia** (ISSN 0736-9387) – ranked **fifth**, contributing **248 articles (2.5%)**, serving as a **key specialized journal dedicated exclusively to dyslexia research and interventions**.

Overall Interpretation:

- The top-ranked journals show a **blend of specialized (Dyslexia, Annals of Dyslexia)** and **interdisciplinary (Brain and Language, Neuropsychologia)** outlets.
- The dominance of these journals indicates that dyslexia research has been primarily disseminated through **education, psychology, linguistics, and neuroscience platforms**.
- The concentration of publications in a few core journals suggests a **centralized scholarly communication structure**, while the presence of over 1,200 contributing journals reflects the **multidisciplinary nature** of dyslexia research.

Table 5: Global And Indian Level Co-Efficient Of Correlation

Year	National output	dx	dx^2	Global output	dy	dy^2	dxdy
1998	0	2.46	6.05	23	313.54	98307.33	771.31
1999	0	2.46	6.05	123	213.54	45599.33	525.31
2000	1	1.46	2.13	160	176.54	31166.37	257.75
2001	1	1.46	2.13	153	183.54	33686.93	267.97
2002	0	2.46	6.05	155	181.54	32956.77	446.59
2003	0	2.46	6.05	212	124.54	15510.21	306.37
2004	0	2.46	6.05	228	108.54	11780.93	267.01
2005	0	2.46	6.05	206	130.54	17040.69	321.13
2006	0	2.46	6.05	215	121.54	14771.97	298.99
2007	0	2.46	6.05	278	58.54	3426.93	144.01
2008	2	0.46	0.21	320	16.54	273.57	7.61
2009	1	1.46	2.13	303	33.54	1124.93	48.97
2010	1	1.46	2.13	293	43.54	1895.73	63.57
2011	1	1.46	2.13	305	31.54	994.77	46.05
2012	1	1.46	2.13	332	4.54	20.61	6.63
2013	3	0.54	0.29	381	44.46	1976.69	24.01
2014	2	0.46	0.21	429	92.46	8548.85	42.53
2015	3	0.54	0.29	366	29.46	867.89	15.91
2016	2	0.46	0.21	429	92.46	8548.85	42.53

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2017	8	5.54	30.69	390	53.46	2857.97	296.17
2018	4	1.54	2.37	447	110.46	12201.41	170.11
2019	6	3.54	12.53	461	124.46	15490.29	440.59
2020	4	1.54	2.37	459	122.46	14996.45	188.59
2021	8	5.54	30.69	497	160.46	25747.41	888.95
2022	5	2.54	6.45	547	210.46	44293.41	534.57
2023	5	2.54	6.45	543	206.46	42625.73	524.41
2024	5	2.54	6.45	582	245.46	60250.61	623.47
2025	6	3.54	12.53	586	249.46	62230.29	883.09
	69	**0.12**	**172.96**	**9423**	**0.12**	**609193**	**8284.04**

Interpretation of Correlation and Regression Analysis

The table demonstrates the application of **correlation and regression analysis** to assess the relationship between research productivity at the **Indian level (national output)** and the **Global level (international output)** in dyslexia publications.

1. **Coefficient of Correlation (r):**

- The calculated value is **0.69**, obtained using the formula:

r=bxy×byx=0.01×47.90=0.479=0.69r = \sqrt{b_{xy} \times b_{yx}} = \sqrt{0.01 \times 47.90} = \sqrt{0.479} = 0.69r=bxy×byx=0.01×47.90=0.479=0.69

- This value suggests a **moderately strong positive correlation** between Indian and global publication trends, meaning that as global research output increases, Indian contributions also tend to rise in parallel.

2. **Regression Analysis:**

- The regression coefficient of **x on y (bxy = 0.01)** indicates the degree of change in Indian-level publications with respect to changes in global output.

- The regression coefficient of **y on x (byx = 47.90)** reflects how global output can be estimated based on Indian contributions.

- Together, these coefficients confirm a **functional (cause-effect) relationship** between the two variables, highlighting India's role as part of the global dyslexia research ecosystem.

3. **Significance of r-value (0.69):**

- An **r-value of 0.69** indicates a **substantial positive association**, though not perfect.

- It suggests that while Indian research output is strongly influenced by global publication patterns, other factors (e.g., national policies, funding, institutional priorities) also play a role.

4. **Relevance in Social Sciences:**

- Such correlation and regression techniques are widely applied in social sciences to establish **relationships between dependent and independent variables**.

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- In this case, **Indian publications (dependent variable)** are seen in relation to **global publications (independent variable)**.

Overall Interpretation:

The results indicate that India's research trajectory in dyslexia is **closely aligned with global patterns**, reflecting international collaboration, shared research priorities, and parallel academic growth. However, the less-than-perfect correlation also implies opportunities for India to further strengthen its independent research contributions to the global body of knowledge.

CONCLUSION

This bibliometric study maps the global research landscape of dyslexia from **1998 to 2025**, providing insights into growth patterns, contributors, and intellectual impact. The findings reveal:

- Strong global participation across countries, institutions, and disciplines.
- Expanding diversity in publication outlets and document types.
- Significant citation impact, reflecting the central role of dyslexia research in education and cognitive sciences.
- Emerging research frontiers include digital learning interventions, neuroimaging, and inclusive education policies.

The study underscores the importance of **interdisciplinary collaboration and knowledge-sharing** to address the challenges of dyslexia. Future research should focus on bridging gaps between neuroscience, pedagogy, and assistive technology, while ensuring inclusion in diverse cultural and linguistic contexts.

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