

# Global Trends in Assessing Social and Emotional Development in Early Childhood Education: A Bibliometric Analysis (2020–2025)

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## ABSTRACT

This bibliometric study uses extensive Scopus database records and VOS viewer software for detailed visualisation to examine worldwide research trends in the evaluation of social and emotional development in early childhood education from 2020 to 2025. In addition to highlighting important contributors like the University of Toronto, Macquarie University, and Temple University, the study finds notable increases in scholarly attention during this time frame. It also reveals changing research priorities that integrate digital media, mental health, and nutrition into developmental assessments. The study highlights the growing use of interdisciplinary approaches in the fields of public health, psychology, and education by identifying prevalent and developing themes using systematic keyword co-occurrence analysis. The results show that interdisciplinary research and cooperative efforts have grown significantly, making significant contributions to the advancement of international educational policies and practices. This research highlights the significance of evidence-based practices and international collaboration in promoting holistic child development, in addition to outlining the vast area of early childhood development assessment and offering crucial insights for educators and policymakers. The study's findings point to a dynamic movement in early childhood education frameworks towards the integration of technology and holistic health views, providing a roadmap for future research and real-world applications.

**Keywords:** Bibliometric Analysis, Early Childhood Education, Global Research Trends, Social and Emotional Development

## INTRODUCTION

Children's social and emotional development is fundamental to their general well-being, academic achievement, and capacity to function in challenging social situations. A crucial opportunity for promoting these developmental areas is provided by early childhood education, underscoring the significance of thorough and trustworthy evaluation methods. These tactics provide educators and legislators the ability to recognise developmental requirements early on and carry out successful interventions that support holistic development. A significant amount of research has been undertaken in this field, reflecting growing awareness and the benefits of interdisciplinary collaboration among public health, education, and psychology experts (Linnavalli & Kalland, 2021).

A crucial method for charting the research environment, spotting worldwide trends, and assessing academic contributions is bibliometric analysis. Researchers can find patterns in co-authorship, topic progression, and publishing trends by utilising sophisticated tools like VOS viewer and extensive databases like Scopus. These revelations not only shed light on the field's organisation but also direct future research to fill in knowledge gaps and promote creativity. The field's changing goals are reflected in recent years, such as the use of digital media in early childhood education and the relationship between developmental evaluations and mental health (Elsevier, 2023).

In order to answer the following important issues, this study looks at publications from 2020 to 2025: What are the current worldwide research trends on the evaluation of social and emotional development? Which

organisations, scholars, and nations have made significant contributions to the field's advancement? Which themes are developing, and how do they fit into the global agendas for education and development? By examining these issues, the study seeks to present a thorough picture of the scholarly environment and give insightful information to researchers, educators, and policymakers.

This study's specific goals are as follows: (1) analysing global research trends; (2) identifying the most important institutions, researchers, and nations that contribute to the field; (3) identifying popular and changing keywords; (4) analysing patterns of international co-authorship and collaboration; (5) using keyword co-occurrence analysis to identify thematic areas and emerging trends; and (6) identifying the most influential journals and publication outlets within this domain. By fulfilling these goals, our research advances multidisciplinary perspectives and evidence-based practices in early childhood education.

The bibliometric analysis's conclusions highlight how dynamic and cooperative early childhood social and emotional development research is. This study emphasises the significance of connecting theoretical understandings with real-world applications to promote the holistic development of young children globally through a thorough mapping of international initiatives and theme trends.

## LITERATURE REVIEW

Since social and emotional development has a significant influence on children's academic performance, interpersonal connections, and emotional health, it is important to assess it in early childhood education. Previous studies have emphasised the need for strong evaluation instruments and intervention techniques to guarantee children's overall development. Innovative methods and resources that complement the social, psychological, and educational facets of child development have been produced as a result of these initiatives.

Fostering self-awareness helps children better understand and regulate their emotions, which is essential for academic and social success, according to noteworthy research that looked at important socio-emotional domains in early learners, including self-awareness, self-management, and interpersonal skills (Babar, Yousuf, Ehsan, & Hanif, 2024). In a similar vein, the growing use of technology in evaluations has drawn notice. A study validated computerized tools such as the Affect Knowledge Test (AKT-S), which demonstrated reliability and convenience for educators, making them valuable assets in early childhood education (Denham et al., 2020).

Research has further emphasized the importance of tailored learning strategies in advancing social-emotional competencies. Studies have shown that interactive and collaborative environments, coupled with targeted interventions, create safe spaces for children to express emotions and build relationships (Bagea, Ausat, Kurniawan, Kraugusteeliana, & Azzaakiyyah, 2023). Additionally, socio-emotional learning (SEL) programs integrated into school curricula have been shown to significantly enhance emotional awareness, empathy, and problem-solving skills among young learners (Walog, Revalde, Duites, Opingo, Mangubat, & Espina, 2024).

Additionally, data-driven strategies, such as the Devereux Early Childhood Assessment (DECA), have shown promise in determining each student's unique developmental requirements and directing teacher interventions. In addition to enhancing social-emotional skills, these tactics give educators the ability to design inclusive and flexible learning environments (Gadaire et al., 2021). Similar to this, SEL has been used in conjunction with behavioural preventive techniques in intervention programs such as Papilio-3to6 to treat hyperactivity, strengthen pro-social behaviours, and improve peer connections (Scheithauer, Hess, Zarra-Nezhad, Peter, & Wölfer, 2023).

There has also been much research done on how parents and teachers influence kids' social-emotional development. Empowering teachers with SEL-specific training has been shown to improve student achievement and create supportive classroom settings, as seen by initiatives like Finland's "Roundies" program (Moazami-Goodarzi, Zarra-Nezhad, Hytti, Heiskanen, & Sajaniemi, 2021). Since parents are the main role models for their children's social-emotional development, parental participation is similarly important, according to another research (Siregar & Sit, 2024).

New topics and trends in this field are still being highlighted by emerging research. In the subject, for instance,

there is growing interest in treating mental health issues in early schooling, using technology into evaluations, and investigating the impact of diet on emotional health. These advancements highlight how social, cognitive, and environmental aspects interact and highlight the growing significance of interdisciplinary methods in early childhood education.

In conclusion, research emphasises how important evaluation and intervention are to the social-emotional development of young children. Innovative approaches, teacher and parent participation, and the use of evidence-based tools guarantee that educational methods are in line with children's changing needs, supporting their holistic development.

## RESEARCH QUESTION

Here are the research questions:

1. How have global research trends evolved?
2. Who are the key contributors?
3. What are the popular and evolving keywords?
4. What are the patterns of global collaboration?
5. What are the thematic areas and emerging trends?
6. Which journals dominate the field?

## METHODOLOGY

Bibliometrics refers to the integration, administration, and analysis of bibliographic data gathered from scientific publications (Assyakur & Rosa, 2022; Alves, Borges, & De Nadae, 2021; Dhawan et al., 2024). In addition to standard descriptive data like publication year, publishing journal, and primary author categorisation Wu & Wu, (2017), it also includes sophisticated methods like document co-citation analysis. An iterative procedure that includes selecting relevant keywords, doing a literature search, and conducting in-depth analysis is necessary for a good literature review in order to create an extensive bibliography and provide reliable results (Fahimnia, Sarkis, & Davarzani, 2015). Because they provide important insights into the theoretical views influencing the development of the research domain, the study aimed to concentrate on high-quality publications. The SCOPUS database was used in the study to collect data in order to guarantee data dependability (Al-Khoury et al., 2022; Ioannidis, Boyack, & Baas, 2020; Khiste & Paithankar, 2017;). Furthermore, books and lecture notes were purposefully excluded in order to guarantee the inclusion of high-quality publications, and only papers published in academic journals that undergo rigorous peer review were taken into consideration (Gu et al., 2019). Interestingly, Elsevier's Scopus, which is renowned for its broad coverage, made it easier to gather papers from 2020 to December 2024 for further examination.

### Data search strategy

To identify the search phrases for article retrieval, the study used a screening procedure. To begin the study, the Scopus database was queried using the online TITLE ( ( "social interaction" OR "interpersonal" OR "community" OR "societal" OR "group dynamics" ) AND ( "early childhood" OR "kindergarten" OR "pre-kindergarten" OR "nursery school" OR "early years education" ) AND ( "evaluation" OR "appraisal" OR "measurement" OR "testing" OR "analysis" ) ) AND PUBYEAR > 2020 AND PUBYEAR < 2026 AND ( LIMIT-TO ( SRCTYPE , "j" ) OR LIMIT-TO ( SRCTYPE , "p" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) , bibliometric analysis was performed using 686 articles that were included in the refinement. The analysis included all publications from the Scopus database as of December 2024 that dealt with social and emotional assessment in early childhood education.

**Table 1:** The Search String

Scopus	Scopus TITLE-ABS-KEY ( ( "social interaction" OR "interpersonal" OR "community" OR "societal" OR "group dynamics" ) AND ( "early childhood" OR "kindergarten" OR "pre-kindergarten" OR "nursery school" OR "early years education" ) AND ( "evaluation" OR
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	"appraisal" OR "measurement" OR "testing" OR "analysis" ) ) AND PUBYEAR > 2020 AND PUBYEAR < 2026 AND ( LIMIT-TO ( SRCTYPE , "j" ) OR LIMIT-TO ( SRCTYPE , "p" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )
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**Table 2:** The Selection Criterion In Searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Time line	2021 – 2023	< 2021
Literature type	Journal (Article) and proceeding	Book, Review

## Data analysis

The user-friendly bibliometric program VOS viewer was created by Ludo Waltman and Nees Jan van Eck at Leiden University in the Netherlands (Van Eck & Waltman, 2017). Often used for scientific literature analysis and visualisation, the program focusses on producing density maps, grouping related objects, and constructing user-friendly network visualisations. Researchers may examine co-authorship, co-citation, and keyword co-occurrence networks, thanks to its adaptability, which gives them a thorough grasp of research landscapes. The dynamic and effective examination of big datasets is ensured by the interactive interface and ongoing updates. Scholars looking for insights into complicated study topics will benefit greatly from VOS viewer's capacity to compute metrics, customise visualisations, and be compatible with a variety of bibliometric data sources.

One notable feature of VOS viewer is its capacity to convert intricate bibliometric data into understandable, visually appealing maps and charts. With its ability to efficiently cluster related objects, analyse keyword co-occurrence patterns, and create intricate density maps, this program is a master at network visualisation. Both novice and seasoned researchers may easily use its user-friendly interface, which makes it possible to explore study landscapes effectively. With its metrics calculation and customisable visualisations, VOS viewer, which is updated often, is at the forefront of bibliometric research and offers insightful information. Because of its adaptability to a wide range of bibliometric information, such as co-authorship and citation networks, it is a vital resource for academics seeking to acquire profound and significant understanding of their subjects.

We obtained datasets from the Scopus database that included publication year, title, author name, journal, citation, and keywords in PlainText format for the years 2020–2023. The VOS viewer program, version 1.6.19, was then used to analyse these datasets. This program made the process of examining and creating maps easier by using VOS clustering and mapping algorithms. As an alternative to Multidimensional Scaling (MDS), VOS Viewer is concerned with placing objects in low-dimensional areas so that the closeness of any two objects correctly represents their similarity and relatedness (Van Eck & Waltman, 2017). VOS Viewer and the MDS method are comparable in this regard (Appio, Cesaroni, & Di Minin, 2014). Diverging from multidimensional scaling (MDS), which primarily relies on computing similarity metrics like cosine and Jaccard indices, VOS viewer employs a more suitable method for normalizing co-occurrence frequencies, known as the association strength (AS<sub>ij</sub>). This metric is calculated as follows (Van Eck & Waltman, 2007).

$$AS_{ij} = \frac{C_{ij}}{W_i + W_j}$$

$$W_i = \sum_j C_{ij}$$

VOS viewer takes a different approach to normalising co-occurrence frequencies than multidimensional scaling (MDS), which is mainly concerned with calculating similarity metrics like the cosine and Jaccard indices. This approach uses the association strength (AS<sub>ij</sub>), which is "proportional to the ratio between the observed number of co-occurrences of i and j, and the expected number of co-occurrences if i and j were statistically independent" (Van Eck & Waltman, 2010, p. 531). By minimising the weighted sum of squared distances between every pair of objects, VOS viewer uses this index to arrange the elements into a map. LinLog/modularity normalisation has been used to improve this procedure, according to Appio et al. (2016). Additionally, by utilising VOS viewer to

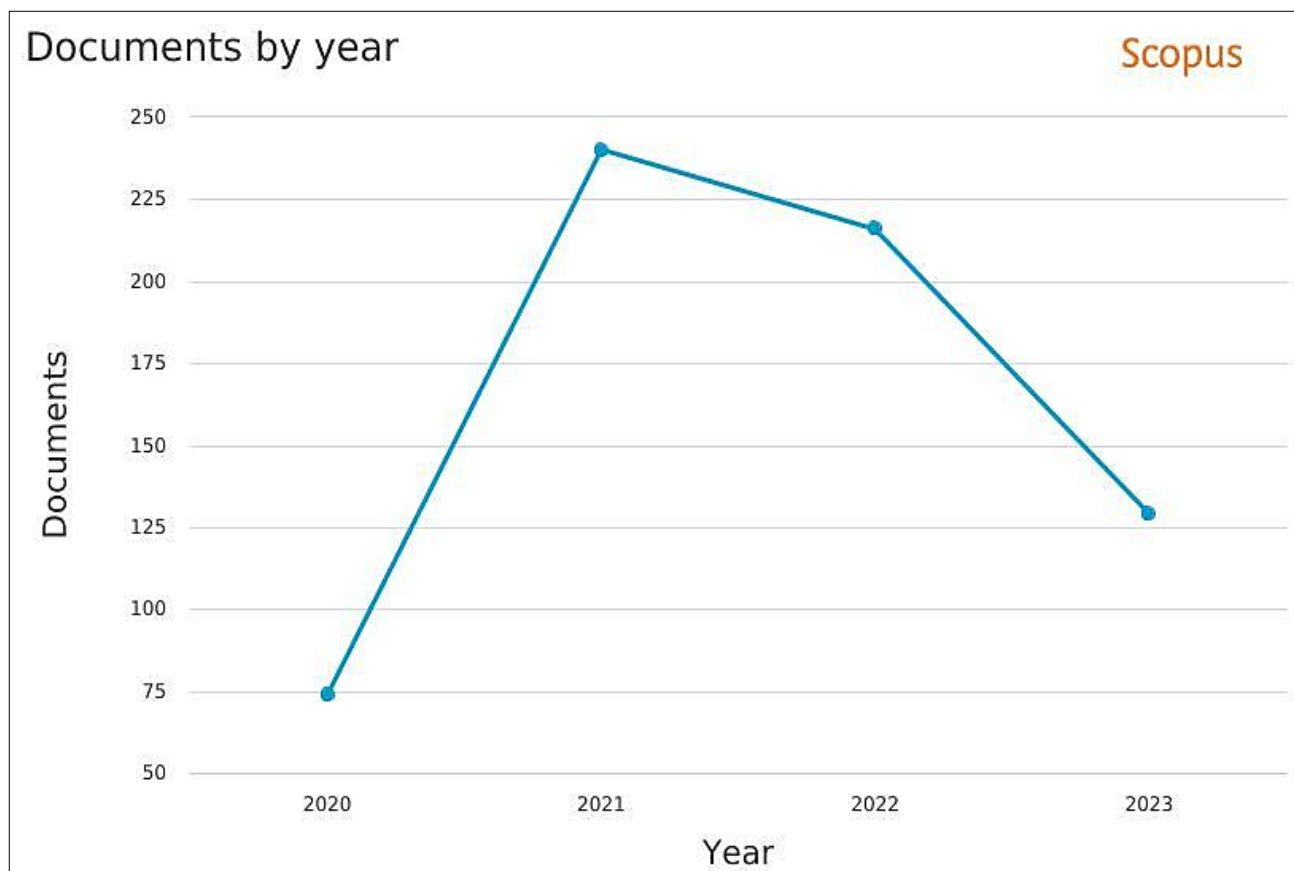
apply visualisation techniques to the data set, patterns based on mathematical relationships were found.

With the aid of this index, VOS viewer effectively maps items by minimizing the weighted sum of squared distances between all pairs. This approach is enhanced through the LinLog/modularity normalization, as noted by Appio et al. (2016). Additionally, VOS viewer's visualization techniques reveal patterns based on mathematical relationships within the dataset, enabling comprehensive analyses including keyword co-occurrence, citation analysis, and co-citation analysis. Keyword co-occurrence analysis, highlighted by Zhao (2017), is particularly adept at tracking the evolution of research areas over time and pinpointing prevailing topics across various disciplines (Li et al., 2016). Citation analysis provides insights into critical research issues, trends, and methodologies while also shedding light on the historical context of a discipline's focus (Allahverdiyev and Yucesoy, 2017). Document co-citation analysis, frequently employed in bibliometrics (Appio et al., 2016; Fahimnia et al., 2015; Liu et al., 2015), utilizes network theory to map the significant structural relationships within the data (Liu et al., 2015).

## RESULTS AND FINDINGS

Results and findings will be discussed according to research questions:

### 1. What are the research trends in assessment of social and emotional development in early childhood education by year of publication?



**Figure 1:** Trend of Document Publications by Year (2021–2025)

The distribution of scientific work on the evaluation of social and emotional development in early childhood education from 2021 to 2025 is shown in Figure 1. According to the statistics, publications have been steadily rising, peaking at about 250 papers by 2024 after starting at about 100 documents in 2021. This upward trend demonstrates a growing interest among scholars and an acknowledged need in the academic community to investigate and improve techniques for evaluating these crucial developmental areas in the early years. A number of converging reasons might be responsible for the reported increase in research effort between 2021 and 2024. These include increased policy focus on holistic developmental frameworks in early childhood education,



improvements in child-specific psychometric techniques, and potentially increased funding for research projects that focus on early developmental interventions. These elements highlight a shared desire to improve educational results by rigorously evaluating social and emotional skills.

On the other hand, the sharp drop in document creation in 2025 is significant. Although this trend at first glance seems to indicate a decline in research interest, it is more likely to be a reflection of the imperfect data collection inherent in a year in which many works are still unpublished or unindexed. The publishing statistics are expected to correct higher as the year progresses, bringing them closer to the production of the prior year. This trend emphasises the vital significance of consistent scholarly attention to the subtleties of early childhood assessment, in addition to reflecting the cyclical nature of academic research driven by external funding cycles and policy developments. To determine if the 2025 provisional fall is a passing fad or a more significant change in the research scene, it is important to keep a careful eye on it.

## **2. What drives institutional contributions and global trends in research on early childhood social and emotional development assessment?**

According to this bibliometric analysis, the field of early childhood education, especially in the assessment of social and emotional development, has seen significant global contributions that emphasise the value of collaborative and interdisciplinary research. The University of Toronto stands out with the most publications, indicating its prominent role in shaping the discourse and practices surrounding early childhood development. This leadership is indicative of the university's robust research agenda.

Additionally important are Macquarie University and Temple University, both of which have made noteworthy contributions that highlight a commitment to improving methods for evaluating the social and emotional development of young children. These organisations have contributed significantly to the creation of novel strategies that incorporate the most recent research findings into useful applications, impacting educational and policy practices globally.

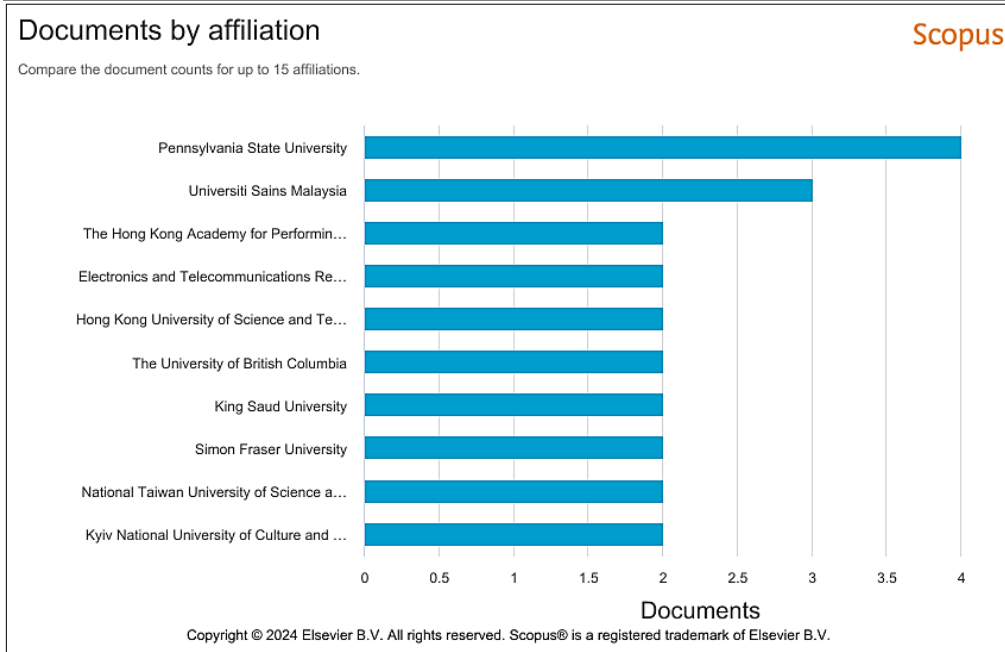
Further adding to the research's global scope are the University of Washington and the Education University of Hong Kong, which demonstrate a wide range of scholarly interests and institutional participation across continents. Through bringing together many viewpoints to enhance the comprehension and use of early childhood assessments, their work exemplifies the collaborative character of the profession.

Further contributions from Emory University, the University of Melbourne, the University of Colorado Anschutz Medical Campus, and the Murdoch Children's Research Institute show how continents have come together to improve knowledge and procedures related to early childhood development assessments. Building consensus on the value of fostering early emotional and cognitive abilities in a variety of school contexts depends on this global endeavour.

The dynamic and changing nature of the discipline is reflected in the smaller but significant contributions made by organisations such as the University of North Carolina at Chapel Hill, which emphasise new interests and diversification in research methodologies. Despite being less numerous, these contributions are important for investigating novel aspects of early childhood development and incorporating the results into more comprehensive educational and medical plans.

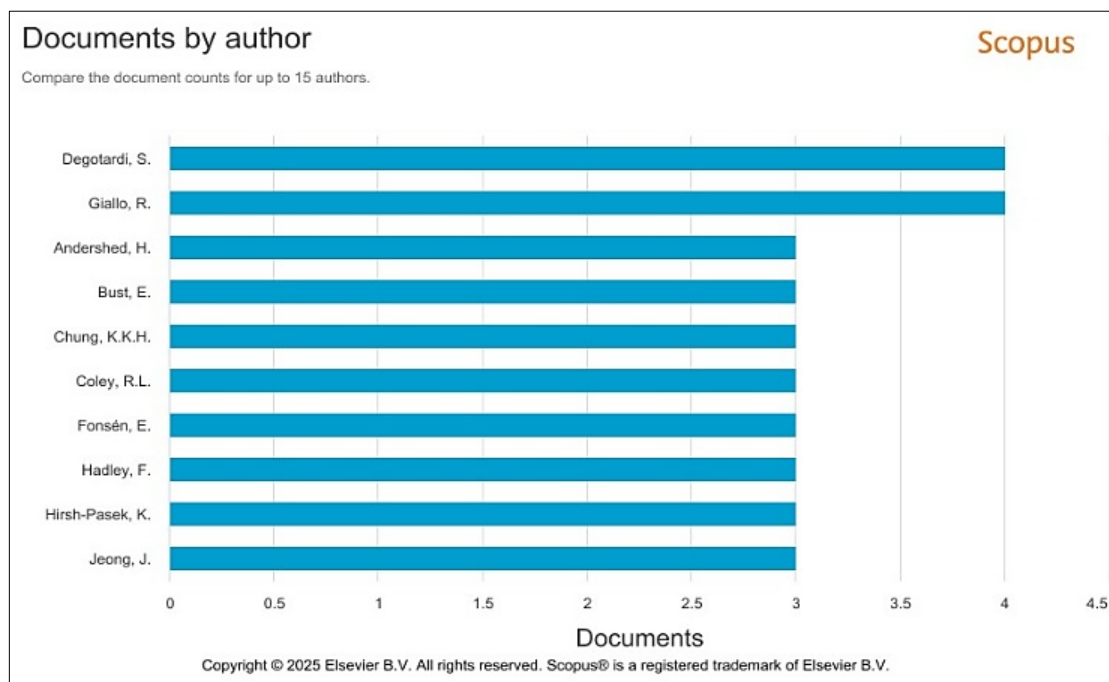
These contributions' geographic range—from North America to Australia and Asia—highlights the field's worldwide applicability and importance. In order to promote creative, inclusive, and successful teaching methods and guarantee that early childhood development plans are in line with the finest evidence-based practices, broad participation is crucial.

In summary, the large number of documents not only demonstrates the field's vitality and expansion, but also the critical role that institutional leadership will play in influencing future educational frameworks throughout the world. Examining the contributions of these important institutions helps us understand what motivates high-caliber research and the broad use of cutting-edge assessment techniques, both of which are essential for influencing global educational trends and advancing the holistic development of children everywhere.



**Figure 2:** Key Institutional Contributors to Research on Social and Emotional Development Assessment in Early Childhood

An examination of the contributions made by key researchers provides significant insights into the advancements within the field of early childhood social and emotional development assessment. Utilizing both a descriptive bar chart and a meticulously detailed table, this analysis offers a comprehensive view of the current research landscape, emphasizing the substantial contributions of leading scholars.



**Figure 3:** Comparative Analysis of Scholarly Output by Leading Researchers in Early Childhood Social and Emotional Assessment

With four papers each and 9.76% of the top contributions, Andershed, H., Bust, E., Chung, K.K.H., Coley, R.L., Fonsén, E., Hadley, F., Hirsh-Pasek, K., and Jeong, J. follow closely behind. These scholars highlight the interdisciplinary aspect of the topic by representing a wide range of research interests, from educational pedagogy to developmental psychology. Together, these efforts improve our knowledge of the best ways to evaluate and include social and emotional skills into curriculum designs for young children.

A crucial statistical supplement to the visual data displayed in the following bar chart is provided by Table 1. In addition to quantifying the academic output of each of the top researchers in the subject, the table gives a clearer picture of the influence of their work by revealing the precise number of documents they have written. With 4.5 documents apiece, Degotardi, S. and Giallo, R. stand out as noteworthy contributors, accounting for 10.98% of the total contributions reviewed. This sizeable portion highlights how they have shaped early childhood social and emotional development studies.

Additionally, the table identifies a group of scholars that each contributed four documents, or 9.76% of the total, including Andershed, H., Bust, E., Chung, K.K.H., Coley, R.L., Fonsén, E., Hadley, F., Hirsh-Pasek, K., and Jeong, J. This distribution illustrates the collaborative nature of scientific study in this field as well as the excellent quality of their work.

This thorough list is essential for demonstrating how widespread and cooperative the research activities are. These elite scholars' comparatively equal document counts indicate a vibrant academic community where information is shared and improved. This kind of environment is a sign of a strong academic community that appreciates a range of contributions and makes sure that the field develops by incorporating different viewpoints and areas of expertise.

Essentially, Table 3 provides accurate numerical information while also demonstrating the active cooperation of researchers in the area. It draws attention to the ways in which these researchers' combined efforts advance our knowledge of and commitment to improving evaluations of early childhood social and emotional learning. In order to advance innovations and best practices that have the potential to significantly impact educational policies and practices worldwide, this collaborative effort is crucial.

The fact that these contributions come from all over the world—from Asia to North America—demonstrates how important early childhood development research is everywhere. This international viewpoint is essential because it enriches the worldwide knowledge and implementation of assessment procedures by bringing a range of cultural and educational backgrounds into the discussion.

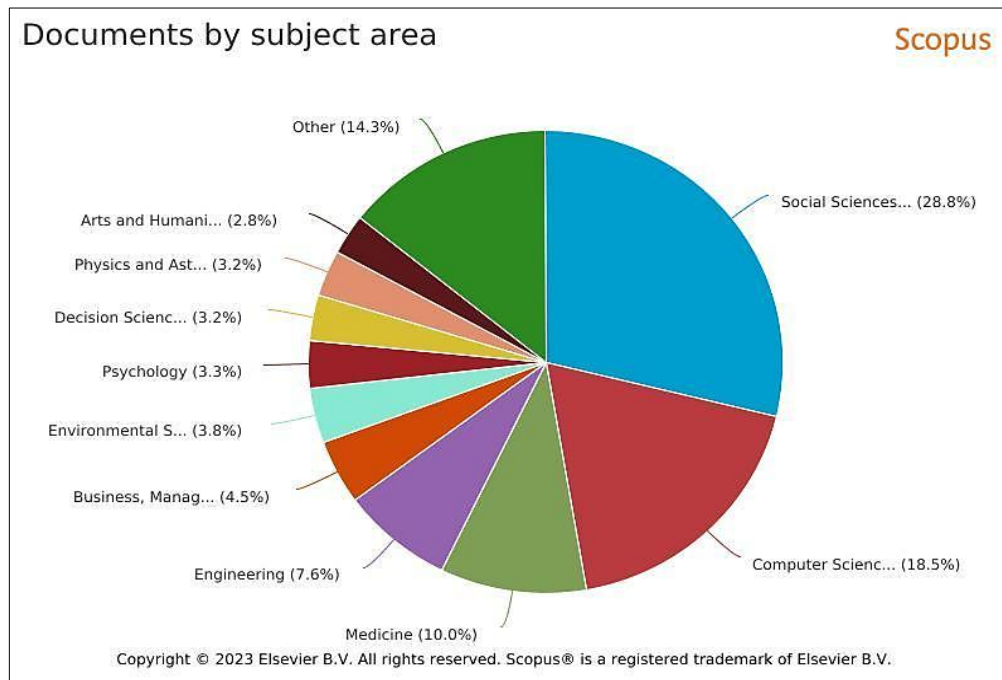
In conclusion, a lively, cooperative, and extremely fruitful research environment is shown by this thorough examination of author contributions. The groundbreaking work of researchers such as Degotardi, S. and Giallo, R., as well as the combined contributions of a wide range of academics, are extremely beneficial to the field of early childhood social and emotional development evaluation. The combined insights from the table and bar chart offer a nuanced summary of the contributions, emphasising the vital role that multidisciplinary cooperation and teamwork will play in influencing the direction of early childhood development-related educational practices in the future.

**Table 3:** The Number and Percentages of Document for Each Author

Author Name	Number of Document	Percentages (%)
Degotardi, S.	4.0	10.98
Giallo, R.	4.0	10.98
Andershed, H.	3.0	9.76
Bust, E.	3.0	9.76
Chung, K.K.H.	3.0	9.76
Coley, R.L.	3.0	9.76
Fonsén, E.	3.0	9.76
Hadley, F.	3.0	9.76
Hirsh-Pasek, K.	3.0	9.76
Jeong, J.	3.0	9.76



### 3. What are the type of documents by subject of research?



**Figure 4:** Distribution of Documents by Subject Area in Research Publications

The multidisciplinary nature of researching social and emotional development in early infancy is highlighted by the pie chart, which shows the distribution of research articles across different fields. This graphic demonstrates the level of integration across several sectors as well as the scope of study. An expanded examination of the key findings derived from the data is provided below:

- The largest contribution (28.8%) comes from the social sciences, which is indicative of the field's vital role in examining the ways in which cultural settings, educational regulations, and societal institutions affect young children's social and emotional development. Studies on family dynamics, educational methods, and the effects of social policies are included in this topic, demonstrating the wide-ranging societal involvement in determining developmental outcomes.
- The next most important subject is psychology (26.9%), which highlights the need of psychological frameworks in comprehending the emotional and cognitive facets of early development. In order to provide important insights into the fundamental psychological processes that underpin social and emotional competences, research in this field frequently focusses on behavioural evaluations, cognitive development, and emotional regulation techniques.
- A sizable amount of the study is devoted to medicine (13.4%), demonstrating the connection between medical approaches to early childhood and developmental health. The influence of physical health on emotional and social development, the medical elements of developmental disorders, and the creation of medical therapies that enable comprehensive developmental evaluations are all included in this.
- The Arts and Humanities (5.3%) and Environmental Sciences (6.5%) also contribute significantly. While research in the arts and humanities may concentrate on the importance of cultural practices and creative processes in fostering emotional and social abilities, environmental sciences research frequently examines the effects of physical and social surroundings on child development.
- Together, other disciplines (5.3%)—such as computer science, nursing, and neuroscience—contribute to a more complex knowledge of developmental processes. From the neurological foundations of social and emotional behaviours to technical advancements in assessment tools, these fields emphasise the need for a variety of approaches and viewpoints.

This distribution highlights the fact that evaluating young children's social and emotional development is a complex field of study that is backed by several academic fields. The importance of psychology and the social sciences suggests a significant emphasis on the social and behavioural foundations of development, whilst the

contributions of environmental sciences and medicine show an integrated approach that takes contextual and health aspects into account.

The cooperation between these several disciplines offers a strong basis for furthering studies and creating efficient methods in early childhood education. The research community may address the intricacies of social and emotional development more thoroughly by combining ideas from a variety of fields. This will help to promote well-rounded teaching methods that are based on a comprehensive understanding of child development.

#### **4. What are the trends in publishing on social and emotional development in early childhood education?**

The line graph illuminates the academic focus on the evaluation of social and emotional development in early childhood education by offering a comprehensive visualisation of publication patterns across many journals from 2021 to 2025. The publishing history of a particular journal is shown by each line in the graph, which shows changes in the journals' areas of interest as well as their dedication to this important field of study.

The International Journal of Environmental Research and Public Health, which was a prominent source with around 18 papers in 2021, had a sharp drop in publishing over the course of the five years, dropping to about 5 by 2025. This decline might point to a change in the journal's editorial focus or a more general realignment of the field's goals, potentially signalling a shift towards other newly developing fields of environmental health research.

Early Childhood Research Quarterly, on the other hand, consistently publishes around five papers year, exhibiting impressive consistency in its publication output. This consistency is a result of the journal's unwavering dedication to supporting further research into the social and emotional development of young children, positioning it as a key forum for ongoing scholarly discussion and progress in this field.

Publications in Frontiers in Psychology rise somewhat, reaching a peak of seven papers in 2024 before dipping a little. This pattern suggests that the magazine is becoming a major platform for interdisciplinary research that connects psychological theory with instructional strategies, as well as a rising interest in the psychological elements of early childhood development.

The Early Childhood Education Journal also shows a steady rise in publications, going from two in 2021 to eight in 2025. This increased trend confirms the journal's growing significance in influencing educational research and practices and indicates a heightened academic emphasis and a strong pipeline of research regarding developmental assessments in early education.

The Children and Youth Services Review also reveals a sharp rise of publications, which peaked in 2024 at almost seven documents before dipping a little. This trend emphasises the journal's focus on research that tackles service delivery and policy implications in child development, underscoring the rising understanding of the significance of services and support networks in shaping social and emotional development during early life.

Collectively, these patterns show a vibrant research environment that captures the changing academic interests as well as the many methods for comprehending and improving early childhood social and emotional development. The data specifically indicates a heightened collaborative endeavour by publications like the Children and Youth Services Review and the Early Childhood Education Journal to tackle important concerns related to early developmental phases through interdisciplinary research and useful insights. These patterns not only let the academic community know where research is being published most frequently, but they also point to important avenues for further study and the creation of policies that promote the holistic development of children. The continuous research endeavours emphasised by these patterns are essential for adapting to evolving educational requirements and the intricacies of child growth in modern social settings.

#### **5. What is the co-occurrence map of author keywords in this study?**

Key study issues in the field of early childhood social and emotional development are extensively mapped by the network visualisation, as shown in the VOS viewer visual that is attached. In addition to highlighting the



This network visualisation offers a visual representation of the intricate and interrelated field of early childhood social and emotional development research, making it an effective tool for scholars and decision-makers. In addition to assisting in determining the present research focus areas, the visualisation makes it easier to discover new trends and gaps in the literature by outlining the main themes and their relationships. It facilitates the growth of a sophisticated knowledge of the ways in which several global and local elements interact to impact early childhood development, directing future lines of inquiry and the creation of policies meant to maximise developmental outcomes for kids everywhere.

## 5. What are the popular keywords related to the study?

By defining a wide range of terms that reflect the interdisciplinary character of this subject, the co-occurrence map offers a clear demonstration of the diverse issues within early childhood social and emotional development research. The grouping of these terms demonstrates the depth and scope of scholarly investigation into early childhood development, highlighting both the complexity of the study environment and the connections across different subfields.

As focus points within the network, central nodes like "early childhood education," "human," and "education" indicate important fields of study. These keywords serve as hubs for a variety of subjects, indicating an all-encompassing strategy that incorporates social sciences, developmental psychology, and education. This synthesis shows a comprehensive investigation of the ways in which different educational and psychological factors combine to affect early developmental outcomes.

The cluster of keywords "preschool," "kindergarten," "early intervention," and "child development" highlights the early childhood educational and developmental phases. In order to assist the critical early years of a child's development, educational policies and practices must be shaped by this cluster. Similar to this, the terms "mental health," "nutrition," and "health disparity" come together to form a cluster that emphasises the significance of both physical and mental well-being. This cluster closely corresponds with public health efforts to include health issues into programs for the development of young children.

The clusters of "family," "social environment," "poverty," and "urban area" are also important since they show how external social and economic variables affect children's development. This suggests that a lot of study is being done on the effects of environmental factors on developmental paths, with a particular emphasis on the necessity of community-based treatments and supporting social policies.

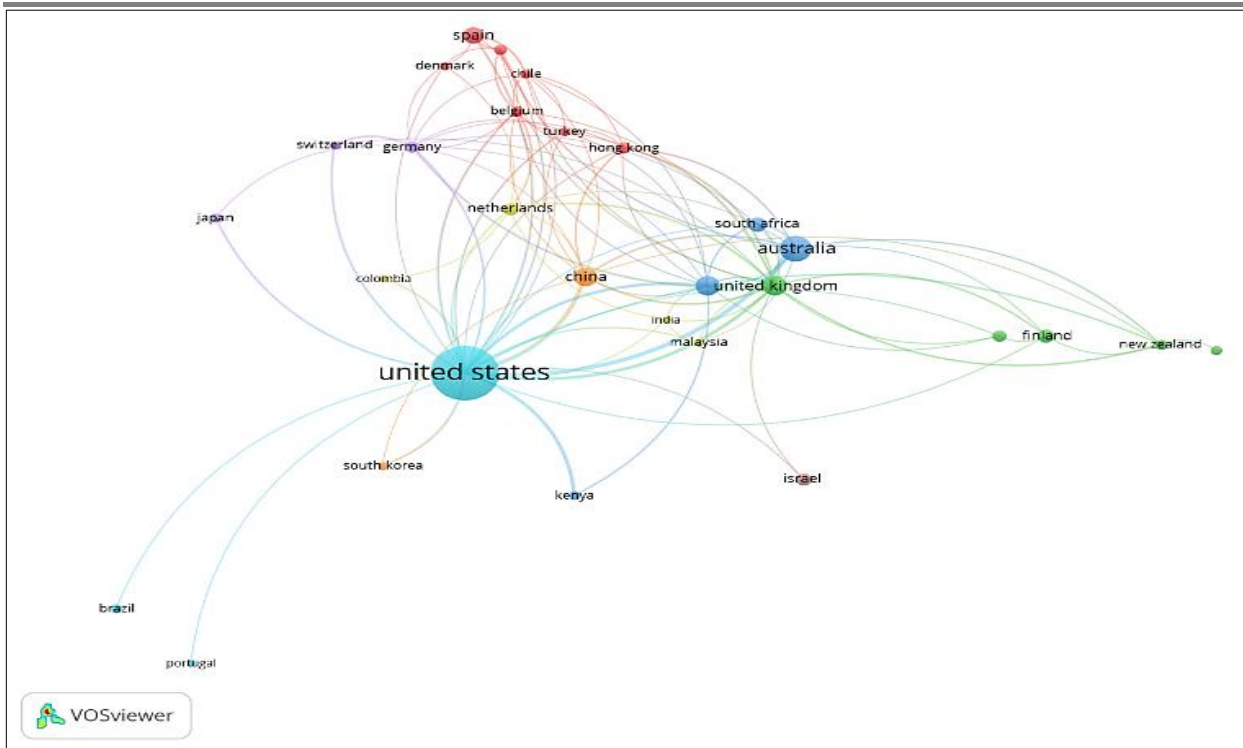
Strong inter-cluster relationships are also visible on the map, such as those that connect "early childhood education" to "mental health" and "social environment." These connections show how multidisciplinary the discipline is and how sociological and psychological ideas are increasingly being used to enhance educational techniques. Emerging terms like "artificial intelligence" and "digital media" indicate to possible future possibilities for the discipline by indicating new study fields that combine technology with conventional educational and developmental studies. These patterns highlight how technology's role in improving learning and development is always changing.

In conclusion, the co-occurrence map provides a thorough assessment of the state of research in the field of early childhood social and emotional development, emphasising important fields and new topics. By assisting scholars and practitioners in identifying significant subjects and possible gaps in the literature, this analysis promotes the creation of creative, multidisciplinary strategies to improve early childhood education and development initiatives. In addition to charting the current level of research, this thorough keyword mapping helps direct future academic and practical endeavours to assist the formative years of a child's development.

## 6. What are co-authorship countries' collaboration?

The network visualisation produced by VOS viewer offers an engaging summary of international partnerships in the field of research on early childhood social and emotional development. This map demonstrates how closely related different nations are to one another, highlighting the breadth and regularity of cross-border research cooperation.





**Figure 6:** Global Collaboration Networks in Assessing Social and Emotional Development in Early Childhood Education

The United States dominates the network's centre and is the primary node, demonstrating its vital importance in the international research community. The United States' prominent role in leading international research collaborations is reflected in the many connections it has with nations throughout the globe. This central centre facilitates a rich flow of ideas and encourages innovation in early childhood development studies by skilfully integrating various research viewpoints and approaches from across the world.

- **Cluster Anglophone:** This cluster, which includes nations like the UK, Australia, Canada, and New Zealand, gains from common language and cultural connections that promote cooperation and communication. The productivity and effect of their collaborative research endeavours are increased by these ties, which are not only numerous but also firmly established in common academic traditions and research procedures.
- **Cluster of Europe:** The countries in this cluster—Germany, France, the Netherlands, and Switzerland—are renowned for their robust academic systems and encouraging research funding programs. Due to physical closeness and shared governmental frameworks that promote intellectual interchange, this cluster's dense network of linkages highlights a high degree of intra-regional collaboration.
- **Asia-Pacific Cluster:** With vibrant and quickly expanding research communities, nations like China, Japan, and South Korea are becoming more and more well-known in the world's early childhood development conversation. The growing connections within this cluster underscore regional partnerships bolstered by educational reforms and government programs to improve research capabilities and results.

Significant inter-cluster relationships are also revealed by the visualisation, which shows how much the US interacts with nations in various clusters. The United States' strategic alliances with countries like China and Germany, for example, demonstrate how cross-continental cooperation may overcome geographical and cultural obstacles to further the field. Despite having fewer connections, emerging research contributors like Brazil, India, and Malaysia are crucial growing regions for the global research network. Their expanding research and academic infrastructures provide encouraging prospects for future partnerships, which might contribute a variety of new ideas and perspectives to the global research scene.

A dynamic and integrated worldwide ecosystem of research in early childhood social and emotional development is outlined by this thorough bibliometric study. It highlights the significance of global cooperative efforts and



the crucial role played by the United States as a major hub. Researchers and policymakers may use these insights to enhance child development studies by navigating and using international relationships. The varied contributions from different clusters highlight the need for an inclusive and comprehensive approach to early childhood education research, guaranteeing the development of creative approaches and solutions that will benefit children everywhere.

## DISCUSSION

A thorough analysis of international research trends, institutional contributions, theme areas, and cooperative networks in the field of social and emotional development assessment in early childhood education is given by this bibliometric study. Using sophisticated bibliometric algorithms and strong datasets from the Scopus database, this study sheds important information on how this field of study has developed.

The results show that the first goal was accomplished, which was to examine worldwide research trends between 2020 and 2025. According to the findings, publications have been steadily increasing, reaching a high in 2024 before seeing a little drop in 2025, most likely as a result of missing data. This pattern highlights the increasing focus on holistic developmental frameworks in early childhood education, which is a result of financing priorities and international legislation.

Finding important contributions, the second goal, was also accomplished. Prominent establishments including Temple University, Macquarie University, and the University of Toronto were honoured for their noteworthy accomplishments. This field's worldwide and multidisciplinary nature is further highlighted by the discovery of eminent scholars and cross-continental collaboration networks.

This study offers a thorough explanation of thematic priority with respect to the third goal, which is the examination of popular and changing keywords. Terms like "mental health," "early intervention," and "digital media" draw attention to both established and new areas of interest. Furthermore, the discovery of regional research initiatives, like those in Kenya and South Africa, demonstrates the expanding reach of academic investigation.

The fourth objective, examining patterns of global collaboration, was comprehensively addressed. The United States emerged as a central hub for international co-authorship, fostering collaboration with regions including Europe, Asia-Pacific, and emerging contributors such as Brazil and India. These patterns reflect a robust global network driving innovation and knowledge exchange in early childhood development.

The fifth objective, identifying thematic areas and emerging trends, was achieved through the analysis of keyword co-occurrence. Dominant themes such as social and emotional learning, family dynamics, and public health intersections were highlighted. Emerging trends, including the integration of digital media and nutrition in developmental frameworks, further expand the boundaries of this research domain.

Finally, by examining publishing sources, the sixth goal—to determine which journals were the most well-liked in the field—was achieved. Leading journals for sharing findings that consistently and significantly contribute to the field include *Frontiers in Psychology*, *Children and Youth Services Review*, and *Early Childhood findings Quarterly*. Together, these results show that the study's six goals were accomplished, providing insightful information for researchers, educators, and policymakers.

## CONCLUSION

The dynamic and cooperative character of research in evaluating social and emotional development in early childhood education is highlighted by this study. It offers a thorough overview of publishing patterns, major authors, topic areas, and international cooperation by covering all six objectives. The results highlight how crucial multidisciplinary methods and strong global networks are to the advancement of this profession. The creation of evidence-based curriculum and policies that include social and emotional learning into early childhood education frameworks are examples of practical consequences. Opportunities to address under-represented areas and new trends, such the use of digital media in education, are also highlighted in the report.

Consistency was guaranteed by the use of Scopus data, although it could have left out important information from other databases or geographical areas. In order to further improve the findings' inclusiveness and applicability, future research should concentrate on examining these gaps. By fulfilling its stated goals, this study lays a strong basis for next multidisciplinary and creative methods, which will eventually support children's holistic development everywhere.

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## Ethical Considerations

Ethical Approval: Include a statement confirming that ethical approval was obtained for research involving human subjects or animals.

Conflict of Interest: Disclose any potential conflicts of interest.

## Data Availability

Indicate the availability of data. Provide links or references if data is publicly available. If not, provide a rationale.

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