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Charting the Future of Inclusive Autism Support: A Global Bibliometric Study on Educational and Transitional Issues

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Abstract. This study examines global research trends on transitional issues in autism spectrum disorder (ASD) between 2019 and 2024, with emphasis on educational contexts and inclusive practices. Using 243 Scopus-indexed articles, the analysis applied bibliometric techniques to identify key themes, influential works, and collaboration networks. Methods included mapping co-authorship, analyzing frequently used keywords, and assessing citation patterns to explore the intellectual structure and thematic evolution of the field. Findings show that research output is concentrated in Western countries - particularly the United States, United Kingdom, Canada, and Australia-while contributions from regions such as China and other parts of Asia are increasing. Dominant research themes focus on postsecondary education, employment, independent living, and transition planning, underscoring the central role of education in preparing autistic individuals for adulthood. Emerging topics, including inclusive education, neurodiversity, student voice, and self-determination, indicate a shift toward strengths-based, person-centered, and interdisciplinary approaches. These trends highlight a growing commitment to educational systems that address diverse learning needs, promote autonomy, and enhance well-being. However, there remains a broader cross-cultural collaboration, inclusion underrepresented regions, and more targeted strategies to support transitions across different life stages. This study offers a comprehensive overview of the evolving discourse, providing evidence to guide educators, researchers, and policymakers in strengthening inclusive and culturally responsive transition frameworks. By illuminating current patterns and future directions, the findings can inform policies and practices that promote equitable opportunities and lifelong participation for autistic individuals.

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1. Introduction

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by persistent challenges in social communication, restricted interests, and repetitive behaviors (World Health Organization, 2023). As autistic individuals move from adolescence into adulthood, they encounter a distinctive set of challenges, particularly when transitioning from school to postsecondary education, employment, and independent living. These transitional phases often involve significant changes in academic expectations, social roles, and daily living arrangements.

For individuals with ASD, such changes are further complicated by difficulties in executive functioning, social adaptability, and the availability of tailored institutional support systems (Ayala, 2023; Dimachkie Nunnally et al., 2024; Klein et al., 2024). Research consistently emphasizes that targeted interventions — including psychoeducational programs, social narrative training, and structured transition planning — play a critical role in supporting these life stages. Equally important are systemic supports, such as teacher preparedness, inclusive learning environments, and cross-agency collaboration, which together create a foundation for successful transitions.

Globally, the transition period is widely recognized as a high-stakes developmental phase for autistic individuals. However, despite increasing awareness, the existing research landscape is heavily weighted toward high-income, Western countries, resulting in an incomplete global picture. Low- and middle-income countries (LMICs) — where autism-related services, diagnostic tools, and trained professionals are often scarce — remain underrepresented in both the volume and diversity of ASD transition studies (Bauer et al., 2022; de Lange et al., 2024; Patra & Kar, 2021).

This imbalance is not only a matter of unequal research output but also reflects the limited applicability of Western-developed transition models to culturally distinct settings (Asaro-Saddler et al., 2025; Westby et al., 2024; Zakirova-Engstrand & Yakubova, 2024). A more globally representative body of literature is essential to ensure that transition planning reflects the needs, values, and contexts of diverse communities.

Bibliometric analysis offers a systematic, quantitative approach to mapping and evaluating research trends, authorship patterns, collaboration networks, and thematic developments in a given field. Unlike traditional literature reviews, which rely on qualitative synthesis, bibliometric methods allow for the identification of research hotspots, influential publications, and evolving conceptual structures over time (Donthu et al., 2021; Marvi & Foroudi, 2023). This approach is particularly relevant to ASD transition research, which spans multiple disciplines — including education, psychology, occupational therapy,

and social policy — and draws contributions from diverse geographic and institutional contexts.

Recent bibliometric investigations in related domains underscore the potential of this approach. For instance, Jiang et al. (2023) reported a 181.7% increase in ASD-related publications between 2011 and 2021, with particular growth in areas such as genetics, intervention design, and developmental psychology. However, relatively few studies have concentrated specifically on transitional issues, especially within educational contexts. Where such analyses exist, they tend to be subsumed within broader autism research trends, offering limited insight into the unique complexities of the transition from school to adulthood.

Similarly, bibliometric reviews in subfields such as occupational therapy (Alkattan et al., 2025) have demonstrated the persistent dominance of countries like the United States in both research volume and citation influence, while highlighting significant underrepresentation of adult-focused and culturally responsive ASD studies. These findings point to the need for targeted bibliometric analyses that address transition-specific challenges and identify underexplored contexts, including LMICs.

The existing literature reflects substantial progress in understanding autism, yet there is a clear gap in synthesizing research on transitional issues across global contexts. While individual studies and reviews have examined educational, vocational, and independent living outcomes for autistic individuals, no recent bibliometric study has comprehensively mapped the global research landscape on these transitions from 2019 to 2024, with a focus on inclusive education. Moreover, although Western dominance in autism research is widely recognized, the extent to which specific countries lead in publication output — and how collaboration networks operate across regions — remains insufficiently documented. To address these gaps, this study is guided by the following research questions:

- 1. What are the patterns of international collaboration in research on transitional issues in autism?
- 2. What are the main thematic clusters in research on transitional issues in autism, as revealed by the co-occurrence of keywords?
- 3. What are the global citation trends in research on transitional issues in autism, and which countries demonstrate the most significant academic influence?
- 4. What does bibliographic coupling reveal about the collaborative research trends and shared references among countries studying transitional issues in autism?
- 5. What are the most influential journals contributing to research on transitional issues in autism, as identified through co-citation analysis?
- 6. What do the co-citation relationships among authors reveal about the collaboration and intellectual foundations of autism transition research?

This study draws on 243 Scopus-indexed articles published between 2019 and 2024. The time frame captures the most recent developments in the field,

reflecting both the impact of global policy shifts toward inclusive education and the growing influence of neurodiversity-oriented approaches. Unlike broader ASD bibliometric reviews, this analysis focuses narrowly on the critical period of transition from childhood to adulthood, including school completion, postsecondary education entry, and preparation for employment and independent living. By concentrating on this life stage, the study addresses a period of heightened vulnerability and opportunity, where well-designed interventions can significantly influence long-term outcomes.

The findings of this analysis will offer valuable insights for educators, policymakers, researchers, and service providers. By identifying emerging research themes, geographic disparities, and collaboration patterns, the study provides an evidence base for shaping more inclusive, culturally relevant transition frameworks. It aims to encourage stronger partnerships between schools, families, and community organizations, ensuring that autistic individuals are equipped with the skills, opportunities, and supports necessary for lifelong learning and participation in society. In doing so, this bibliometric review not only contributes to academic understanding but also offers practical guidance for translating research into effective policy and practice.

3. Methodology

This study employs a bibliometric analysis approach to systematically evaluate research trends, influential contributors, and thematic developments in ASD transition research. Bibliometric analysis is a widely used method for examining the structure of scientific knowledge through quantitative assessments of published literature (Donthu et al., 2021). The study follows a systematic sequence of data collection, processing, and analysis to ensure methodological rigor and reliability. Scopus was selected as the primary database due to its extensive indexing of high-quality scholarly journals across diverse scientific disciplines. Compared to Web of Science and PubMed, Scopus offers a broader multidisciplinary scope, strong citation tracking capabilities, and advanced bibliometric tools, making it an ideal choice for this study (Baas et al. 2020).

3.1 Research Strategy

This study employed a screening sequence to determine the search terms for article retrieval. The study was initiated by querying the Scopus database with TITLE-ABS-KEY ("autism" OR "autistic" OR "ASD") AND TITLE-ABS-KEY ("transition*" OR "transitional issue*" OR "life transition*" OR "school transition*" OR "transition planning" OR "adolescent transition" OR "adult transition" OR "employment transition" OR "postsecondary transition" OR "independent living"), thereby assembling 2,975 articles. The search results were then refined to include only articles from 2019 to 2024, limited to the Social Sciences subject area, with document type restricted to articles and language set to English.

The selection of this timeframe was based on the need to capture recent research developments and trends while ensuring that emerging themes, methodologies, and policy changes were reflected in the analysis. Older publications were excluded to prioritize contemporary research findings that align with current

challenges and interventions in ASD transitions. These criteria ensured the selection of relevant and recent publications focused specifically on the study's scope. Furthermore, the period from 2019 to 2024 was selected for the analysis to ensure that the research findings examined were current and up to date.

The final search string — TITLE-ABS-KEY ("autism" OR "autistic" OR "ASD") AND TITLE-ABS-KEY ("transition*" OR "transitional issue*" OR "life transition*" OR "school transition*" OR "transition planning" OR "adolescent transition" OR "adult transition" OR "employment transition" OR "postsecondary transition" OR "independent living") AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA, "SOCI")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English")) — resulted in 243 articles which were used for bibliometric analysis. As of October 2024, all articles from the Scopus database relating to transitional issues focusing on autism were incorporated in the study.

Table 1: The search string

Scopus	TITLE-ABS-KEY ("autism" OR "autistic" OR "ASD") AND TITLE-ABS-KEY ("transition*" OR "transitional issue*" OR "life transition*" OR "school transition*" OR "transition planning" OR "adolescent transition" OR "adult transition" OR "employment transition" OR "postsecondary transition" OR "independent living") AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA , "SOCI")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English"))
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Table 2: The selection criterion is searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2019 - 2024	< 2019
Literature type	Journal (Article)	Conference, Book, Review

3.2 Data Analysis

The collected data was analyzed using VOSviewer (version 1.6.20), a software tool designed for visualizing bibliometric networks (van Eck & Waltman, 2017). The analysis was conducted using the following bibliometric techniques:

3.2.1 Co-Authorship Analysis

Co-authorship analysis was conducted to assess collaboration patterns among researchers and institutions. This analysis identifies prolific authors, research

hubs, and international collaboration trends within ASD transition research (Glänzel & Schubert, 2020).

3.2.2 Keyword Co-Occurrence Analysis

Keyword co-occurrence mapping was employed to identify dominant research themes and emerging topics. The mapping results were first generated through algorithmic analysis, which revealed frequently used terms and their interrelationships. To ensure validity, the preliminary clusters were manually reviewed by two independent researchers, who cross-checked the algorithm-generated groupings against the contextual meaning of keywords in the source articles. Any discrepancies in interpretation were discussed and resolved through consensus. Additionally, an expert in ASD transition research was consulted to verify thematic labelling and confirm the accuracy of cluster interpretations. This combined algorithmic and expert-validated approach enhanced the credibility of the findings, enabling a robust identification of evolving research trends and gaps in ASD transition studies (Donthu et al., 2021; Narong & Hallinger, 2023).

3.2.3 Citation and Co-Citation Analysis

Citation analysis determined the most influential articles based on citation counts, highlighting seminal works that shape the research landscape. Cocitation analysis, first introduced by Small (1973), examines how frequently two documents are cited together, thereby uncovering intellectual connections between foundational publications. These techniques remain central in contemporary bibliometric research for identifying knowledge structures and scholarly influence (Donthu et al., 2021).

3.2.4 Bibliographic Coupling Analysis

Bibliographic coupling was utilized to identify research clusters by assessing shared references among articles. Originally introduced by Kessler (1963), this technique remains widely used in bibliometric research to detect thematic groups and interdisciplinary connections across publications (Donthu et al., 2021).

4. Results and Discussions

The results of this bibliometric analysis provide a detailed examination of publication trends, author collaborations, and thematic structures within autism transition research. By leveraging data from the Scopus database, this study identifies key contributors, influential journals, and emerging research themes shaping the field. Additionally, the findings reveal patterns in publication output, co-authorship networks, and keyword co-occurrence, offering critical insights into the intellectual development and global collaboration in this domain. The following analysis explores these results, discussing their implications for advancing autism transition research and fostering interdisciplinary collaboration.

4.1. Research Question 1: What are the patterns of international collaboration in research on transitional issues in autism?

To address the first research question on the global distribution and collaboration patterns in autism transition research, Figure 1 illustrates the network visualization of co-authorship at the country level based on Scopus-indexed publications. Of the 43 countries involved, only eight met the minimum threshold of five publications, highlighting a limited and uneven international research landscape.

The visualization, produced using VOSviewer, clearly shows the United States as the most influential and interconnected node within the network. This central positioning reflects the country's dominant role in shaping the field, supported by strong research funding, established academic institutions, and a high concentration of autism-focused research centers. This pattern corroborates previous findings (Jiang et al., 2023) and suggests that while global interest in autism transition research is growing, substantial disparities remain in terms of research output and international collaboration. The limited representation of countries from low- and middle-income regions further emphasizes the need to promote more equitable global research engagement and capacity building in underrepresented areas.

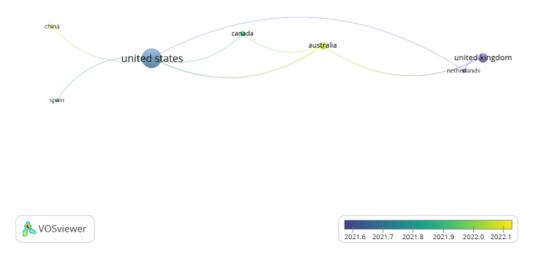


Figure 1: Network of co-authorship at country level. Out of 43 countries, 7 meet the threshold (minimum number of documents of a country, 5).

In addition to the United States, Australia, Canada, and the United Kingdom demonstrate strong co-authorship ties, suggesting a high degree of international collaboration among these high-income countries. The intensity of these connections reflects shared research priorities and policy agendas surrounding autism transitions, particularly in domains such as school-to-work pathways, postsecondary education access, and independent living supports for individuals with ASD (Donthu et al., 2021; Jiang et al., 2023). The close integration of these countries within the network underscores the role of

established English-speaking research communities in shaping global discourse on autism transitions.

Emerging research contributors such as China, Spain, and the Netherlands are also represented in the co-authorship map, though their collaborative links to dominant hubs appear relatively limited. This pattern indicates that while research productivity in these nations is increasing, especially in terms of article output, their integration into the global autism transition research community remains comparatively weak. This observation resonates with previous bibliometric studies that highlight how non-English-speaking countries often face structural barriers to international collaboration, including linguistic challenges, limited access to international funding, and disparities in research visibility (Zhu & Liu, 2020).

Interestingly, some countries with historically strong contributions to broader autism research such as Germany, France, and several Scandinavian nations are notably absent from the co-authorship network in this analysis. This suggests that while these countries have contributed substantially to general autism research, autism transition has not yet become a prioritized research focus within their national agendas (Jiang et al., 2023; Zhu & Liu, 2020). The underrepresentation of these countries points to thematic fragmentation within autism scholarship and emphasizes the need for more culturally diverse and globally representative investigations of transitional experiences.

Overall, the co-authorship network illustrates a Western-centric research landscape, where high-income countries dominate the production and collaborative development of autism transition studies, while low- and middle-income countries remain significantly underrepresented. These findings support the conclusions of Jiang et al. (2023), who observed that autism-related research is overwhelmingly concentrated in North America and Western Europe, with minimal engagement from regions such as Latin America and Africa.

Addressing this imbalance requires deliberate action, including the expansion of international funding schemes, promotion of cross-border research collaborations, and the formation of equitable global research partnerships. Moreover, promoting open-access publishing, multilingual dissemination, and capacity building in underrepresented regions can help close the global research gap. Enhancing the inclusivity of international collaboration will ultimately lead to more contextually relevant and culturally sensitive transition supports for individuals with autism worldwide.

4.2. Research Question 2: What are the main thematic clusters in research on transitional issues in autism, as revealed by the co-occurrence of keywords?

To address the second research question on the thematic focus and emerging trends in autism transition research, Figure 2 presents the keyword co-occurrence network derived from Scopus-indexed publications. Out of 1,008 keywords identified, 57 met the minimum threshold of five occurrences, signifying their prominence and relevance within literature. This network, visualized using VOSviewer, offers a structural overview of academic discourse

by mapping frequently co-occurring terms, thereby illuminating the thematic clusters that define current research priorities.

The interconnectedness of keywords reflects how various concepts—such as postsecondary education, employment, independent living, healthcare, and self-determination—are frequently studied in relation to one another, indicating an integrated approach to understanding the multifaceted nature of autism transitions. Additionally, the appearance of emerging terms like neurodiversity and inclusive education points to a growing shift toward holistic, person-centered, and strengths-based frameworks. This thematic mapping not only illustrates dominant areas of focus but also signals evolving discourses that emphasize empowerment, stakeholder involvement, and identity-affirming practices, contributing to a more nuanced and inclusive understanding of transition experiences for individuals with autism.

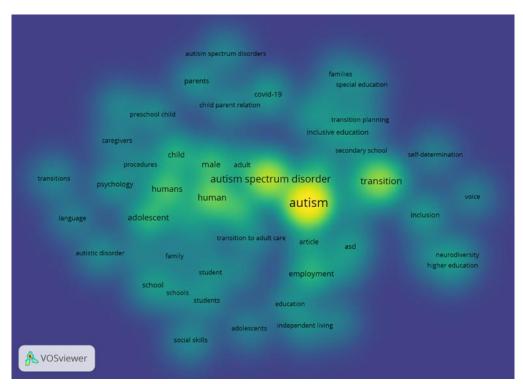


Figure 2: Co-occurrence of all keywords. Of the 1008 keywords, 57 meet the threshold (minimum number of occurrences of a keyword: 5)

At the core of the network, the keywords "autism" and "autism spectrum disorder" emerge as the most dominant nodes, underscoring their foundational relevance to all clusters. Surrounding these are frequently linked terms such as "transition," "employment," "education," "independent living," and "adolescents," which collectively signal a sustained research emphasis on the shift from adolescence to adulthood. These terms reflect the substantial scholarly focus on the challenges autistic individuals face as they navigate postsecondary education, vocational pathways, and the pursuit of independence in adulthood—a pattern consistent with previous studies documenting these transitional difficulties (Lee et al., 2023). Complementing these themes are the

keywords "transition to adult care" and "self-determination," highlighting the critical role of healthcare continuity and the growing recognition of personal agency as a decisive factor in successful transition outcomes (Wisner-Carlson et al., 2020).

Beyond these primary domains, the co-occurrence map reveals a second layer of research interest centered on social, family, and educational supports. Keywords such as "inclusive education," "special education," "families," and "caregivers" indicate that researchers are increasingly attentive to the broader support systems that shape transition experiences. These clusters suggest a shift toward ecological and systems-based perspectives that emphasize collaboration among schools, families, and service providers to facilitate smoother transitions. Notably, the presence of "COVID-19" as a co-occurring term within these clusters reflects the pandemic's impact on transition trajectories. The disruptions caused by COVID-19 appear to have redirected research attention toward topics such as remote learning, service accessibility, and heightened social isolation—factors that significantly affected autistic individuals during key transitional stages (Pellicano et al., 2021).

A particularly salient development is the clustering of terms like "neurodiversity" and "voice," which signify an evolving shift toward advocacy, self-representation, and participatory approaches in autism research. These terms reflect the growing influence of the neurodiversity movement, which promotes the recognition of autistic individuals as active contributors in decisions affecting their lives, including transition planning and policy development (Leadbitter et al., 2021). This thematic emergence underscores a broader epistemological transition in autism scholarship—from a deficit-based orientation to one grounded in strengths, rights, and lived experience.

When compared to earlier bibliometric studies, the sustained prominence of keywords such as "employment" and "independent living" reaffirms the persistent challenges faced by autistic individuals during the transition to adulthood (Wisner-Carlson et al., 2020). However, the appearance of newer themes such as "self-determination," "social skills," and "higher education" indicates a growing recognition of the multifaceted nature of transition. These emerging directions suggest a societal and scholarly shift toward inclusive practices that extend beyond basic service provision to encompass empowerment, community participation, and lifelong developmental support.

Despite these developments, certain blind spots remain underexplored. Research in low- and middle-income countries, particularly in Southeast Asia, is sparse, limiting understanding of how cultural norms, policy environments, and resource constraints shape transition outcomes. Additionally, there is limited focus on intersectional factors—such as gender, socioeconomic status, or co-occurring conditions—that may compound transition challenges. The lived experiences of autistic individuals in rural or underserved areas also remain largely absent from the literature, underscoring the need for geographically and demographically diverse perspectives. Collectively, these findings suggest that

the field is gradually embracing a more holistic approach to autism transitions — one that integrates medical, social, educational, and policy-related dimensions. Moving forward, it will be essential for future research to foster multidisciplinary collaborations and develop culturally responsive, sustainable transition frameworks. Such efforts will not only improve individual outcomes but also contribute to building more inclusive and equitable systems of care for autistic individuals worldwide.

4.3. Research Question 3: What are the global citation trends in research on transitional issues in autism, and which countries demonstrate the most significant academic influence?

Figure 3 highlights the citation analysis by country, offering a clearer perspective on the global distribution of scholarly influence within autism transition research. Out of the 43 countries represented in the dataset, only four met the minimum citation threshold for inclusion, pointing to a concentration of impactful research within a limited number of nations. Visualization, produced using VOS viewer, maps citation relationships at the country level and reveals distinct patterns of influence.

Countries such as the United States, United Kingdom, Canada, and Australia (as in Figure 3) stand out as leading contributors—not only in terms of publication output but also in citation impact—underscoring their significant role in shaping the intellectual direction of the field. This concentration reflects the advantages held by nations with established research infrastructures and access to greater resources. Conversely, the limited citation visibility of many other countries highlights ongoing disparities in global academic recognition, emphasizing the need for more equitable dissemination and acknowledgment of diverse research contributions, particularly from underrepresented regions.

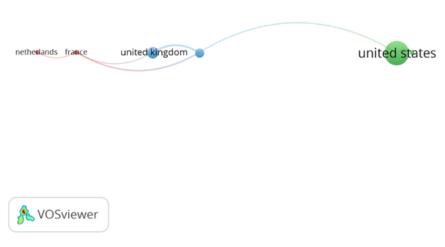


Figure 3: Citation at the country level (maximum number of countries per document: 25)

The analysis of Scopus data confirms that the United States holds a central and dominant position in the global citation landscape, indicating its significant influence on scholarly discourse in autism transition studies. This leadership is attributed to its well-established research infrastructure, access to substantial funding resources, and the presence of numerous specialized autism research centers. The volume and impact of United States based publications have enabled it to shape research priorities and inform policy development at both national and international levels. These findings are consistent with previous bibliometric investigations, which have consistently identified the United States as the foremost contributor to autism research and a leading driver of global intervention strategies (Jiang et al., 2023).

Beyond the United States, the United Kingdom, Canada, and Australia emerge as influential contributors, as evidenced by their high citation counts and dense interconnectivity within the citation network. These countries have led several cross-institutional initiatives focused on autism transitions, particularly in the areas of education-to-employment pathways, postsecondary inclusion, and independent living supports for individuals on the spectrum. Their academic influence reflects not only the quantity of research output but also the depth of their collaborative ties, which amplify their contributions across the international research community. The citation patterns observed mirror those reported in other bibliometric analyses, reinforcing the roles of these nations as key architects of autism policy and research infrastructure (Jiang et al., 2023). Their work continues to inform the development of evidence-based practices and model programs implemented around the world.

While citation impact remains heavily concentrated in Western nations, the data also highlight a notable rise in contributions from emerging economies, particularly China and India. Though these countries currently lag behind their Western counterparts in terms of total citations, their growing presence in literature signals a broader shift in the global research landscape. Increased publication output from these regions reflects heightened national investment in autism awareness, diagnosis, and intervention infrastructure. More importantly, it marks an evolution toward a more geographically diverse and inclusive research environment. As developing countries expand their academic visibility, they bring valuable regional perspectives and culturally informed approaches to the field.

This trend aligns with broader bibliometric observations across scientific disciplines. Zhu and Liu (2020) identified similar shifts in research productivity from non-Western countries, noting the increasing use of international bibliographic databases such as Scopus and Web of Science by Asian scholars. Their analysis also underscored ongoing challenges such as language barriers, limited funding, and systemic publication biases that continue to restrict international visibility and collaboration. Despite these challenges, the upward trajectory of autism-related research in China, India, and other developing nations suggests that the field is becoming increasingly diversified in scope and authorship.

To ensure the equitable development of global transition models for autistic individuals, it is essential to promote cross-regional research partnerships, expand funding opportunities, and support multilingual and culturally responsive dissemination practices. Encouraging interdisciplinary collaboration that spans both high-income and low-to middle-income countries will strengthen the transferability and contextual relevance of research findings. This global engagement is critical for the development of inclusive, flexible, and effective transition policies that can accommodate the diverse social, educational, and economic contexts in which autistic individuals live and learn.

4.4. Research Question 4: What does bibliographic coupling reveal about the collaborative research trends and shared references among countries studying transitional issues in autism?

Bibliographic coupling analysis offers a valuable lens through which to understand the intellectual linkages and collaborative patterns across countries in the field of autism transition research. As visualized in Figure 4, which presents the bibliographic coupling of countries using VOSviewer and Scopus data, only 8 out of the 43 countries analyzed met the inclusion threshold (with a maximum of 25 countries per document). This indicates that while global engagement exists, only a subset of nations exhibits strong interconnectedness through shared references.

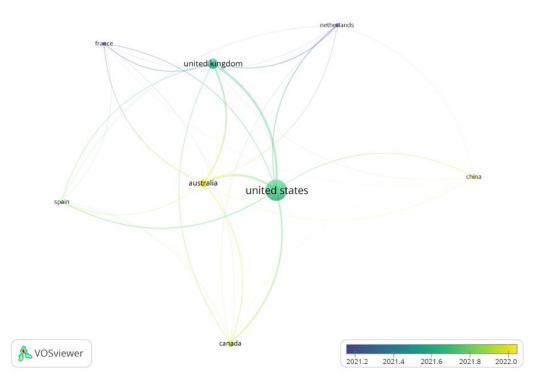


Figure 4: Bibliographic coupling by countries. Of the 43 countries, 8 meet the threshold (maximum number of countries per document: 25)

The United States emerges as the most central and densely connected node in the network, underscoring its dominant role in advancing research on transitional issues in autism. Closely following are the United Kingdom, Australia, and Canada—countries that demonstrate high bibliographic coupling strength. This pattern suggests a robust exchange of knowledge and mutual citation practices, pointing to a well-integrated research ecosystem. These trends align with broader bibliometric findings that highlight the leadership of high-income countries in autism research, supported by advanced funding mechanisms, established institutional infrastructures, and dedicated autism research centers (Jiang et al., 2023). The high degree of coupling among these nations reflects not only their collaborative ethos but also the shared policy frameworks and intervention models that influence transition practices for individuals with ASD.

Beyond these dominant Western contributors, the bibliographic coupling map reveals growing involvement from countries such as China, Spain, France, and the Netherlands. Although these nations do not yet exhibit the same level of coupling strength as the U.S. and U.K., their increasing presence signals a meaningful shift toward broader international participation in autism transition scholarship. China's rising contribution, for instance, reflects national initiatives to enhance autism awareness and expand research infrastructure (Jiang et al., 2023).

Despite challenges such as language barriers, funding constraints, and limited indexing in global databases, several non-English-speaking countries are progressively aligning their research agendas with international trends (Zhu & Liu, 2020). Nonetheless, the comparatively lower coupling strength indicates that much of this research remains localized and less integrated into mainstream global discourse. This aligns with previous bibliometric analyses showing that autism research remains concentrated in the Global North—particularly in the U.S. and Western Europe—while Latin America, Africa, and parts of Asia remain underrepresented (Glänzel & Schubert, 2020; Sweileh, 2021).

The observed coupling patterns highlight the need to strengthen international research partnerships to ensure that autism transition interventions are globally relevant and culturally adaptable. While high-income countries maintain leadership in research output and collaboration, the increasing engagement of Asian and European nations points toward a gradually diversifying research landscape (Lyu et al., 2024; Sweileh et al., 2016). For emerging countries, strategies to enhance bibliographic integration could include fostering cross-border research networks, participating in global autism research consortia, and increasing contributions to open-access platforms for wider visibility.

Investments in researcher training on bibliometric tools, systematic review methodologies, and English-language academic writing could also help bridge linguistic and technical gaps. Additionally, incentivizing joint publications with established research hubs can accelerate integration into global citation networks. By implementing these measures, emerging countries can strengthen

their presence in international autism scholarship, contributing to more equitable, culturally responsive, and globally informed transition policies for individuals with ASD.

4.5. Research Question 5: What are the most influential journals contributing to research on transitional issues in autism, as identified through co-citation analysis?

The co-citation analysis, as visualized in Figure 5, provides critical insight into the intellectual structure of autism transition research by identifying the most influential scholarly sources based on citation frequency. Out of 4,307 cited sources, 53 met the minimum threshold of 20 citations, highlighting a concentrated core of journals that shape the field.

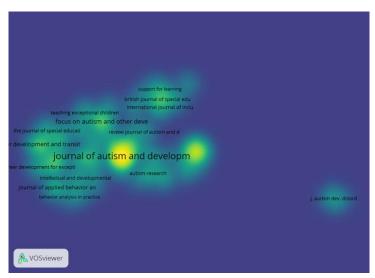


Figure 5: Co-citation by cited sources. Of the 4307 sources, 53 meet the threshold (Minimum number of citations of a source: 20)

Foremost among these is the Journal of Autism and Developmental Disorders (JADD), which emerges as the most frequently co-cited source. This reinforces JADD's status as a foundational journal in autism research, particularly on developmental trajectories, early intervention strategies, and the challenges of life transitions for individuals with ASD. Its centrality in the co-citation network aligns with prior bibliometric analyses that consistently identify it as one of the most cited and authoritative sources in the field (Jiang et al., 2023). In parallel, Focus on Autism and Other Developmental Disabilities and Autism Research also rank highly in co-citation frequency, reflecting a growing emphasis on neurodevelopment, evidence-based interventions, and policy considerations within autism scholarship (Lyu et al., 2024).

Beyond these core sources, the network reveals notable secondary clusters of specialized journals such as the Journal of Applied Behavior Analysis and the British Journal of Special Education. Their prominence highlights the significant role of applied behavioral science and special education in shaping autism transition discourse. This trend mirrors earlier bibliometric studies showing that autism transition research often intersects with inclusive education, behavioral

interventions, and vocational training (Sweileh et al., 2016). The presence of journals like the International Journal of Inclusive Education and Teaching Exceptional Children further reinforces the field's interdisciplinary nature, where education, psychology, and community-based supports converge to address the complex needs of individuals with ASD.

This interdisciplinary orientation is validated by intervention studies such as the COMPASS randomized controlled trial, which underscore the value of cross-disciplinary collaboration—particularly among educators, psychologists, and therapists—in enhancing transition outcomes (Ruble et al., 2018). The integration of educational, clinical, and behavioral perspectives reflects a maturing field that increasingly acknowledges the systemic support necessary for successful life transitions.

A particularly noteworthy finding is the partial separation of JADD from other influential journals such as Autism Research and the Review Journal of Autism and Developmental Disorders. This separation suggests an evolving research ecosystem in which newer or more specialized journals are gaining influence in autism transition literature. Recent bibliometric studies also identify clusters with a biological and genetic focus, signalling an increased emphasis on neurocognitive mechanisms within transition research (Lyu et al., 2024). These developments underscore the growing diversity of autism scholarships and highlight the need for greater integration across education, healthcare, and behavioral science.

However, an evaluation of the journal mix indicates that clinical and medical outlets remain dominant, with educational journals forming a substantial but secondary presence. Policy-oriented journals, in contrast, are comparatively underrepresented, which may limit the translation of research findings into systemic or legislative change. While established journals like JADD have a demonstrable impact on both policy and practice, emerging sources often have less reach in shaping large-scale reforms. This imbalance suggests that diversifying publication outlets—and increasing the visibility of policy-focused platforms—could help bridge the gap between research insights and actionable policy development.

In sum, the co-citation analysis affirms the influence of longstanding journals while revealing a more diversified and interdisciplinary research landscape. As autism transition studies continue to expand, a balanced engagement across clinical, educational, and policy-oriented journals will be essential to developing holistic, inclusive, and culturally responsive approaches to supporting individuals with ASD across the lifespan.

4.6. Research Question 6: What do the co-citation relationships among authors reveal about the collaboration and intellectual foundations of autism transition research?

To answer sixth research question in this study, Figure 6 sheds light on the intellectual foundations of autism transition research through a co-citation analysis, which identifies authors frequently cited together, thereby revealing

shared theoretical influence and scholarly alignment. Out of 18,882 authors examined, 103 met the minimum citation threshold, forming a well-defined network of interconnected contributors. This dense co-citation network highlights key scholars whose work has shaped the field's conceptual and methodological frameworks. The clustering of frequently co-cited authors suggests the presence of influential research traditions and schools of thought that continue to inform current studies on autism transitions. By uncovering these foundational linkages, the analysis provides deeper insight into how knowledge in this area has evolved, and which intellectual contributions continue to guide both emerging research and practical applications.

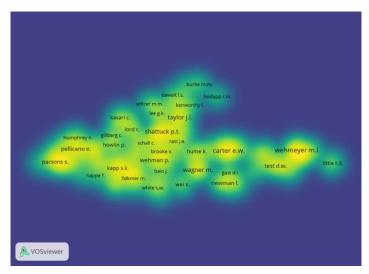


Figure 6: Co-citation by cited authors. Of the 18882 authors, 103 meet the threshold (Minimum number of citations of a source: 20)

At the core of this network are highly co-cited scholars such as Taylor J.L., Shattuck P.T., Wehman P., Carter E.W., and Wehmeyer M.L., whose collective work has significantly shaped the field. These authors are renowned for their contributions to key domains including postsecondary education, employment readiness, independent living, and social integration for individuals with ASD.

Their co-citation clustering reflects the presence of well-defined research domains transition planning, vocational training, and self-determination programs which are critical pillars in supporting autistic individuals as they navigate life transitions. This thematic clustering was identified through co-citation analysis based on bibliometric methods (Donthu et al., 2021). The frequency with which these authors are cited together signals their central role in informing evidence-based practices, policies, and intervention models in autism transition research.

In addition to these central figures, the network also reveals peripheral yet increasingly influential authors such as Pellicano E., Parsons S., and Kasari C., whose work is situated at the intersection of emerging research priorities. These scholars have contributed substantially to evolving areas such as self-advocacy, participatory research, and the advancement of neurodiversity-informed

perspectives. Unlike the traditional focus on service systems and outcomes, their work emphasizes lived experiences, stakeholder engagement, and inclusive models that prioritize identity-affirming practices. This trend may reflect a paradigm shift in autism transition research—moving away from deficit-oriented approaches toward more individualized, strengths-based strategies that empower autistic individuals in shaping their own life outcomes (Lee et al., 2023; Ruble et al., 2018). The visibility of these authors within the co-citation network underscores the field's growing receptiveness to diverse epistemologies and inclusive methodologies.

Furthermore, the co-citation patterns provide valuable insights into the interdisciplinary nature of autism transition scholarship. Strong citation linkages between autism education specialists and rehabilitation researchers highlight a cross-disciplinary approach that integrates educational, clinical, and social service frameworks. This multidisciplinary foundation is essential, as successful transitions into adulthood often require coordinated support systems that span healthcare, education, vocational training, and community living (Lee et al., 2023).

Compared to other research areas, the field of autism transition demonstrates a notable integration of psychological, pedagogical, and occupational perspectives, as evidenced by the thematic clustering of co-cited authors across disciplines. These interdisciplinary connections enhance the translational value of research findings, enabling practitioners and policymakers to develop holistic and sustainable models of support for autistic individuals across the life course.

In summary, the co-citation analysis not only maps the intellectual roots of autism transition research but also highlights its evolution toward greater inclusivity, interdisciplinarity, and person-centered frameworks. By identifying key contributors and emergent research trajectories, this analysis offers a roadmap for future collaboration, encouraging scholars to bridge disciplinary boundaries and advance globally responsive strategies for supporting autistic individuals in their transitions to adulthood.

5. Limitation and future work

This study is subject to several limitations that warrant consideration. First, it was confined to publications indexed in the Scopus database and written in English, which may have excluded relevant work from other databases or in different languages, thereby limiting the comprehensiveness of the analysis. Second, the thematic cluster interpretations were based on the authors' subjective judgment, which, despite following systematic procedures, may introduce interpretive bias. Third, the temporal scope of this review ended in early 2024, which means potentially significant late-breaking studies were not captured.

Future work should aim to expand coverage by integrating multiple databases and including non-English literature to ensure a more inclusive representation of global scholarship. Employing collaborative coding and multi-researcher validation could strengthen the reliability of thematic interpretations. Additionally, regional or country-specific case studies would be valuable for examining local priorities, particularly in underrepresented low- and middle-income countries. Longitudinal citation analyses could also provide insights into the sustained influence and evolution of research themes, collaborations, and policy impacts over time. Such expansions would deepen the evidence base, enhance cultural applicability, and inform the development of globally relevant, equity-driven transition strategies for autistic individuals.

6. Conclusion

This bibliometric analysis offers a comprehensive synthesis of global research on transitional issues in ASD from 2019 to 2024, based on 243 Scopus-indexed publications. The findings highlight structural, thematic, and collaborative patterns, revealing the dominance of high-income countries such as the United States, United Kingdom, Canada, and Australia, alongside emerging contributions from China, India, and Spain. While diversification is gradually taking place, the predominance of Western perspectives limits the cultural transferability of findings to other contexts.

Thematically, research is concentrated on postsecondary education, employment, and healthcare transitions, with increasing attention to neurodiversity, self-determination, and inclusive education—reflecting a shift toward more person-centered and participatory approaches. Citation trends show the combined influence of long-established scholars and emerging voices advancing identity-affirming and inclusive practices.

The study's theoretical contribution lies in mapping the global structure of ASD transition research, while its practical value is in identifying strategic opportunities for action. Researchers should extend inquiry to underrepresented regions, apply culturally sensitive methodologies, and actively engage autistic voices in the research process. Governments are encouraged to adopt robust transition policies, allocate targeted funding for inclusive education and employment programs, and promote international collaborations that bridge research and practice.

Institutions can support these efforts by embedding structured transition planning into curricula, investing in staff capacity building, and strengthening connections with families, employers, and community networks. Together, these measures can foster more equitable, culturally responsive, and sustainable transition outcomes for autistic individuals worldwide.

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8. References

- Alkattan, A., Albokhadaim, I., Almofti, Y. A., Alrasheed, M., & Kandeel, M. (2025). Evolution and emerging directions in occupational therapy for autism: A bibliometric evaluation of global literature. *International Journal of Innovative Research and Scientific Studies*, 8(3), 3431–3445. https://doi.org/10.53894/ijirss.v8i3.7253
- Asaro-Saddler, K., Hamsho, N., Uzoqova, M., & Ghazali, H. (2025). Understanding of autism and the diagnostic process in Uzbekistan: Mothers' perspectives. *Research and Practice for Persons with Severe Disabilities*. Advance online publication. https://doi.org/10.1177/15407969251343493
- Ayala, K. (2023). LEADERS: A psychoeducational support group for college-bound high school students with autism spectrum disorder (ASD). *Journal of Applied School Psychology*, 39(4), 397–412. https://doi.org/10.1080/15377903.2023.2221201
- Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, 1(1), 377–386. https://doi.org/10.1162/qss_a_00019
- Bauer, K., Morin, K. L., Renz, T. E., III, & Zungu, S. (2022). Autism assessment in lowand middle-income countries: Feasibility and usability of Western tools. *Focus on Autism and Other Developmental Disabilities*, 37(3), 179–188. https://doi.org/10.1177/10883576211073691
- de Lange, S., Muller, D., & Dafkin, C. (2024). Biomedical research on autism in low- and middle-income countries: Considerations from the South African context. *Developing World Bioethics*. Advance online publication. https://doi.org/10.1111/dewb.12446
- Dimachkie Nunnally, A., Nuske, H., Bronstein, B., Castellon, F., Chiappe, J. C., Garcia, C., Hochheimer, S., Lee, H. S., Sparapani, N., Vejnoska, S., Fitzgerald, A. R., Levato, L., Li, J., Jones, F., Shih, W., Iadarola, S., Mandell, D. S., Smith, T., Stahmer, A., Kataoka, S., Kasari, C., & McGhee Hassrick, E. (2024). Social network support is associated with teacher's perceptions of transition planning for their autistic students. *Research in Autism Spectrum Disorders*, 113, Article 102360. https://doi.org/10.1016/j.rasd.2024.102360
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070
- Glänzel, W., & Schubert, A. (2020). Analysing scientific networks through co-authorship. In H. F. Moed (Ed.), *Handbook of bibliometric indicators* (pp. 123–138). Springer. https://doi.org/10.1007/1-4020-2755-9_12
- Jiang, M., Lu, T., Yang, K., Li, X., Zhao, L., Zhang, D., Li, J., & Wang, L. (2023). Autism spectrum disorder research: Knowledge mapping of progress and focus between 2011 and 2022. *Frontiers in Psychiatry*, 14, Article 1096769. https://doi.org/10.3389/fpsyt.2023.1096769
- Kessler, M. M. (1963). Bibliographic coupling between scientific papers. *American Documentation*, 14(1), 10–25. https://doi.org/10.1002/asi.5090140103
- Klein, J., Medina, S., Spath, K. M., Hill, C. A., Li, C., Hwang, I., Olson, K. E., & Chou, C.-C. (2024). A preliminary curriculum to promote social skills via social narratives and app development in youth with autism. *Journal of Special Education Technology*. Advance online publication. https://doi.org/10.1177/01626434241289335
- Leadbitter, K., Buckle, K. L., Ellis, C., & Dekker, M. (2021). Autistic self-advocacy and the neurodiversity movement: Implications for autism early intervention research and practice. *Frontiers in Psychology*, 12, Article 635690. https://doi.org/10.3389/fpsyg.2021.635690

- Lee, H., Lee, G. K., Chun, J., Kuo, H.-J., Curtiss, S. L., & Okyere, C. (2023). Perspectives of autistic emerging adults, parents, and practitioners on the transition to adulthood. *Journal of Child and Family Studies*, 32(3), 938–950. https://doi.org/10.1007/s10826-022-02430-x
- Lyu, K., Zhang, T., Zhao, Y., Wang, L., & Zhang, C. (2024). A bibliometric analysis of autism spectrum disorder signaling pathways research in the past decade. *Frontiers in Psychiatry*, 15, Article 1304916. https://doi.org/10.3389/fpsyt.2024.1304916
- Marvi, R., & Foroudi, M. M. (2023). Bibliometric analysis: Main procedure and guidelines. In *Researching and analysing business: Research methods in practice* (pp. 43–54). Routledge. https://doi.org/10.4324/9781003107774-4
- Narong, D. K., & Hallinger, P. (2023). A keyword co-occurrence analysis of research on service learning: Conceptual foci and emerging research trends. *Education Sciences*, 13(4), Article 339. https://doi.org/10.3390/educsci13040339
- Nageye, A. Y., Jimale, A. D., Abdullahi, M. O., & Ahmed, Y. A. (2024). Emerging trends in data science and big data analytics: A bibliometric analysis. *SSRG International Journal of Electronics and Communication Engineering*, 11(5), 84–98. https://doi.org/10.14445/23488549/IJECE-V11I5P109
- Patra, S., & Kar, S. K. (2021). Autism spectrum disorder in India: A scoping review. *International Review of Psychiatry*, 33(1–2), 81–112. https://doi.org/10.1080/09540261.2020.1761136
- Pellicano, J., Brett, E., & den Houting, J. (2021). COVID-19, social isolation, and the mental health of autistic people: A commentary. *Autism*, 25(7), 1815–1819. https://doi.org/10.1177/13623613211035936
- Riaman, Sukono, Supian, S., & Ismail, N. (2022). Mapping in the topic of mathematical model in paddy agricultural insurance based on bibliometric analysis: A systematic review approach. *Computation*, 10(4), Article 50. https://doi.org/10.3390/computation10040050
- Ruble, L. A., McGrew, J. H., Toland, M. D., Dalrymple, N. J., & Jung, L. A. (2018). Randomized control trial of COMPASS for improving transition outcomes of students with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 48(10), 3586–3595. https://doi.org/10.1007/s10803-018-3623-9
- Small, H. (1973). Co-citation in the scientific literature: A new measure of the relationship between two documents. *Journal of the American Society for Information Science*, 24(4), 265–269. https://doi.org/10.1002/asi.4630240406
- Sweileh, W. M., Al-Jabi, S. W., Sawalha, A. F., & Zyoud, S. H. (2016). Bibliometric profile of the global scientific research on autism spectrum disorders. *SpringerPlus*, *5*, Article 1480. https://doi.org/10.1186/s40064-016-3165-6
- Toaza, B., & Esztergár-Kiss, D. (2024). Automated bibliometric data generation in Python from a bibliographic database. *Software Impacts*, 19, Article 100602. https://doi.org/10.1016/j.simpa.2023.100602
- van Eck, N. J., & Waltman, L. (2017). Citation-based clustering of publications using CitNetExplorer and VOSviewer. *Scientometrics*, 111(2), 1053–1070. https://doi.org/10.1007/s11192-017-2300-7
- Westby, C., Chen, K.-M., Cheng, L., Jithavech, P., & Maroonroge, S. (2024). Autism in Taiwan and Thailand: Influences of culture. *Neuropsychiatric Disease and Treatment*, 20, 1523–1538. https://doi.org/10.2147/NDT.S462864
- Wisner-Carlson, R., Uram, S., & Flis, T. (2020). The transition to adulthood for young people with autism spectrum disorder. *Child and Adolescent Psychiatric Clinics of North America*, 29(2), 345–358. https://doi.org/10.1016/j.chc.2019.12.002
- World Health Organization. (2023, March 27). Autism spectrum disorders. https://www.who.int/news-room/fact-sheets/detail/autism-spectrum-disorders

- Zakirova-Engstrand, R., & Yakubova, G. (2024). A scoping review of autism research conducted in Central Asia: Knowledge gaps and research priorities. *Autism*, 28(2), 342–354. https://doi.org/10.1177/13623613231170553
- Zhu, J., & Liu, W. (2020). A tale of two databases: The use of Web of Science and Scopus in academic papers. *Scientometrics*, 123(1), 321–335. https://doi.org/10.1007/s11192-020-03387-8