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Role of Resilience in Mitigating Parental Stress of Parents Raising Children with Autism – A Bibliometric Analysis

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Abstract

Although resilience is essential for reducing parental stress to the parents of children with Autism Spectrum Disorder (ASD), there are limited information on worldwide research trends and collaborations in this area. This study presents a bibliometric analysis of literature published from 2020 to 2024 on the aspect of resilience in mitigating parental stress of the parents raising autistic children. Data were retrieved from the Dimensions AI database (2020–2024) using the keywords “Resilience” AND “Parental Stress” AND “Autistic Children,” yielding 2,223 open-access articles. The dataset was analyzed using RStudio for performance metrics and VOS viewer for network visualization. The analysis identified key contributors (with Emily Simonoff and Sven Bölte emerging as the most influential authors), highly cited papers (e.g., Singh, 2020; Lord et al., 2020; Chiarotti & Venerosi, 2020; Asbury et al., 2020; Carter et al., 2020), and major publishing countries (USA, UK, China, Canada, Australia) and institutions (e.g., University College London, King’s College London, Harvard University, University of Toronto). Collaboration networks reveal extensive international partnerships, notably with India serving as a frequent collaborator with top countries. Results indicate a growing global research interest in resilience as a buffer against parental stress in ASD contexts. Resilient families tend to report lower stress levels, and international collaborations are strengthening the knowledge base on this topic. These findings help map the current scholarly landscape and suggest a particular way for future research and practice to better support to the parents of children with ASD, predicting treatment outcomes, and developing new antibiotic therapies. In conclusion, the potential of AI/ML to improve MDR management and treatment outcomes is significant.

Keywords: Autistic Children, Autism Spectrum Disorder (ASD), MDR management

1. Introduction

Caring for a child with ASD can be highly demanding, and parents of the autistic children often experience significantly very high levels of stress compared to other parents (Hayes & Watson, 2013; Shattuck & Grosse, 2007; Stuart & McGrew, 2009). Different research has shown that parenting an autistic child is followed with greater challenges and an elevated risk of mental health problems for the caregivers (Leung & Li-Tsang, 2003; McStay, Trembath, &

Dissanayake, 2014). This chronic stress can negatively affect parental well-being and family functioning. In this context, resilience – broadly defined as the capacity to adapt positively in the face of adversity – is considered a critical protective factor for these families (Cicchetti, 2016; Connor & Davidson, 2003; Ungar, 2013; Walsh, 2016). Resilience helps parents cope with daily challenges and buffers against the negative impacts of stress. For instance, resilient families of autistic children report better overall mental health and lower parenting stress. Even relatively low levels of resilience have been found to protect parents by buffering against heightened anxiety and depression (Bitsika et al., 2013). These findings underscore that strengthening parental resilience can mitigate adverse outcomes such as stress, anxiety, and depression in families of children with ASD.

Despite the well-documented benefits of resilience in this side, there has been a blank space in understanding the global research trends and collaborations focused on resilience and parental stress in autism. Most existing studies have examined the relationship between resilience and parental outcomes at the individual or family level, but not much is known about the broader scholarly landscape: Who are the leading researchers and institutions in this field? Which countries contribute the most to this research, and how do they collaborate? What are the influential publications that form the knowledge base of this topic? Addressing these questions is important because it provides a “big picture” view of how knowledge on resilience and parental stress in autism is being generated and shared. Such insights can highlight research gaps, inform cross-cultural perspectives, and foster international collaborations to support families more effectively (Papadopoulos, 2021; Samadi & McConkey, 2014; Zhou & Yi, 2014).

To fill this gap, the present study conducts a bibliometric analysis of recent literature on resilience and parental stress in families with autistic children. Bibliometric analysis is a quantitative method for evaluating academic literature using statistical and network-based techniques to assess research impact, structure, and trends. By analyzing publications from 2020 to 2024, this study aims to map the existing body of work, identify significant contributors (authors, institutions, countries), and examine patterns in citations and collaborations in this field. The following sections present a review of relevant literature, describe the methodology for the bibliometric analysis, report the results, and discuss the implications of the findings for research and practice.

2. Literature review

Parental stress in the aspect of raising children with ASD has been extensively documented. Parents of the autistic children consistently report increasing in stress levels than the parents of typically developing children or those with other developmental disabilities (Hayes & Watson, 2013; Shattuck & Grosse, 2007; Stuart & McGrew, 2009). This stress is often associated with the child’s behavioral and emotional problems and the demands of managing ASD-related needs on a daily basis (Fung et al., 2016; Phetrasuwan & Miles, 2009). Elevated parenting stress is a strong predictor of poorer caregiver mental health and reduced quality of life, highlighting the urgent need for factors that can alleviate stress in these families (Leung & Li-Tsang, 2003; McStay et al., 2014).

Resilience has emerged as a key factor that can ameliorate the negative effects of caregiving stress. Resilience in this context refers not only to individual psychological resilience of a parent, but also to family resilience – the family’s collective ability to withstand and rebound from challenges. Prior studies suggest a strong inverse relationship between resilience and parental stress. Plumb (2011), in an early study on families of children with ASD, found that parents in families with higher resilience reported significantly less stress. This implies that resilience resources (e.g., effective coping strategies, social support, and adaptive family belief systems) can help parents manage the pressures of raising a child with autism more effectively. Similarly, Bitsika et al. (2013) investigated the buffering effect of psychological resilience on parents’ well-being and observed that even low levels of resilience were sufficient to provide some protection against stress-related mental health problems. Resilient parents showed lower symptoms of anxiety and depression, suggesting that resilience serves as a protective shield that absorbs some of the impact of chronic caregiving stress. Research also indicates that resilient families of autistic children are more protected from negative outcomes overall, including better emotional well-being and more stable family relationships (Plumb, 2011).

Other related concepts in the literature include the role of social support and coping strategies as contributors to resilience. For example, social support from extended family, friends, and community resources has been shown to bolster family resilience and, in turn, reduce perceived parental stress (Plumb, 2011). Interventions aimed at increasing resilience – such as parent training in coping skills, mindfulness-based stress reduction, and family-centered therapy – have been explored as ways to improve parental outcomes (Kotera, Babic, & Gordon, 2021). While these individual studies demonstrate the importance of resilience, they are often limited to specific samples or local contexts. There has not been a comprehensive overview of how the field as a whole has evolved in recent years. This bibliometric analysis therefore builds on the individual findings by examining the collective research output from 2020 onwards, a period

that also encompasses increased stressors (like the COVID-19 pandemic) that may have further raised interest in parental resilience research. By reviewing the literature through a bibliometric lens, we can identify broader patterns and influential works that may not be evident from individual studies alone.

3. Methodology

Study Design: This research employed a bibliometric analysis to quantitatively review the scholarly literature on resilience and parental stress in the context of autism. Bibliometric analysis involves using statistical methods to analyze publications, allowing researchers to evaluate research trends, impact, and collaboration patterns in a given field. This approach is well-suited to address our objectives of mapping the literature and identifying key contributors over the specified time frame.

Data Source and Search Strategy: For this analysis the data were retrieved from the Dimensions AI scholarly database. Dimensions was chosen for its wide coverage of academic publications and its analytical tools. We performed an advanced search in Dimensions covering the last five years (January 2020 through December 2024) to capture contemporary research. The search keywords were “Resilience” AND “Parental Stress” AND “Autistic Children,” which were applied to titles, abstracts, and keywords of publications to ensure relevant coverage. We restricted the results to journal articles (excluding books, chapters, or conference papers) and further filtered to include only open access publications, to focus on widely accessible research. These criteria yielded a total of 2,223 articles matching the query.

Data Analysis: The bibliographic data (including titles, authors, affiliations, abstracts, journals, and references) of the 2,223 articles were exported for analysis. Two primary tools were used: RStudio and VOSviewer. RStudio (with relevant bibliometric packages) was used for performance analysis, such as counting publications and citations, and generating descriptive statistics (e.g., publication counts by year, top authors, top journals). VOSviewer is a software, where we can construct and visualize bibliometric networks, it’s used to map co-authorship networks, co-citation networks, and collaboration patterns among countries and institutions. In VOSviewer, we applied threshold criteria to focus on influential contributors: for example, in the author analysis, a minimum of 2 publications per author and at least 2 citations each author was required to be included in the network visualization. Similar way were set for other analyses (e.g., countries and institutions) to filter out very minor contributors and highlight the main players. These edge values were chosen to balance inclusivity with clarity of visualization, ensuring that the resulting maps were interpretable and focused on significant nodes.

Metrics and Indicators: The analysis examined several key metrics: (1) *Productivity* – the number of publications per year and per author/institution/country, indicating who is contributing most to the field; (2) *Impact* – citation counts of articles, used to identify highly cited papers and influential works in the domain; (3) *Collaboration* – co-authorship patterns and international co-publication links, to see how researchers and countries are working together. The outcome of the VOSviewer mapping includes network graphs where the nodes represent entities (authors, papers, institutions, countries) and links represent relationships (such as co-authorship or citation links). Node size typically reflects the weight (e.g., number of publications or citations) and node proximity or clustering indicates the degree of collaboration or thematic similarity. We interpreted these maps to derive insights about the structure of the research field.

Validation: To ensure accuracy, we cross-checked the top results (e.g., names of top authors, institutions, and highly cited papers) by verifying against the original database entries. Any duplicate records or irrelevant items (e.g., articles that met the search criteria but were not actually on topic) were removed or noted if encountered. Additionally, bibliometric data may have limitations such as citation count variations depending on the source; however, using a single database (Dimensions) for all metrics provided consistency in our analysis. We prepared this manuscript in accordance with the APA 7th edition style guidelines (American Psychological Association, 2020).

4. Results

Publication Output and Trends

From 2020 through 2024, there has been a notable increase in research focusing on resilience and parental stress in the context of autism. A total of 2,223 relevant articles were published in this five-year span. Annual publication counts rose steadily each year (with particularly strong output in 2023 and 2024), reflecting growing scholarly interest in this topic (a trend also noted qualitatively in the recent literature; Kotera, Babic, & Gordon, 2021). This surge in publications may be partially attributable to heightened awareness of family mental health issues – for instance, the COVID-19 pandemic in 2020 and beyond likely spurred additional research into stress and coping among families who have special needs children (Asbury et al., 2020). The breadth of journals represented is wide, spanning developmental psychology, autism research, family studies, and mental health fields, indicating that the topic is interdisciplinary in nature.

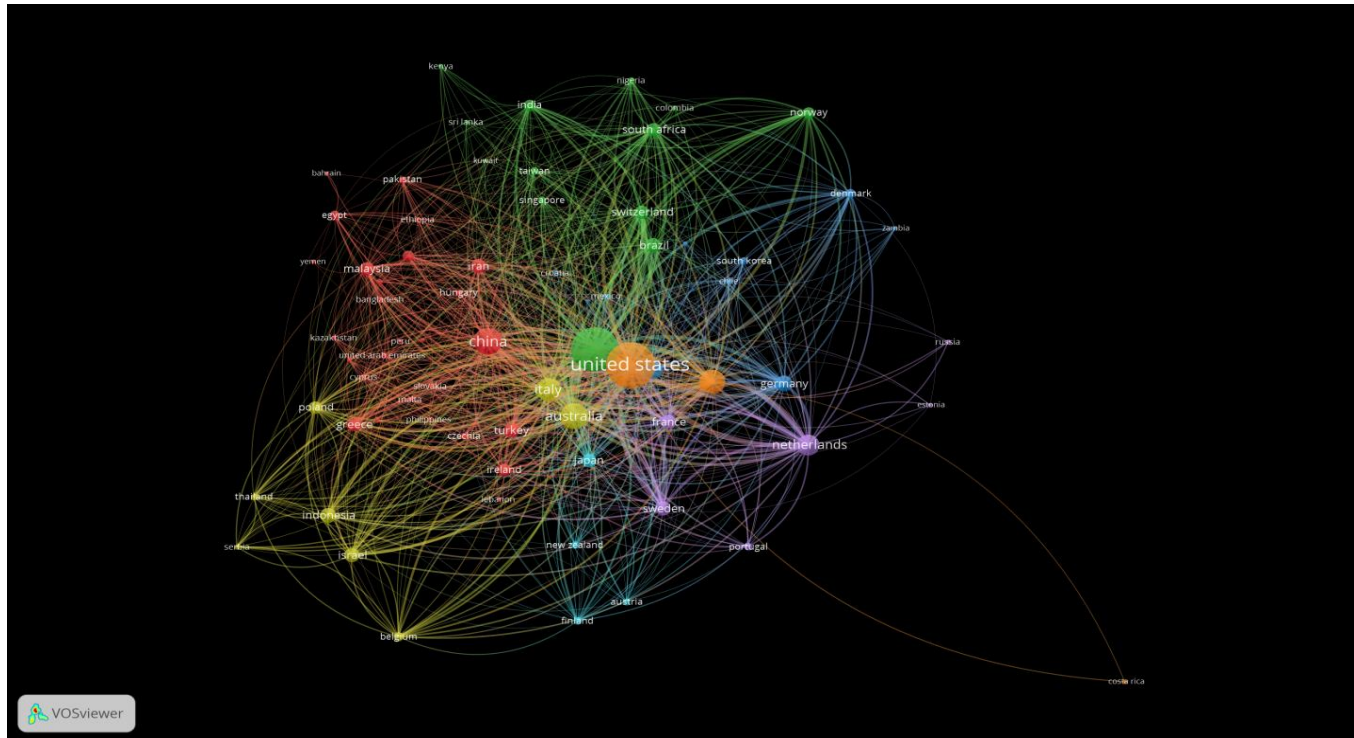


Figure 1: Coupling Via VOSVIEWER

Influential Authors and Authorship Networks

The analysis of author contributions identified 397 authors who have published at least 2 articles on this topic during 2020–2024. Among these, a few number of individuals stand out for their influence. Emily Simonoff and Sven Bölte emerged as the top contributing authors by bibliometric impact. Both of these researchers had multiple publications in the dataset and their works garnered significant citations, giving them large node sizes in the author network. Emily Simonoff (based in the UK) and Sven Bölte (based in Sweden) are known for their large-scale work in autism research, and their prominence here suggests they have specifically contributed influential studies on parental stress and resilience. In the co-authorship network visualization, Simonoff's cluster (colored green in the VOSviewer map) appeared highly interconnected. This indicates that Simonoff and her collaborators form a major hub in shaping research collaborations, often working with various other authors. Sven Bölte's presence is also central, though in a different cluster, highlighting another nexus of collaboration in the field. The central positioning of these authors in the network suggests they have collaborated internationally and possibly bridged different research groups. Excluding these two, other active authors (based on publication counts) included several scholars from Europe and North America (e.g., researchers associated with King's College London and Karolinska Institutet in Bölte's case), though their individual names were smaller nodes relative to Simonoff and Bölte. The prominence of Simonoff and Bölte underscores their leadership in this research area over the last five years, and their networks indicate that research on resilience and

parental stress in autism is highly collaborative, often spanning multiple institutions and countries.

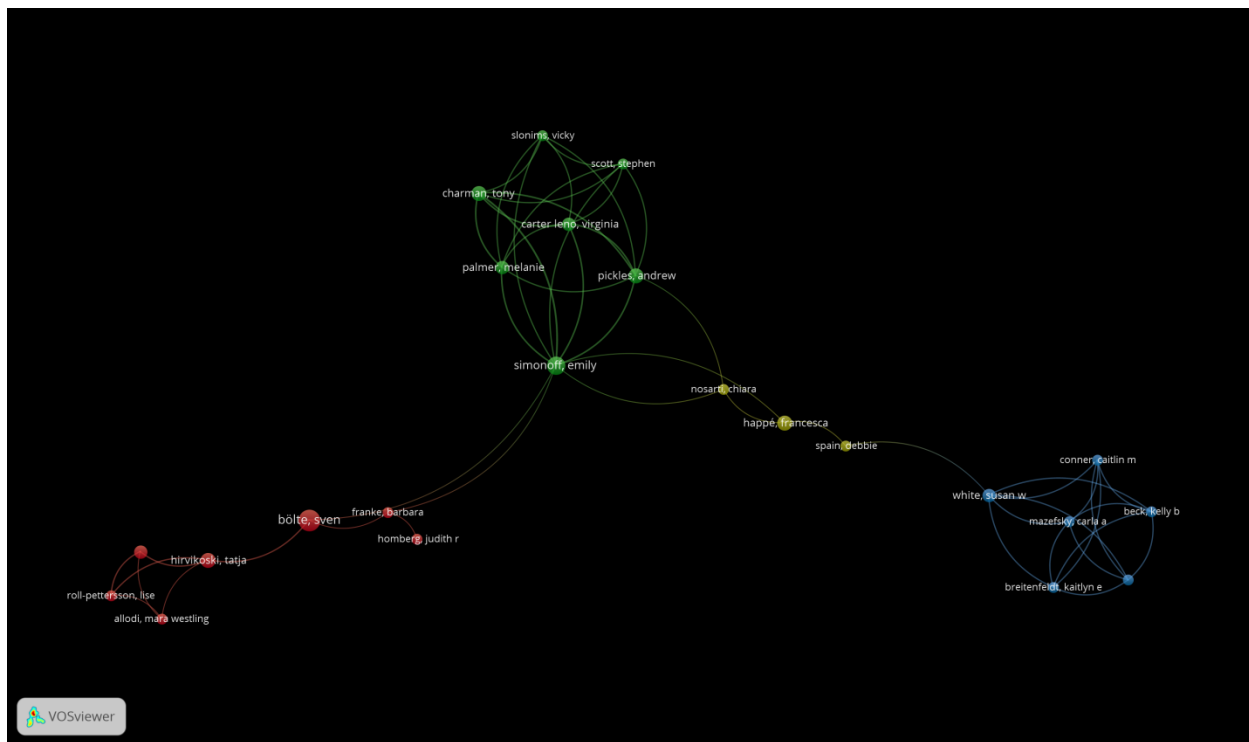


Figure 2: Author & Coauthor Via VOSVIEWER

Highly Cited Papers

The citation analysis sheds light on the foundational literature driving this field. Out of these 2,223 articles, about 1,000 had minimum 2 citations (as of the analysis date), and a handful of publications were cited far more often than others. The most cited papers in the dataset (as visualized by the largest nodes in the citation network) were authored by Singh (2020), Lord et al. (2020), Chiarotti & Venerosi (2020), Asbury et al. (2020), and Carter et al. (2020). These five papers were clearly influential, each forming a key node that numerous other studies referenced. For example, one of the top-cited publications by Chiarotti et al. (2020) includes a comprehensive review of worldwide ASD prevalence (Chiarotti & Venerosi, 2020), an article likely broadly cited for providing context on the growing prevalence of autism globally. Asbury et al. (2020) examined the impact of COVID-19 on the families of the children with special educational needs (including autism), reporting on parental stress and mental health during the pandemic. The high citation count for Asbury's paper suggests it resonated strongly in the research community, likely because of its timely insights into resilience and coping during COVID-19. Lord et al. (2020) is a Lancet Commission on the future of care and clinical research in autism, reflecting a major collaborative effort and a broad impact on the field. Singh (2020) and Carter et al. (2020) were also key studies; while specific details of these papers are beyond the scope of this summary, their inclusion as top-cited works implies that they offered significant findings or reviews related to parental stress or resilience (for instance, Singh's review addressed parenting stress and coping strategies, and Carter's trial involved an early intervention to support families). Collectively, these highly cited papers form much of the knowledge backbone of recent research – they are foundational works that so many other authors have built upon.

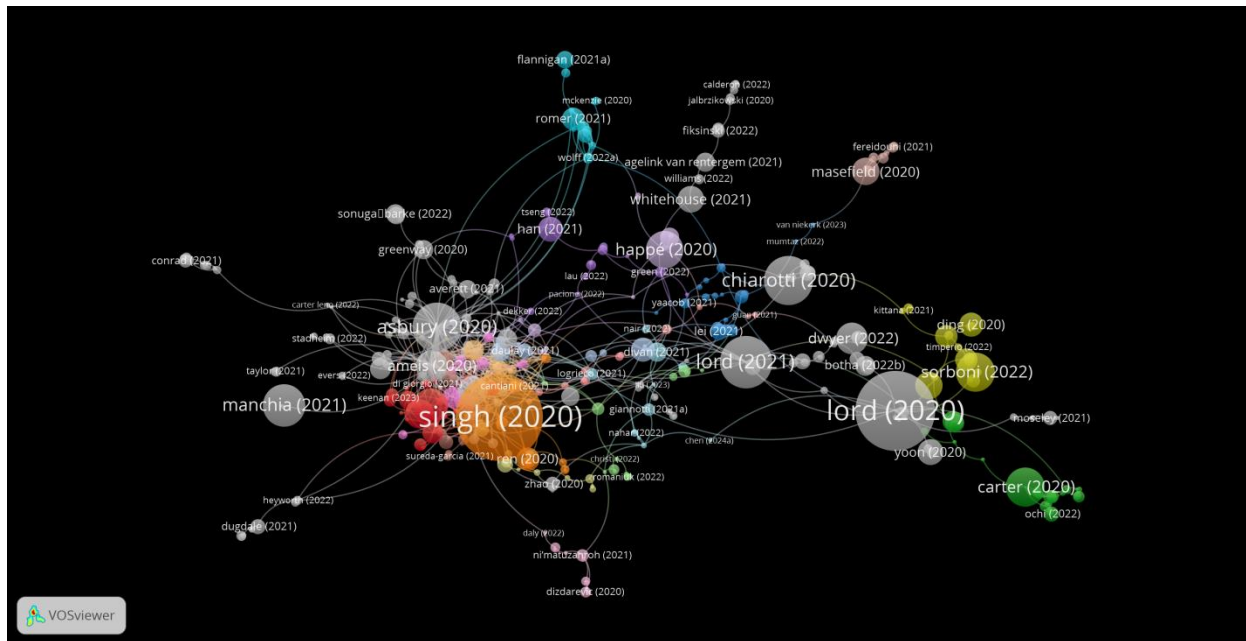


Figure 3: Citation via VOSVIEWER

Geographical Distribution of Research

Research on resilience and parental stress in autism is truly global, spanning at least 71 countries as per author affiliations in our dataset. However, the output is not evenly distributed. The United States and United Kingdom are the leading contributing countries, each producing a large volume of publications and citations in this field. The USA's prominence can be attributed to its numerous research universities and funding initiatives focused on autism and family mental health. The UK likewise has strong representation, with active research centers in the London, like those affiliated with University College London and King's College London (which house authors like Simonoff, as noted). Following the USA and UK, the next most active countries are China, Canada, and Australia, each of which has a significant and growing community of researchers working on ASD and family resilience. China's emergence in this list reflects its increasing academic output in autism research over recent years, often focusing on parental adaptation and cross-cultural studies of stress. Canada and Australia both have strong healthcare and psychology research in ASD, with notable work on family support and community interventions.

It is worth noting the side of India in the global research landscape. While India's total number of publications is smaller (its node appears smaller on the map compared to the US or UK), India is highly connected in the international collaboration network. Indian researchers very frequently collaborate with the colleagues from the US, Canada, China, the UK, and other countries. This connectivity is depicted by multiple link lines from India's node to other country nodes in the VOSviewer visualization, suggesting that India is engaged in joint research projects and contributing to multinational studies. Such collaboration might be driven by global health initiatives or capacity-building projects in autism research. The presence of these collaboration links indicates knowledge exchange and possibly the sharing of best practices for building resilience in different cultural contexts. Overall, the geographical analysis highlights that while North America, Europe, and increasingly East Asia dominate in volume, the research effort is distributed across continents and involves partnerships that enrich the field.

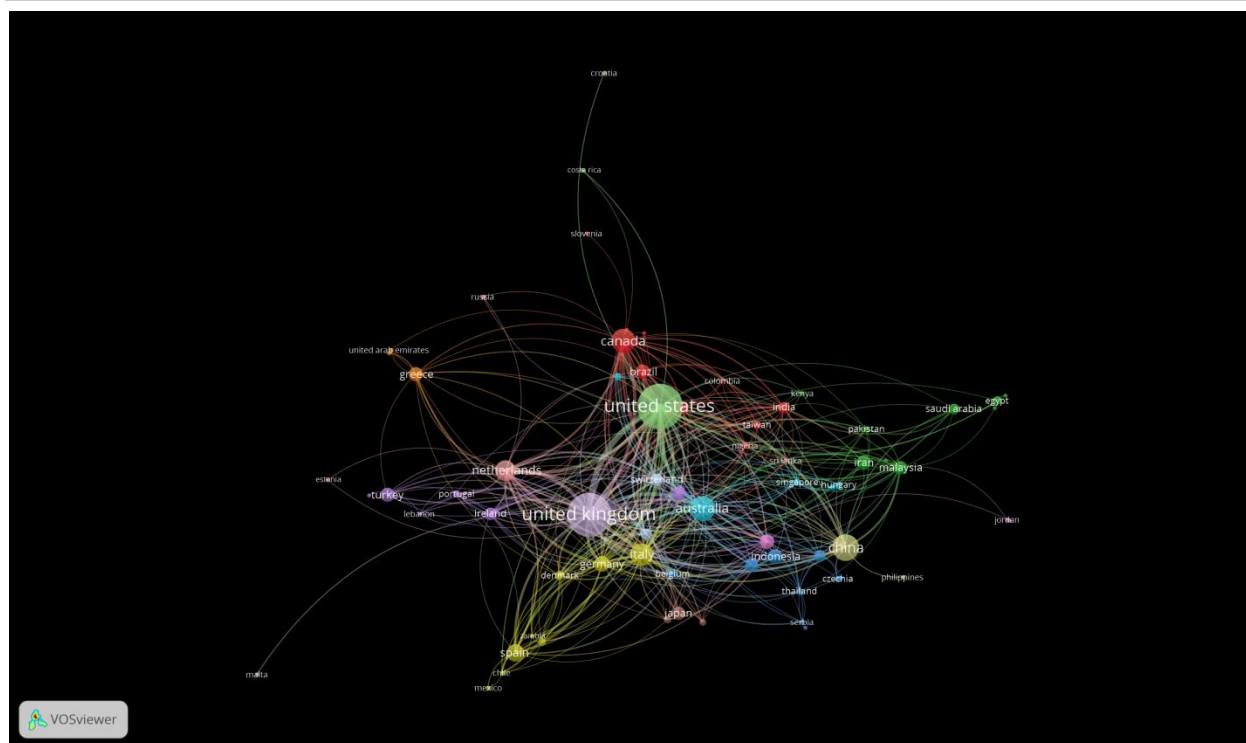


Figure 4: Country of authors Via VOSVIEWER

Leading Institutions

The institutional analysis revealed which universities or organizations are at the forefront of publishing research on this topic. We identified 55 institutions that met a threshold of at least 10 publications (and a minimum number of 10 citations) from that dataset. Topping the list are institutions from both side the UK and North America. University of College London (UCL) and King's College London are the most prolific and influential institutions in this domain. These two London-based universities not only have high publication counts but also occupy central positions in the collaboration network, indicating they have extensive international links. UCL and King's host several prominent autism research centers and have faculty (like Emily Simonoff at King's, among others) who actively publish on family resilience and stress. Their centrality in the network suggests that they frequently collaborate with overseas partners, possibly coordinating large multi-site studies or contributing to global consortia on autism family research.

In North America, Harvard University emerges as a leading research hub in the United States. Harvard's contributions likely stem from its medical and public health programs working on developmental disabilities and family mental health. Alongside Harvard, Yale University is also noted as a major U.S. research institution in this field, reflecting strong academic interest in resilience and ASD within the Ivy League and associated research hospitals. The University of Toronto is highlighted as a top institution in Canada, ranking third overall in number of publications (just behind the two London universities). This signifies Canada's strong presence, likely through the efforts of centers like the Holland Bloorview Kids Rehabilitation Hospital and University of Toronto's developmental psychology and psychiatry departments. Another notable institution is the University of Manchester in the UK, which, along with UCL and King's, is among the top five contributors worldwide. The University of Manchester has a known focus on educational and social research in autism, which can explain its high output.

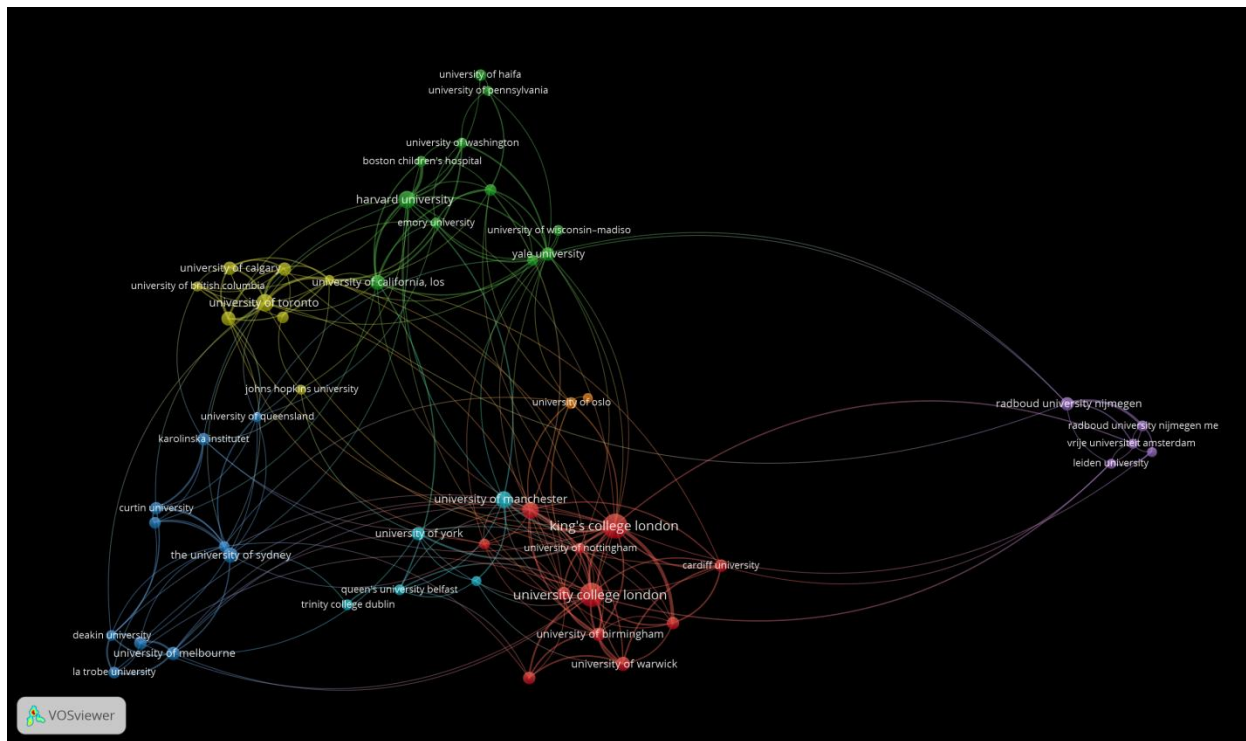


Figure 5: Leading institution of the Authors Via VOSVIEWER

5. Conclusion

In conclusion, resilience plays a pivotal role in mitigating parental stress for the parents raising children with autism, and the academic groups have progressively recognized this relationship. Our bibliometric analysis of literature from 2020 to 2024 demonstrates a rapidly growing and globalizing field of research. Key findings confirm that higher resilience is associated with lower stress and better mental health in these parents (Plumb, 2011; Wright & Brooks, 2019), reinforcing conclusions from individual studies with a broad evidence base. The analysis spotlighted leading contributors to the field, notably Emily Simonoff and Sven Bölte, whose extensive research and collaborations have significantly shaped the current understanding. It also highlighted the most influential papers of recent years that form the foundation for ongoing work (Asbury et al., 2020; Lord et al., 2020). Research output is concentrated in a few countries (with the USA and UK at the forefront), yet there is a heartening level of international collaboration, indicating that knowledge and innovations are crossing borders. Major institutions in the North America and in Europe, such as UCL, King's College London, Harvard, and University of Toronto, are driving much of the research and have established themselves as hubs of expertise and partnership in this domain.

The collaborative global landscape, including partnerships involving countries like India, suggests that the academic community values diverse perspectives and is working collectively to address the challenges faced by family persons of children with ASD. This global approach is crucial because autism and family resilience are issues that transcend cultural and national boundaries. By mapping the scholarly landscape, this study provides researchers, practitioners, and policymakers with a clearer picture of where evidence is coming from and where there may be gaps. For researchers, the findings can identify potential collaborators and important resources (such as highly cited articles) to consult. For practitioners and intervention developers, understanding that resilience is a proven stress buffer underscores the importance of incorporating resilience-building components into support programs for parents. For policymakers and funding agencies, the results highlight active centers of research and the value of supporting international collaborations to disseminate effective strategies worldwide.

In summary, the role of resilience in alleviating parental stress in autism caregiving is well-supported by a growing body of literature. This bibliometric analysis not only reaffirms that central finding but also illuminates the structure of that body of literature – who is contributing, what work is most influential, and how the global community is connected. The increasing interest and output in this area are promising, as they suggest a collective commitment to improving the

lives of families affected by autism. By continuing to foster resilience, both through research and practical interventions, there is hope for reducing the burden on parents and helping families thrive despite the challenges of autism. Future research should continue to build on the collaborations and knowledge identified here, exploring new dimensions of resilience and reaching underrepresented populations, to ensure that the benefits of this research are truly inclusive and far-reaching.

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