

Interdisciplinary Perspectives on Ethnic Studies: Analyzing Scholarly Contributions and Public Engagement

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Abstract: This study provides a comprehensive analysis of ethnic groups research using a mixed-methods approach, integrating bibliometric analysis, content analysis, and Altmetric Attention Score (AAS) evaluation. The purpose is to identify dominant trends, emerging themes, and the societal impact of research on racial and ethnic disparities. The dataset from Scopus encompasses 16,615 publications spanning nearly eight decades, analyzed through performance metrics, citation patterns, and co-occurrence networks. Findings reveal an increasing scholarly focus on racial and ethnic disparities in healthcare, education, and socioeconomic outcomes, with significant contributions from interdisciplinary research. Content analysis of highly cited works highlights key themes such as intergroup contact theory, emotion regulation, implicit bias, and acculturation models. The AAS evaluation further underscores the broader societal influence of ethnic research beyond traditional academic citations. The study's results emphasize the need for culturally sensitive policies and interdisciplinary collaborations to address persisting disparities. By leveraging advanced bibliometric tools and alternative impact metrics, this research offers actionable insights for policymakers, educators, and scholars, guiding future inquiries into the evolving landscape of ethnic groups research.

Keywords: Ethnic disparities, bibliometric analysis, content analysis, Altmetric Attention Score, interdisciplinary research, cultural policy

In recent decades, a growing body of research has illuminated the complex landscape of racial and ethnic disparities across various domains, highlighting the critical need for culturally informed and nuanced research methodologies. These disparities persist in key areas such as education, healthcare, and socioeconomic outcomes, as underscored by Sue's foundational work in 1978, which advocated for tailored research approaches that incorporate the distinct experiences of ethnic minority groups (Sue, 1978). This call for methodological

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rigor and collaboration with minority researchers sets the stage for current research initiatives to bridge existing gaps and drive systemic change.

The demographic shifts in the United States over the last fifty years have added complexity to understanding these disparities (Sandefur et al., 2001). With the increasing population diversity, there is a pressing need to re-evaluate how these changes impact socioeconomic metrics, particularly employment and compensation. Nkonya and Pender (2025) provide a contemporary analysis revealing profound disparities in employment benefits and compensation across racial lines, warranting a closer look at the roots of these inequities and the development of comprehensive strategies to address them.

Healthcare disparities remain a focal point globally and nationally, illustrating how race and ethnicity intersect with health outcomes. Recent studies by Swain et al. (2025) and Nerlekar et al. (2025) reveal significant disparities in medical practices and cardiovascular risk assessments among ethnic groups. These findings underscore the necessity for culturally specific diagnostic criteria and healthcare practices that accommodate the needs of diverse populations. In a related international perspective, Sawadogo et al. (2025) illustrate how resource scarcity and ecological challenges in Burkina Faso require community-engaged solutions, further reinforcing that ethnic disparities are not confined to any single geographic locale.

Several theoretical perspectives underpin the study of ethnic disparities and interdisciplinary ethnic studies. Intergroup Contact Theory (Allport, 1954), for example, posits that positive interactions between members of different social groups under appropriate conditions can reduce prejudice—a theory that has been extensively validated in ethnic research (Pettigrew & Tropp, 2006). Additionally, Critical Race Theory emphasizes the role of structural racism and institutional power in perpetuating racial inequalities (Delgado & Stefancic, 2017), serving as a foundation for analyzing policy impacts and public discourse. Acculturation Theory, particularly in its bidimensional form, provides insight into how individuals negotiate identity and cultural affiliation in multicultural settings (Berry, 1997; Ryder et al., 2000). These frameworks inform the academic understanding of ethnic group dynamics, offering critical lenses through which disparities are conceptualized and addressed.

The pervasive nature of these disparities is echoed in educational and mental health domains. For instance, the systemic inequities in education and employment starkly affect vocational opportunities and mental health service utilization among minority groups. Zhu et al. (2019) and Turner et al. (2016) emphasize the importance of culturally specific interventions in vocational research and mental health service delivery. These challenges are further exacerbated by the COVID-19 pandemic, which disproportionately impacted ethnic minorities, as demonstrated in studies by Harris and Brunsdon (2021) and Wong et al. (2021), highlighting the urgent need for equitable public health policies.

Recent scholarship on ethnic studies has highlighted its potential to transform educational outcomes, cultural understanding, and equity frameworks in diverse societies. For example, empirical evidence demonstrates that ethnic studies course can improve long-term academic engagement and attainment among marginalized students (Bonilla et al., 2021), while theoretical perspectives emphasize their role as a decolonial and transdisciplinary project that challenges Eurocentric epistemologies (Maldonado-Torres, 2019). Similarly, research highlights its importance in fostering critical consciousness and civic participation among younger learners (Nojan, 2020) and in reshaping curricula to counter scripted and standardized approaches (Valdez, 2020). Yet, despite these contributions, the literature remains fragmented: prior studies often isolate either outcomes, theory, or pedagogy, but rarely integrate them with broader educational policies and practices. In addition, Šlebir and Zupančič (2024) systematically reviews the factors contributing to ethnic distance, showing how social, cultural,

political, psychological, and spatial dynamics shape perceptions of separation between groups. Although not an intervention study, it offers valuable insights for ethnic studies by highlighting underlying structural and identity-based influences that can inform curriculum, pedagogy, and policy aimed at reducing intergroup divides. Moreover, debates persist regarding the scalability and sustainability of ethnic studies within mainstream schooling systems, with limited attention to how such approaches inform institutional reforms (Tintiangco-Cubales & Duncan-Andrade, 2021).

Collectively, these studies underscore the persistence of racial and ethnic disparities and highlight the need for multidimensional, culturally informed research and policy frameworks. As the research landscape continues to evolve, the imperative remains: to craft inclusive policies and interventions that adequately address the diversity and distinct needs of ethnic minority communities worldwide. This collective endeavor, informed by interdisciplinary collaboration and methodological precision, aims to dismantle systemic inequities and foster a more equitable society.

This study employs a mixed-methods approach to provide a holistic analysis of ethnic groups research, integrating quantitative analyses with qualitative insights derived from content analysis and the Altmetric Attention Score (AAS) (Priem et al., 2012). By leveraging Altmetric, which tracks a research work's societal impact through diverse channels such as policy influence and public engagement, researchers gain valuable insights into their work's global dissemination and influence (Richardson et al., 2021). This comprehensive methodological framework facilitates a nuanced understanding of the complex phenomena under investigation, encompassing academic and societal impacts.

The research design is organized into three analytical stages: bibliometric analysis, content analysis, and evaluation via AAS. Bibliometric analysis employs quantitative statistical tools to examine publications within the ethnic groups research domain, revealing critical insights into the field's characteristics and evolution, including leading publications, key contributors, and prevalent themes (Aria & Cuccurullo, 2017). Content analysis, a qualitative method, systematically examines textual data to identify patterns and trends in top-cited ethnic groups research, offering in-depth insights into methodological diversity and the field's contributions. The third stage, evaluating AAS, measures scholarly works' impact and public engagement, expanding beyond traditional citation metrics by analyzing attention across news outlets, blogs, social media, and policy documents. This combination provides a comprehensive overview of how ethnic groups research studies resonate beyond academia.

By integrating these methods, the study aims to deliver a holistic overview of the current landscape and future trajectory of ethnic groups research. The investigation addresses several research questions, such as exploring dominant trends and emerging themes, assessing contributions by authors, journals, and institutions, and comparing traditional and alternative impact metrics. This approach offers actionable insights for researchers, practitioners, policymakers, and educators, guiding future academic and practical efforts in the field. The findings, presented in a structured format, ensure clarity and coherence, culminating in a roadmap for advancing knowledge and identifying opportunities for future research. This comprehensive examination not only illuminates the current state of ethnic groups research but also paves the way for ongoing advancements and understanding in this critical field.

While earlier works provide strong theoretical grounding for understanding ethnic disparities (e.g., Sue, 1978; Allport, 1954; Delgado & Stefancic, 2017), more recent scholarship has expanded the conversation by linking ethnic studies to measurable educational and health outcomes. For instance, recent analyses of ethnic disproportionality in special education and teaching workforce representation show persistent structural inequities (Cooc & Kiru, 2018; Demie & Huat See, 2022). In healthcare, disparities remain critical, with studies showing

disproportionate expenditures and risks among ethnic minorities even in the last five years (Spector et al., 2020; Swain et al., 2025; Nerlekar et al., 2025). Policy-focused works have highlighted the urgent need for culturally sensitive approaches, particularly during crises such as COVID-19, where minority populations were disproportionately affected (Harris & Brunson, 2021; Wong et al., 2021). Recent methodological advancements have enriched the field, such as the development of qualitative frameworks for studying language and cultural preservation within ethnic communities, which emphasize participatory and culturally sensitive research practices (Park, 2025). From a practice perspective, integrating ethnic studies into school curricula has been shown to improve academic performance and engagement among marginalized youth, while simultaneously challenging Eurocentric norms in pedagogy (Bonilla et al., 2021; Maldonado-Torres, 2019). However, gaps remain in connecting these academic, policy, and practice strands into a unified framework for addressing disparities. This study, therefore, explores how ethnic studies research—analyzed through bibliometric, content, and altmetric perspectives—can reveal dominant trends, emerging themes, and societal impacts, contributing to more integrated frameworks for policy and practice.

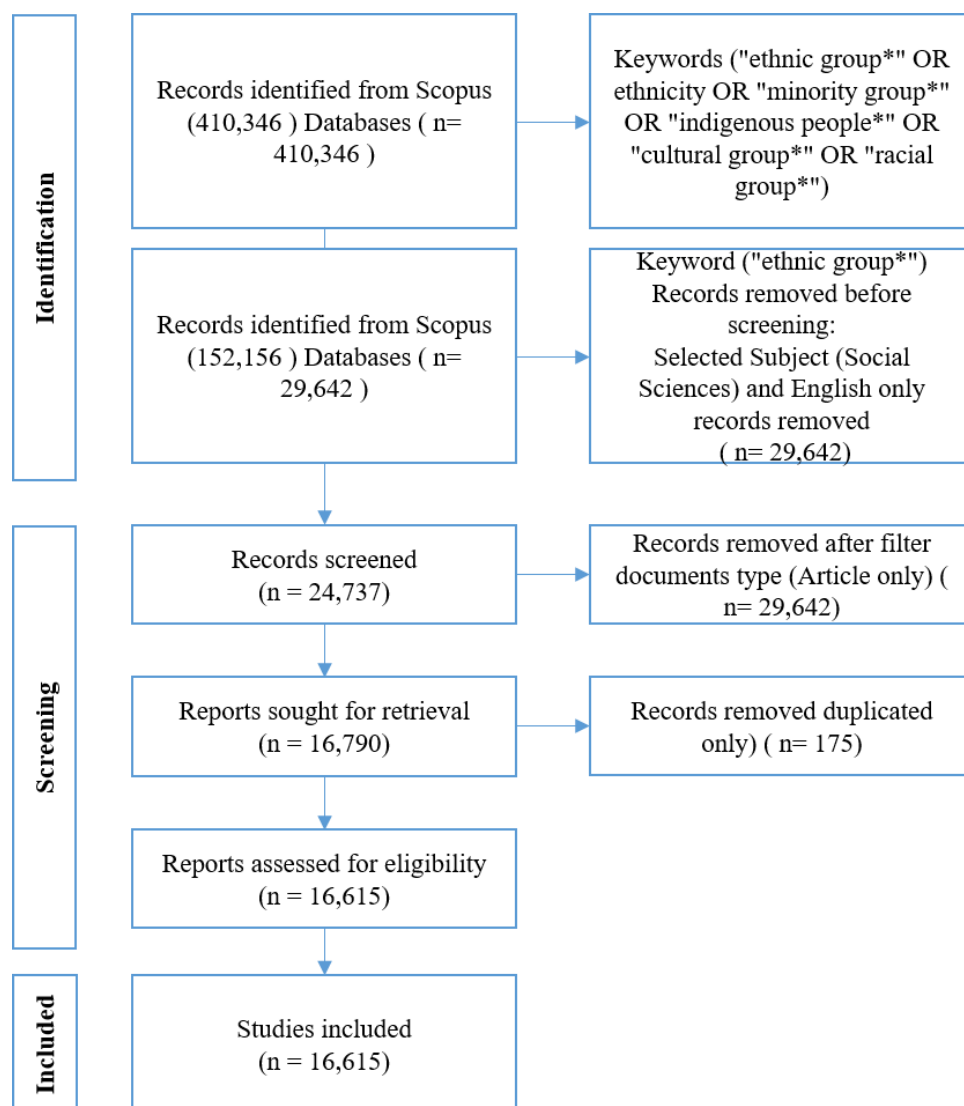
Methodology

The data for this research was meticulously obtained from Scopus, one esteemed and globally recognized database, ensuring a robust foundation for addressing the research question and producing reliable findings (Jamshed & Majeed, 2022; Gaviria-Marin et al., 2019; Mongeon & Paul-Hus, 2016; Zupic & Čater, 2015; Griffith et al., 1974). Renowned for their extensive and authoritative collections of citation data and abstracts, these databases are pivotal to academic research. They rank among the largest globally, offering a vast, multidisciplinary repository of peer-reviewed content spanning science, technology, medicine, social sciences, and the arts and humanities. By leveraging these resources, the study upholds high academic rigor and integrity standards, drawing on diverse and credible sources from international scholarly communities to enhance the reliability and depth of its findings.

The data were collected from Scopus, a comprehensive and multidisciplinary database known for its high-quality, peer-reviewed content. The search was conducted using the terms: ("ethnic group*" OR ethnicity OR "minority group*" OR "indigenous people*" OR "cultural group*" OR "racial group*"), focusing on titles, abstracts, and keywords. This yielded 410,346 initial records. To enhance focus and consistency, we refined the query using the term "ethnic group*" in combination with PRISMA-based filtering (Moher et al., 2009; Liberati et al., 2009; Page et al., 2021), resulting in a final dataset of 16,615 publications from 1946 to 2025.

In Phase Two, the data-cleaning method proposed by Wang et al. (2020) was employed, which included integrating author keywords, country-specific data, and the overall dataset. Subsequently, the merged dataset was refined for consistency and accuracy, producing a more cohesive and comprehensive analysis (Chansanam et al., 2022). This meticulous process significantly strengthened the quality of the bibliometric analysis, as illustrated in Figure 1.

Figure 1. PRISMA flow diagram



Inclusion criteria comprised peer-reviewed journal articles and conference papers with complete bibliographic metadata. Exclusion criteria involved non-English works, incomplete records, and non-scholarly content. The dataset spans diverse disciplines, authorships, and global affiliations, enhancing the representativeness and generalizability of our findings.

For analysis, bibliometric data were cleaned and prepared using Microsoft Excel, then imported into RStudio (Biblioshiny) for performance analysis, co-word and co-citation mapping, and thematic evolution. The content analysis focused on the top 10 most-cited papers, systematically coded using a structured framework (Camprubí & Coromina, 2016). For Altmetric Attention Score (AAS), we used the official Altmetric Bookmarklet tool and manually collected engagement indicators across platforms such as Twitter, policy documents, blogs, and Wikipedia, ensuring consistency and accuracy.

The size and diversity of the dataset, combined with mixed methods and a global focus, provide robust evidence to support the study's conclusions. The triangulation of bibliometric, qualitative, and altmetric methods reinforces the validity and depth of our insights.

Ethical Considerations

This research did not include human participants, personal information, or experimental procedures that might raise ethical concerns. It relies exclusively on the collection and analysis of secondary data and scholarly literature. As such, no ethical approval from an institutional review board was required. Nonetheless, we maintained strict adherence to recognized academic ethics by ensuring proper attribution of sources, truthful reporting of results, and avoidance of plagiarism or data falsification.

Data Analysis

This study employed a three-stage methodological approach to comprehensively analyze the ethnic groups research, incorporating bibliometric analysis, content analysis, and Altmetric Attention Score (AAS) evaluation. This systematic approach aimed to provide a multidimensional understanding of the academic, methodological, and societal impacts within this research domain.

(1) Stage I: Bibliometric Analysis

Bibliometric analysis, a quantitative technique used to evaluate the scientific output of a field, is essential for tracking its development and identifying emerging trends (García-León et al., 2021). This stage involved multiple steps, beginning with the collection and preparation of bibliographic data from reputable databases, followed by a rigorous examination and correction process to ensure consistency in author name expressions and eliminate inaccuracies (Van Eck et al., 2010). The descriptive analysis provided a comprehensive summary of the ethnic groups research landscape, focusing on publication metrics, geographical distribution, author collaborations, leading institutions, and influential journals. Subsequently, advanced bibliometric methods such as performance analysis, citation analysis, co-citation analysis, and co-word analysis were applied. Data cleaning and processing were conducted using Microsoft Excel, while visualization tools, including the BiblioShiny app in RStudio, were employed to generate bibliometric indicators and maps, revealing relationships between concepts, geographical research distribution, and thematic foci (Aria & Cuccurullo, 2017). This combination of quantitative tools provided visually enriched insights into the field's structure and dynamics, contributing to a deeper understanding of its development and evolution.

(2) Stage II: Content Analysis

Building on the insights gained from the bibliometric analysis, the second stage involved an in-depth evaluation of the top ten most-cited research articles. The process commenced with the selection of the ten articles with the highest citation counts from the dataset for detailed evaluation. A systematic pattern of observation was used to analyze the content of these articles (Bruijnzeel et al., 2022), focusing on their objectives, methods, tools, and findings (Camprubí & Coromina, 2016; Chansanam et al., 2022). As this stage did not involve human subjects, it did not require Institutional Review Board (IRB) approval (Putri et al., 2020; Thelwall et al., 2013; Barbic et al., 2016; Barakat et al., 2018; Huang et al., 2018; Lee et al., 2025).

(3) Stage III: Altmetric Attention Score (AAS) Analysis

The final stage aimed to assess the societal impact of the top-cited papers by incorporating Altmetric Attention Scores. This process involved the integration of the Altmetric Bookmarklet tool into the Chrome browser (Altmetric, n.d.). Each target paper was accessed through the browser, and the "Altmetric It" option was selected to retrieve the AAS values from the Altmetric doughnut visualization. This method ensured the consistent and accurate retrieval of AAS values, aligning with the study's data collection framework.

Results

Bibliometric Analysis

Overview of Publication Patterns

This section analyzes and presents the findings related to ethnic groups research based on the systematic review. It offers insights into key aspects of ethnic groups research, identifies major trends in the research, and highlights potential gaps for future exploration. Through a comprehensive evaluation of the literature, this section aims to deepen the understanding of ethnic groups research and its evolving role, providing guidance for future research directions and informing policy considerations.

Figure 2. Overview Information

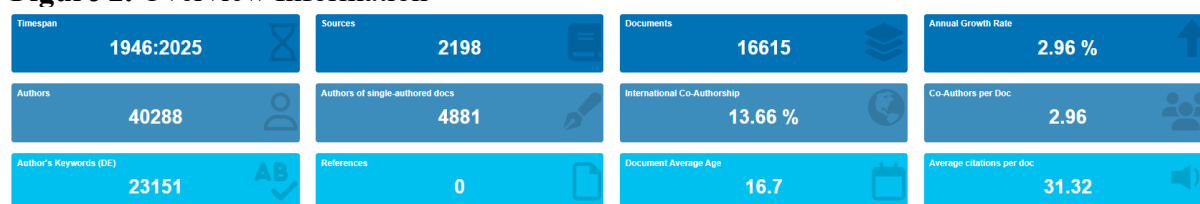
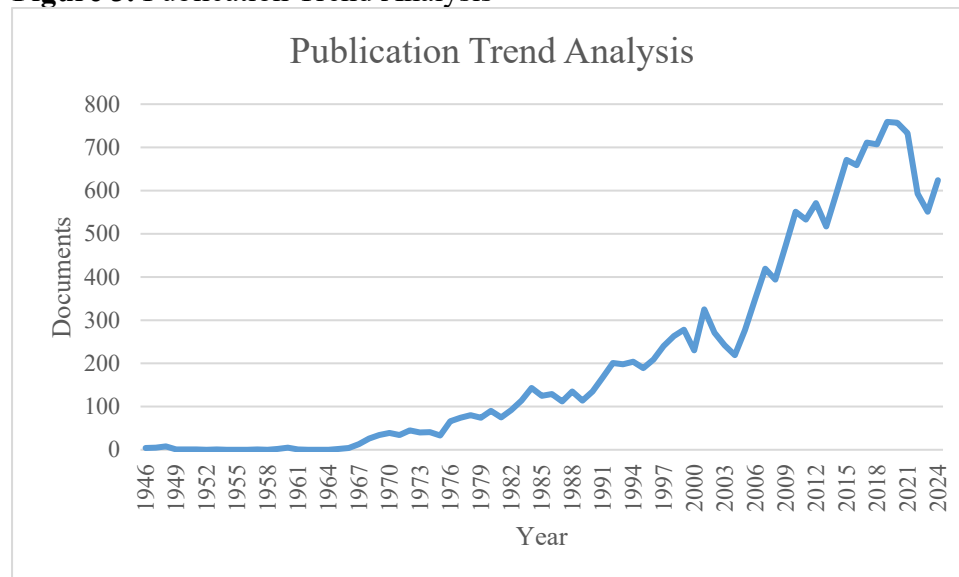


Figure 2 presents a comprehensive statistical overview of an academic corpus spanning from 1946 to 2025. The dataset comprises 16,615 documents from 2,198 sources, authored by 40,288 researchers, and reflects an annual publication growth rate of 2.96%. Notably, 4,881 documents are single-authored, while the international co-authorship rate stands at 13.66%, with an average of 2.96 co-authors per document. The corpus contains 23,151 distinct author keywords (DE), though interestingly shows zero references recorded. The documents have an average age of 16.7 years and receive considerable scholarly attention, averaging 31.32 citations per document. This dashboard effectively quantifies the collection's scope, authorship patterns, and scholarly impact, providing valuable metrics for bibliometric analysis of this nearly 80-year academic record.

Figure 3 depicts a distinct pattern of scholarly output over nearly eight decades. Publication numbers remained minimal from the 1940s through the early 1960s, showing only marginal growth. A modest increase began in the late 1960s, with more substantial growth emerging in the late 1970s and early 1980s. The 1990s and early 2000s show steady upward momentum, before a dramatic acceleration occurs around 2006-2009. The period from 2012 to 2018 exhibits particularly rapid growth, peaking at approximately 750 documents around 2021. Notably, the most recent years (2022-2024) display a significant decline before a slight recovery at the end of the period. This visualization effectively captures the long-term

evolution of this publication corpus, highlighting both its exponential growth phase and recent fluctuations.

Figure 3. Publication Trend Analysis



Key Contributors and Institutional Output

Table 1. present the top 10 authors in a publication corpus based on both their total article count and fractionalized contribution. Shervin Assari and the Centers for Disease Control and Prevention (CDC) lead with 33 articles each, though their fractionalized counts differ significantly (19.40 vs. 6.96), suggesting Assari publishes with fewer co-authors. Prevention follows closely with 32 articles (6.82 fractionalized). Notable researchers include Ron Johnston (26 articles, 8.32 fractionalized) and Maykel Verkuyten (25 articles, 10.45 fractionalized). The remaining authors—TJ Mathews, Seth J. Schwartz, Adriana J. Umaña-Taylor, Sandra Graham, and Tiffany Yip—have contributed between 20-21 articles each, with varying degrees of fractionalized authorship ranging from 3.99 to 8.80. The fractionalization metric provides insight into authorship patterns, revealing which scholars tend to publish independently versus collaboratively within this research domain.

Table 1. Most relevant authors

Authors	Articles	Articles Fractionalized
Shervin Assari	33	19.40
Centers for Disease Control and Prevention (CDC)	33	6.96
Ron Johnston	32	6.82
Maykel Verkuyten	26	8.32
T.J. Mathews	25	10.45
Seth J. Schwartz	21	8.80
Adriana J. Umaña-Taylor	21	3.99
Sandra Graham	21	4.29
Tiffany Yip	20	8.40
Shervin Assari	20	8.43

Table 2 presents the top ten institutional affiliations based on article contributions to the research corpus. The University of California system dominates with 898 articles, more than double the output of the second-ranked University of Michigan, Ann Arbor (400 articles). Arizona State University holds the third position with 204 publications, closely followed by Columbia University (196) and the University of Washington, Seattle (194). The middle tier includes the University of Southern California (169) and the University of Minnesota, Twin Cities (165). Rounding out the top ten are California State University (149), Utrecht University from the Netherlands (144), and the University of Oxford from the UK (131). This distribution reveals the prominence of American institutions in this research field, with eight of the top ten affiliations being U.S. universities, alongside one European and one British institution. The significant gap between the leading institution and others suggests the University of California system's substantial investment and expertise in this research domain.

Table 2. Most Relevant Affiliations

Affiliation	Articles
University of California, Berkeley (or other specific campus name, e.g., UCLA)	898
University of Michigan, Ann Arbor	400
Arizona State University	204
Columbia University in the City of New York	196
University of Washington, Seattle	194
University of Southern California (USC)	169
University of Minnesota, Twin Cities	165
California State University, Fullerton (or other specific campus name)	149
Utrecht University	144
University of Oxford	131

Figure 4 illustrates the collaborative relationships between academic institutions, with "University of California" positioned as the central hub in the network. The diagram uses a force-directed layout where nodes (represented by colored circles) indicate individual universities, and connecting lines represent collaborative relationships, likely co-authored publications. Different node colors appear to denote institutional clusters or geographic regions, with blue nodes (including Harvard Medical School, University of Pennsylvania, and Johns Hopkins) forming one prominent cluster, orange nodes (Stanford University, University of North Carolina at Chapel Hill) forming another, and smaller clusters in green, red, and purple representing other collaborative groups. The University of California's central positioning and larger node size indicate its role as the dominant collaborative institution in this research network. The visualization effectively illustrates the complex web of inter-institutional research partnerships, with varying line densities suggesting different strengths of collaborative relationships. This bibliometric representation provides valuable insight into the academic ecosystem surrounding this research domain, highlighting both strong collaborative partnerships and the central importance of the University of California system in facilitating scholarly connections across multiple institutions globally.

Table 3. Most Global Cited Documents

Documents	DOI	TC	TP	NTC
Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: the implicit association test. <i>Journal of personality and social psychology</i> , 74(6), 1464.	10.1037/0022-3514.74.6.1464	8328	297.4 3	103.28
Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. <i>Handbook of emotion regulation</i> , 2, 3-20.	10.1037/0022-3514.85.2.348	7822	340.0 9	92.88
Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. <i>Journal of personality and social psychology</i> , 90(5), 751.	10.1037/0022-3514.90.5.751	6112	305.6 0	87.44
Courtenay, W. H. (2000). Engendering health: A social constructionist examination of men's health beliefs and behaviors. <i>Psychology of men & masculinity</i> , 1(1), 4.	10.1016/S0277-9536(99)00390-1	2905	111.7 3	36.56
Duncan, G. J., Brooks-Gunn, J., & Klebanov, P. K. (1994). Economic deprivation and early childhood development. <i>Child development</i> , 65(2), 296-318.	10.1111/j.1467-8624.1994.tb00752.x	1467	45.84	26.67
Alba, R., & Nee, V. (2014). Rethinking assimilation theory for a new era of immigration 1. In <i>The new immigrant in American society</i> (pp. 2-50). Routledge.	10.2307/2547416	1413	48.72	26.27
Benet-Martínez, V., & John, O. P. (1998). Los Cinco Grandes across cultures and ethnic groups: Multitrait-multimethod analyses of the Big Five in Spanish and English. <i>Journal of personality and social psychology</i> , 75(3), 729.	10.1037/0022-3514.75.3.729	1266	45.21	15.70
Steinberg, L., & Monahan, K. C. (2007). Age differences in resistance to peer influence. <i>Developmental psychology</i> , 43(6), 1531.	10.1037/0012-1649.43.6.1531	1123	59.11	26.24
Kitayama, S., Markus, H. R., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective processes in the construction of the self: self-enhancement in the United States and self-criticism in Japan. <i>Journal of personality and social psychology</i> , 72(6), 1245.	10.1037/0022-3514.72.6.1245	1110	38.28	20.64
Ryder, A. G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. <i>Journal of personality and social psychology</i> , 79(1), 49.	10.1037/0022-3514.79.1.49	1103	42.42	13.88

TC=Total Citations, TP=Total Citations per Year, NTC=Normalized TC

Conceptual and Thematic Structures

The three-field plot in Figure 5 shows connections between three different sets of elements, such as authors, keywords, and journals. The left side of the plot represents one field (e.g., authors), the center represents another (e.g., keywords or topics), and the right side represents the third field (e.g., journals or sources). The plot's lines indicate relationships and flow between elements, with thicker lines representing stronger or more frequent connections. Figure 5 illustrates the interconnectedness between three key study aspects, showing how various authors, topics, and publication outlets are related. The plot reveals clusters of frequently occurring topics and highlights the primary contributors to these research themes. It also identifies the most common journals where related work is published, demonstrating the flow of knowledge within the field. This analysis underscores the collaborative nature of research in this domain and identifies prominent research hubs and focal points in the literature.

Figure 5. Three Field Plot

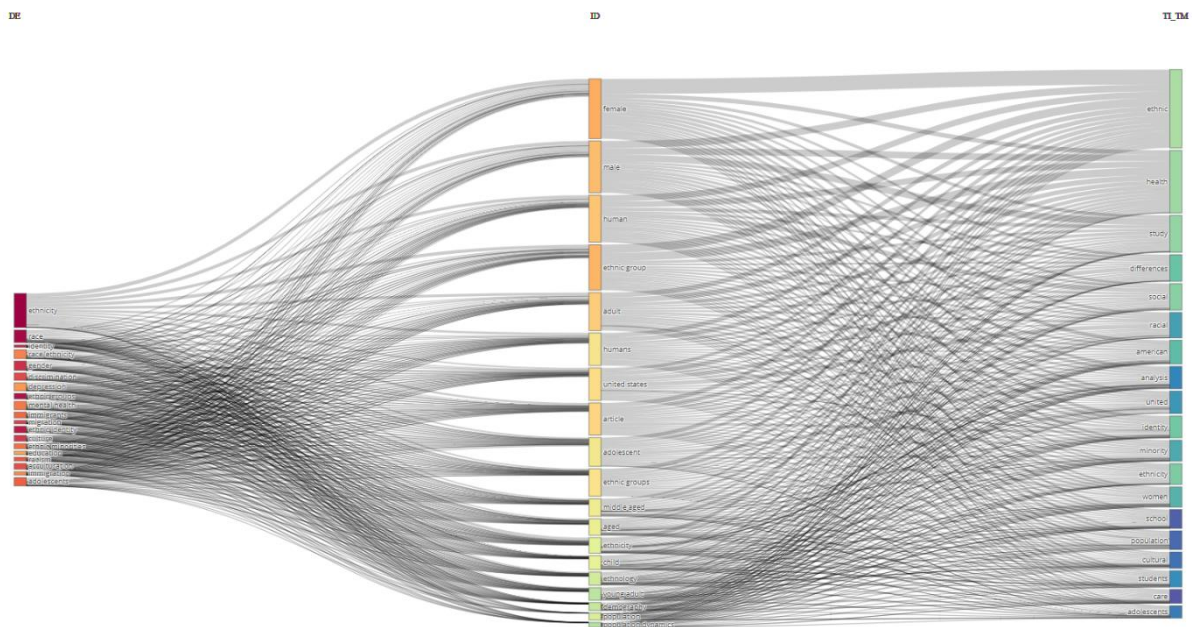


Figure 6 presents the conceptual relationships around the central term "ethnicity" within an academic research context. The graph features two distinct clusters, represented by red nodes in the upper portion and blue nodes in the lower portion, with "ethnicity" positioned prominently at the center as the focal concept. The red cluster appears more densely populated with approximately 20-25 nodes, suggesting a more established or heavily researched thematic area, with visible connections to concepts like "identity," "race," and other social science terminology. The blue cluster, containing roughly 15 nodes, appears more dispersed and likely represents a separate but related research domain or methodological approach. The varying link weights (represented by line thickness) indicate different strengths of association between concepts, with some terms more strongly connected to "ethnicity" than others. This visualization effectively captures the conceptual structure of ethnicity research, revealing how this central construct bridges multiple research subdomains and highlighting the concept's interdisciplinary nature within the scholarly literature. The network structure suggests ethnicity functions as a boundary-spanning concept connecting distinct scholarly traditions or methodological approaches.

Figure 6. Co-occurrence network

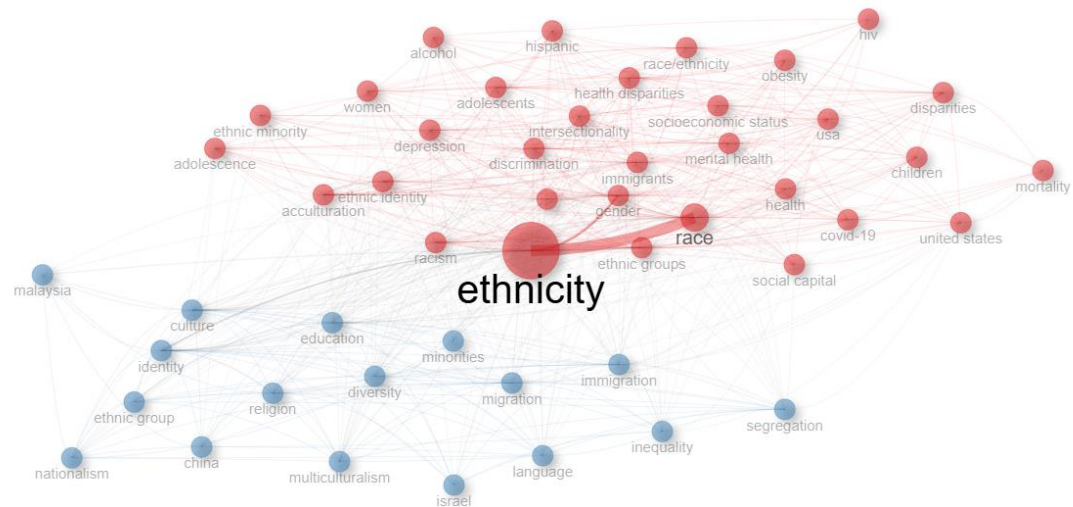


Figure 7 presents a longitudinal analysis of publication history, likely displaying the temporal distribution of research contributions across multiple categories or authors. The visualization employs a horizontal timeline structure where each row represents a specific category or contributor, and horizontal lines indicate publication activity periods. The x-axis represents approximately 20–25 years based on the visible scale markers. A distinctive pattern emerges with blue vertical markers forming a diagonal progression from bottom-left to upper-right, suggesting chronological advancement of key developments or milestones in the field. The density of horizontal lines varies across different rows, indicating uneven publication productivity among different categories or contributors. Some rows display continuous publication activity spanning many years, while others show more sporadic or concentrated patterns. This visualization effectively captures the temporal evolution of the research domain and the relative contribution patterns of different entities, revealing how the field has developed over time and highlighting periods of intensified research activity. The diagonal arrangement of markers suggests a progressive development of research themes or methodological approaches across the observed timeframe.

Figure 8. Thematic Map of e-Government

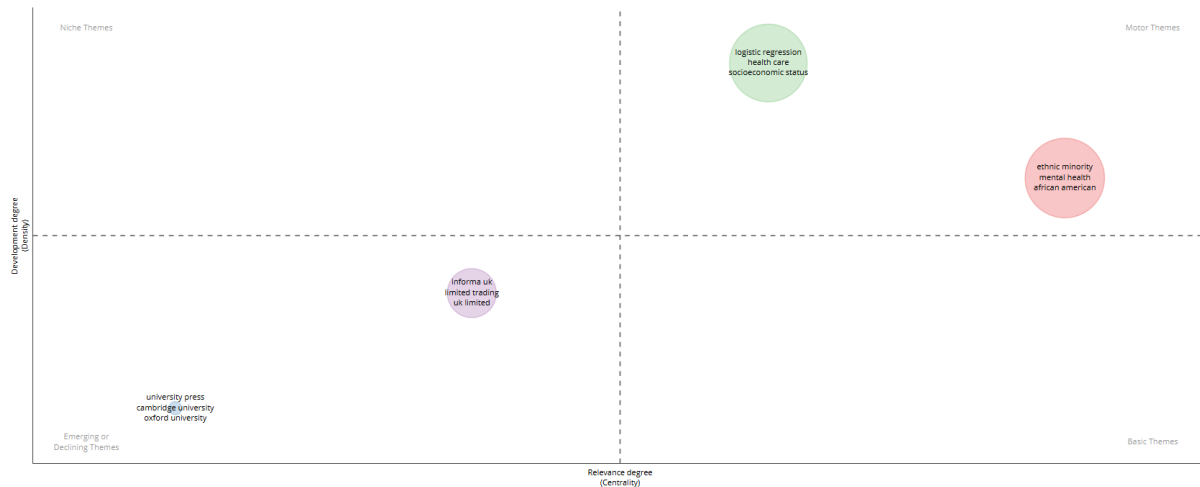


Figure 9 illustrates the thematic evolution in displaying flow distribution between two time periods, 1946-2012 on the left and 2013-2022 on the right. The diagram shows how different categories (represented by colored bands on the left and right sides) connect and transition between these periods. The gray flows in the middle represent the relationships between the categories, with each flow's width indicating the transition's relative magnitude or quantity. The thicker flows suggest stronger relationships between specific categories across the periods. The left side appears to have at least five distinct color-coded categories (orange, pink, red, blue, and purple), while the right side shows similar categorization, adding a green band at the bottom right. Some flows maintain their category association across periods, while others diverge or merge, indicating shifts in distribution or classification between the two timeframes.

Figure 9. Thematic evolution of e-Government

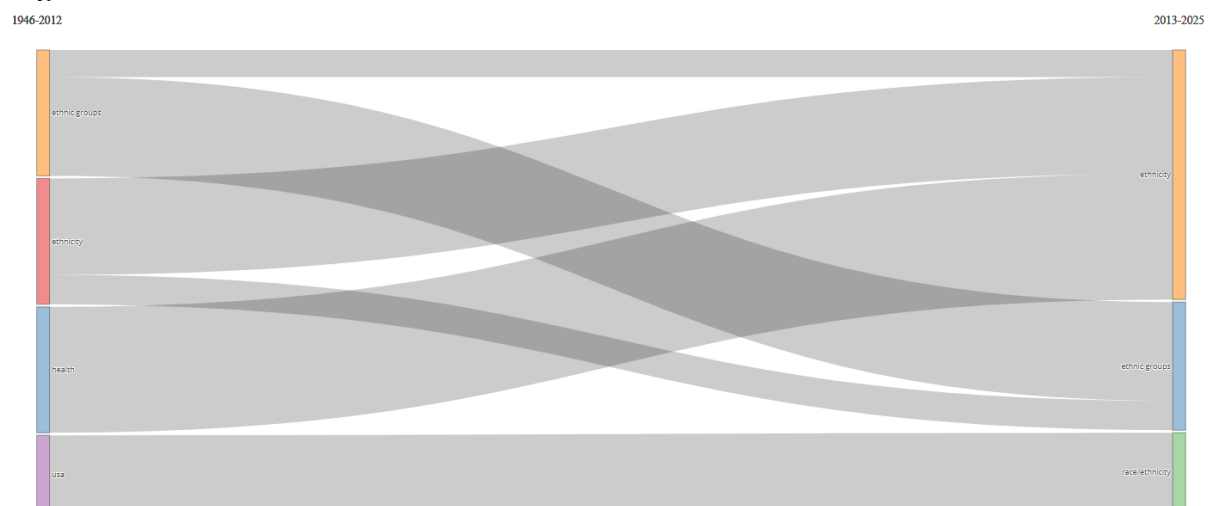


Figure 10 displays a concept map Conceptual Structure Map—Method (MCA). The map is a two-dimensional plot with a pink/red shaded polygon connecting the outermost concepts. Various social sciences and public health terms are scattered throughout the space, with their positions likely representing conceptual relationships and associations based on MCA.

cultural dimensions highlight the impact of cultural context on self-enhancement and self-criticism, as well as the relevance of bidimensional acculturation models in understanding heritage and mainstream culture identification. Overall, the analyses emphasize the interplay between individual differences, social contexts, and psychological processes, providing valuable insights into the complexities of ethnic group dynamics across various research domains.

The content analysis of the top ten most-cited articles in ethnic groups research reveals several recurring themes and methodological approaches. These studies encompass experimental, meta-analytic, cross-cultural, and theoretical designs. Key topics include implicit bias (Greenwald et al., 1998), emotion regulation (Gross, 2014), intergroup contact theory (Pettigrew & Tropp, 2006), acculturation models (Ryder et al., 2000), and cultural self-construction (Kitayama et al., 1997). Collectively, the findings highlight:

- The importance of cognitive and emotional processes in understanding prejudice and self-identity.
- The role of cultural norms and socioeconomic structures in shaping health behaviors and development.
- The continued relevance and refinement of theories such as assimilation, bidimensional acculturation, and intergroup contact.

These articles form the empirical and conceptual backbone of contemporary ethnic studies. A full breakdown of each article's objectives, methods, tools, and findings is provided in Appendix A (Table 4).

Altmetric Attention Score (AAS)

Table 5 presents a comparative analysis of traditional citations and Altmetric Attention Scores (AAS) for the top ten highly cited papers in ethnic group research. This integration of metrics reflects both academic impact and broader societal engagement across platforms such as Mendeley, Twitter (X), policy documents, blogs, and Wikipedia. Notably, while some papers such as Greenwald et al. (1998) and Gross (2014) dominate in citations, others like Pettigrew and Tropp (2006) show exceptionally high AAS, highlighting their broader public and policy relevance.

Table 5. Top 10 Highly Cited Papers with Corresponding Altmetric Attention Scores

Rank	Author(s) & Year	TC	AAS	B	Bo	C	Cl	Co	D	F	I	M	N	P A	PE	PO	W	X	Y
1	Greenwald et al., 1998	832 8	371	8		5	1	-	8884	-	-	4443	35	5		13	19	13	-
2	Gross, 2014	782 2																	
3	Pettigrew & Tropp, 2006	611 2	702	13	1	2	-	-	6512	-	-	3858	-	-	1	23	7	17	-
4	Courtenay, 2000	290 5	-																
5	Duncan et al., 1994	146 7	48	-	-	-	-	-	-	-	-	154	-	-	-	16	-	-	-
6	Alba & Nee, 2014	141 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Benet- Martínez & John, 1998	126 6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Steinberg & Monahan, 2007	112 3	217	-	1	-	-	-	1214	-	-	1124	22	-	-	6	12	15	
9	Kitayama et al., 1997	111 0	33	-	1	-	1	-	1299	-	-	542	2	-	1	1	1	-	-
10	Ryder et al., 2000	110 3	70	-	-	-	-	-	1180	-	-	647	9	-	-	-	-	1	-

TC=Total of Citations, AAS=Altmetric attention score, B=Blogs, Bo=Book reviewer, C=CiteULike, Cl= clinical guideline source, Co=Connotea, D= Dimensions, F=Facebook pages, I=institutions with syllabi, M=Mendeley, N=New outlets, PA=Patents, PE= Peer review site, PO=Policy source, W=Wikipedia page, X=X users (twitter), Y=YouTube creator (Data retrieved from Altmetric.com on 28 February, 2025)

Table 5 presents a comprehensive analysis of research impact, integrating traditional citation counts with alternative metrics to capture diverse patterns of scholarly influence. The bibliometric examination of highly cited psychology papers reveals substantial variations in academic impact and broader societal engagement, as reflected in Altmetric Attention Scores (AAS). Greenwald et al.'s (1998) seminal work on implicit cognition demonstrates exceptional academic influence, accumulating 8,328 citations while maintaining a notable alternative metric presence (AAS = 371). In contrast, Pettigrew and Tropp's (2006) meta-analysis on intergroup contact theory exhibits the highest alternative impact (AAS = 702) despite a comparatively lower citation count (6,112), underscoring its broader societal relevance. The impact distribution across platforms indicates that academic repositories such as Mendeley and Dimensions serve as primary channels for scholarly dissemination. At the same time, engagement on social media varies considerably across influential works. Notably, several highly cited papers exhibit minimal or no alternative metric presence, highlighting a potential disconnect between traditional citation impact and broader digital visibility in psychological research.

Discussion

This study provides a comprehensive examination of ethnic groups research using a mixed-methods approach that integrates bibliometric analysis, content analysis, and Altmetric

Attention Score (AAS) evaluation. The findings highlight the growing body of research on racial and ethnic disparities in education, healthcare, and socioeconomic outcomes, revealing significant methodological and theoretical advancements in the field. The bibliometric analysis illustrates the increasing scholarly output, particularly over the last two decades, while the content analysis underscores the thematic diversity in ethnic groups research, ranging from intergroup contact theory to acculturation models. The AAS evaluation further demonstrates the societal impact of influential works beyond academia, emphasizing the importance of alternative metrics in assessing research dissemination.

The results highlight profound social, economic, and political implications of cultural phenomena related to ethnic group disparities. For instance, persistent healthcare inequities, as identified in recent studies (Seskir et al., 2024; Swain et al., 2025; Nerlekar et al., 2025), are not solely medical but are deeply rooted in systemic biases and institutional neglect. These findings align with Critical Race Theory, which frames racial inequality as embedded within legal and societal structures (Delgado & Stefancic, 2017). Similarly, economic deprivation among ethnic minorities, as discussed by Duncan et al. (1994), underscores how intersectional inequalities (e.g., race $\times$ class) can perpetuate cycles of poverty.

Additionally, concepts such as assimilation and integration warrant clearer distinction. Assimilation often implies a unidirectional absorption into the dominant culture, potentially erasing cultural heritage (Gordon, 1964), whereas integration emphasizes mutual adaptation and cultural pluralism (Berry, 1997). Our findings support the relevance of bidimensional acculturation models (Ryder et al., 2000), which better account for individuals' simultaneous attachment to both heritage and mainstream cultures. This nuance is critical in understanding identity formation, particularly among immigrant youth.

Politically, the data reveal uneven representation and engagement with ethnic issues across policy documents and media platforms (as reflected in the AAS results), signaling the need for more inclusive and culturally responsive policymaking. Thematic analysis shows a shift from traditional assimilation paradigms to more complex frameworks that acknowledge multicultural citizenship and structural inequity. This theoretical expansion underscores the urgency of adopting interdisciplinary approaches grounded in sociocultural theory, public health, and political science.

The trends identified in this study align with previous research, indicating a shift toward interdisciplinary and policy-relevant investigations in ethnic studies (Sandefur et al., 2001; Nkonya & Pender, 2025). The bibliometric analysis confirms that key contributors to the field, such as Shervin Assari and institutions like the University of California system, continue to shape contemporary discourse. These results support earlier findings that racial and ethnic research has expanded to include diverse methodological approaches, integrating qualitative and quantitative paradigms (Aria & Cuccurullo, 2017). The emphasis on social determinants of health and economic disparities also corroborates prior studies, which have advocated for culturally specific policy interventions (Swain et al., 2025; Nerlekar et al., 2025).

Despite the robust analytical framework, this study has several limitations. First, relying on Scopus as the primary data source may exclude relevant contributions from regional databases or non-English publications. Future research could expand data collection to include additional repositories such as Web of Science or Google Scholar. Second, while bibliometric and content analyses offer valuable insights into research trends, they do not capture the nuanced experiences of ethnic minority groups in real-world contexts. Integrating qualitative methodologies, such as interviews or case studies, could provide deeper insights into the lived experiences underlying these trends. Lastly, while the AAS metric enhances understanding research impact beyond academia, its reliance on digital media engagement may introduce

biases. Not all impactful research receives equivalent social media attention (Priem et al., 2012; Richardson et al., 2021).

The findings of this study have significant implications for both researchers and policymakers. From an academic perspective, identifying dominant themes and emerging research areas provides a roadmap for future inquiries. The thematic evolution analysis highlights the increasing importance of interdisciplinary collaboration, suggesting that ethnic group research should integrate sociology, psychology, and public health perspectives. For policymakers, the study underscores the necessity of evidence-based interventions tailored to diverse ethnic communities. Addressing disparities in education and healthcare requires culturally responsive policies that consider historical and structural inequities (Sawadogo et al., 2025).

This discussion builds upon the introduction by providing empirical support for the study's initial premise: that racial and ethnic disparities persist and require multidimensional research approaches. The introduction outlined the historical context and theoretical underpinnings of ethnic groups research, while the discussion section validates these perspectives with data-driven insights. The results reinforce the argument that systemic employment, healthcare, and education inequities necessitate continued scholarly engagement and policy innovation.

While the current study focused on the most globally cited articles in ethnic group research, we recognize that country-specific content analysis—especially from regions with diverse ethnic dynamics such as the United States, United Kingdom, Canada, and Brazil—could provide contextualized insights into local discourse, policy, and cultural practices. Future studies could stratify content analysis by country to better understand regional approaches to integration, discrimination, and cultural policy within the framework of ethnic studies.

Recent scholarship highlights that ethnic research increasingly intersects with policy and practice, reinforcing the importance of evidence-based interventions tailored to marginalized communities. For example, inequities in healthcare utilization among ethnic minorities have persisted despite reforms (Spector et al., 2020; Swain et al., 2025), while education studies continue to reveal structural disproportionalities in teaching and student representation (Demie & Huat See, 2022). These findings align with global calls for inclusive policy frameworks that are consistent with the Sustainable Development Goals (SDGs), particularly those targeting the reduction of inequality (Sawadogo et al., 2025). Building on these insights, the present study contributes a multidimensional approach that integrates bibliometric, content, and altmetric analysis to offer actionable directions for policymakers, educators, and practitioners.

From a policy perspective, the study's findings underscore the need for evidence-based and culturally responsive interventions. At the local level, governments and institutions can leverage insights from highly cited research to design programs that address educational inequities, healthcare access, and social inclusion. For instance, themes related to implicit bias, intergroup contact, and health disparities suggest practical frameworks for teacher training, public health campaigns, and community development initiatives tailored to specific ethnic contexts.

The implications of this study extend beyond the U.S. and Anglo-American contexts that dominate much of the ethnic studies literature. For instance, in Japan, where questions of cultural homogeneity intersect with increasing immigration and minority recognition, insights from ethnic studies can inform debates on integration, multicultural education, and policy reforms addressing social cohesion (Yaish & Gabay-Egozi, 2019). Similarly, in Germany and broader European contexts, where migration, refugee integration, and rising nationalism pose complex challenges, the thematic frameworks identified in this study—such as intergroup

contact theory and bidimensional acculturation models—offer valuable perspectives for designing evidence-based interventions that balance social inclusion with cultural preservation (Alba & Nee, 2014; Demie & Huat See, 2022). More broadly, by combining bibliometric, content, and altmetric analyses, this work provides international scholars and policymakers with a methodological roadmap for assessing how ethnic research resonates across societies, highlighting transferable lessons that can inform inclusive policy development, educational practices, and cross-cultural dialogue.

At the global level, the results have broader implications for international organizations, funding agencies, and multinational policy networks. Ethnic studies research contributes to global goals such as the UN Sustainable Development Goals (SDGs), particularly those related to reducing inequalities (SDG 10) and promoting inclusive societies (SDG 16). Moreover, the thematic shift toward interdisciplinary approaches underscores the importance of collaboration among health, education, and cultural ministries in crafting inclusive national policies. This calls for continuous investment in knowledge infrastructures that integrate both traditional scholarship and real-time societal engagement.

Conclusions

This study set out to investigate the evolving landscape of ethnic groups research by integrating bibliometric analysis, content analysis, and Altmetric Attention Score (AAS) evaluation. In line with the introduction's call to address persistent disparities through multidimensional approaches, the findings confirm several critical trends. First, the bibliometric analysis demonstrated exponential growth in ethnic studies over the last two decades, with leading contributions from U.S. institutions and increasingly interdisciplinary collaborations. Second, the content analysis of the most cited works underscored recurring themes such as implicit bias, intergroup contact, acculturation, and emotion regulation, which continue to shape theoretical and empirical debates. Third, the AAS results revealed a meaningful but uneven societal uptake of research, with some influential works gaining substantial traction in policy and media. In contrast, others remain confined to academic discourse. Collectively, these results highlight the intersection of scholarship, policy, and practice, underscoring the necessity of culturally responsive interventions in education, healthcare, and labor policy.

While this study validates existing findings, it also advances the field by systematically combining traditional bibliometric indicators with alternative metrics to capture both academic influence and societal resonance. However, reliance on Scopus and the exclusion of non-English sources represent limitations that future research could address by diversifying databases and incorporating qualitative insights into lived experiences. Moving forward, interdisciplinary and globally inclusive approaches are critical, particularly as ethnic studies align with international agendas such as the UN Sustainable Development Goals (SDG 10 and SDG 16). Ultimately, this work reinforces the argument, advanced in the introduction, that dismantling systemic inequities requires integrative research methods and cross-sector collaboration. By linking empirical evidence with theoretical frameworks and policy implications, the study contributes to both academic debates and practical strategies for fostering equity and inclusion across diverse societies.

Importantly, the implications of this research are not confined to any single country. By identifying transferable themes such as implicit bias, intergroup contact, and acculturation, the findings provide international relevance for contexts as varied as Japan, Germany, and other societies facing demographic change and cultural negotiation. Thus, the study contributes to a

global conversation on equity, inclusion, and social justice, aligning ethnic research with the needs of an increasingly interconnected world.

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Conflicts of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability statement

Data is available upon request. Please contact the corresponding author for any further information regarding data access or usage.

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Appendix A. (Table 4)

Table 4

Content analysis of top 10 articles in ethnic group research.

No.	Source	Objectives	Methods	Research tools	Data/Sampling	Results/Conclusion
1	Measuring individual differences in implicit cognition: the implicit association test. Journal of personality and social psychology (Greenwald et al., 1998)	The study aims to explore how performance speed variations in the Implicit Association Test (IAT) reveal differences in implicit associations when categories with strong associations share a response key.	The study uses the Implicit Association Test (IAT) to assess differences in associations by measuring response times in categorizing two target concepts and an evaluative attribute.	The primary tool utilized is the Implicit Association Test (IAT), designed to measure differences in how quickly participants associate target concepts with evaluative attributes.	Three experiments were conducted with participants from diverse backgrounds, including Japanese, Korean, and self-described unprejudiced White participants, to test the IAT's sensitivity.	The results indicate that the IAT is effective in detecting implicit associations, revealing universal, individual, and consciously disavowed differences in attitudes, showing that response times can objectively measure implicit biases.
2	Emotion regulation: Conceptual and empirical foundations. Handbook of emotion regulation (Gross, 2014)	Gross aims to provide a comprehensive overview of emotion regulation, including its theoretical foundations, key processes, and impact on psychological health and social interactions.	The study is a literature review synthesizing empirical research and theoretical models from psychology, neuroscience, and clinical research.	Gross discusses theoretical frameworks like the Process Model of Emotion Regulation and references self-report scales and experimental paradigms used to assess emotion regulation strategies.	The chapter does not use primary data but integrates findings from various empirical studies examining emotion regulation across different populations and contexts.	Gross categorizes emotion regulation strategies into adaptive (e.g., cognitive reappraisal) and maladaptive (e.g., suppression), demonstrating their impact on psychological outcomes, and concludes that effective emotion regulation is crucial for mental health, social well-being, and future intervention development.
3	A meta-analytic test of intergroup contact theory. Journal of personality and social psychology (Pettigrew & Tropp, 2006)	This study conducts a meta-analytic test of intergroup contact theory to examine whether intergroup contact reduces prejudice and to assess	Multiple rigorous tests are applied to determine if biases related to participant selection or publication influence the findings, confirming that such biases do not account	Meta-analytic statistical techniques are employed to generalize findings across various outgroup targets and contact settings.	A diverse range of racial, ethnic, and other outgroup categories is analyzed to provide a broad perspective on the impact of intergroup	The findings confirm that intergroup contact generally reduces prejudice across different contexts, with Allport's optimal contact conditions enhancing but not essential for this effect, highlighting the need for future research on factors that hinder its effectiveness.

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4	Engendering health: A social constructionist examination of men's health beliefs and behaviors. Psychology of men & masculinity (Courtenay, 2000)	the robustness of this effect. The article explores why men and women adopt different health beliefs and behaviors and examines how these differences contribute to more severe health conditions and higher mortality rates in men in the United States.	for the observed effects. A review of research is conducted to analyze gender differences in social experiences, cultural representations of gender, and broader social and institutional structures, such as media and the healthcare system.	The study utilizes existing literature to comprehensively examine the sociocultural influences on health-related beliefs and behaviors.	contact on prejudice reduction. The review focuses on research conducted in North America, particularly analyzing the impact of cultural norms, everyday interactions, and social structures on gendered health behaviors.	Results: The study finds that North Americans actively reinforce stereotypical masculine and feminine behaviors, leading men to adopt health beliefs and behaviors that are largely unhealthy as a means of expressing masculinity. Conclusion: The article concludes that cultural norms, daily interactions, and broader social and institutional structures perpetuate risky behaviors in men and that health beliefs and behaviors serve as a means of expressing gender identities.
5	Economic deprivation and early childhood development. Child development (Duncan et al., 1994)	This study examines the impact of poverty and its correlates (single parenthood, ethnicity, and maternal education) on child development, explores the effects of the duration and timing of economic deprivation, and compares economic influences at family and neighborhood levels.	A longitudinal study using data from the Infant Health and Development Program to assess economic factors' relationships with child developmental outcomes over time.	The study likely employs standardized cognitive assessments, behavioral evaluations, and economic status measures (e.g., family income, poverty status) to evaluate child development outcomes.	he study utilizes longitudinal data from the Infant Health and Development Program, capturing diverse family environments across income levels, family structures, and neighborhood characteristics.	Findings reveal that family income and poverty status significantly affect children's cognitive and behavioral development, with prolonged poverty having a stronger impact than early childhood deprivation; affluent neighborhoods are linked to higher IQ scores, whereas low-income neighborhoods correlate with more behavioral issues, emphasizing the critical role of economic factors in child development.
6	Rethinking assimilation theory for a new era of immigration 1. In The new	The study evaluates the relevance of assimilation theory in understanding contemporary immigration to the	A critical review approach is used to analyze key canonical accounts of assimilation theory, particularly those of	The study relies on a critical analysis of existing literature, theories, and empirical evidence related to assimilation	While no specific data or sampling methods are mentioned, the study examines various sources to assess socioeconomic	The findings indicate that assimilation is occurring among recent immigrant groups, though unevenly, and arguments differentiating historical and contemporary immigration are inconclusive; the authors affirm the

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	immigrant in American society (Alba & Nee, 2014).	United States and explores its applicability despite longstanding critiques.	Milton Gordon, while also considering Shibutani and Kwan's ethnic stratification theory for refinement.	and ethnic stratification from historical and contemporary perspectives.	and residential assimilation trends among recent immigrant groups in the U.S.	continued relevance of assimilation theory but advocate for its refinement to address modern immigration complexities.
7	Los Cinco Grandes across cultures and ethnic groups: Multitrait-multimethod analyses of the Big Five in Spanish and English. Journal of personality and social psychology (Benet-Martínez & John, 1998)	This research aimed to evaluate the Spanish version of the Big Five Inventory (BFI) and examine the generalizability of the Big Five factor structure among Latin cultural groups, addressing the need for Spanish-language personality measures.	Three studies employed a cross-cultural comparison (Study 1) between Spanish and English BFI versions, a bilingual validation design (Study 2) with a college-educated Hispanic sample, and a replication study (Study 3) with a working-class bilingual Hispanic sample.	The primary instruments used for personality assessment were the Spanish and English versions of the Big Five Inventory (BFI) and the NEO Five Factor Inventory.	The study included college students from Spain and the U.S., a college-educated bilingual Hispanic sample, and a working-class bilingual Hispanic sample to ensure diverse representation of Latin populations.	The Spanish BFI was found to be an efficient, reliable, and factorially valid measure of the Big Five dimensions, with minimal cultural differences observed, supporting its generalizability across languages and cultural contexts.
8	Age differences in resistance to peer influence. Developmental psychology (Steinberg & Monahan, 2007)	To examine age differences and developmental changes in resistance to peer influence using a new self-report instrument.	The study employs a combination of longitudinal and cross-sectional designs.	A newly developed self-report instrument that distinguishes between susceptibility to peer pressure and willingness to engage in antisocial behavior.	Data were collected from over 3,600 participants aged 10 to 30, across four ethnically and socioeconomically diverse samples, using one longitudinal and two cross-sectional studies.	Resistance to peer influence increases significantly between ages 14 and 18 but shows little change between ages 10 to 14 and 18 to 30, highlighting middle adolescence as a key period for developing personal autonomy against peer pressure.
9	Individual and collective processes in the construction of the self: self-enhancement in the United States	This study explores the collective constructionist theory of the self, which argues that psychological processes like self-	The research comprises two separate studies examining cultural differences in self-enhancement and self-criticism between	While specific tools are not detailed, the study likely employed methods to measure and compare self-enhancement and self-criticism behaviors	The abstract does not specify sample size, demographics, or data collection methods but indicates that participants were drawn from both	The findings reveal that American contexts encourage self-enhancement, while Japanese contexts promote self-criticism, supporting the collective constructionist theory and reinforcing the interdependence of culture and self-perception.

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	and self-criticism in Japan. Journal of personality and social psychology (Kitayama et al., 1997)	enhancement in the U.S. and self-criticism in Japan emerge from culturally defined social acts and experiences.	American and Japanese contexts.	across the two cultural groups.	American and Japanese populations.	
10	Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. Journal of personality and social psychology (Ryder et al., 2000)	The study aims to compare the unidimensional and bidimensional models of acculturation in assessing the relationship between heritage and mainstream culture identifications.	A comparative analysis was conducted across five distinct samples, including ethnic Chinese individuals, non-Chinese East Asians, and a diverse group of acculturating individuals.	The study utilized both unidimensional and bidimensional measures of acculturation, along with external correlates related to personality, self-identity, and psychosocial adjustment.	The data consisted of five samples with varying sizes (n = 70 to 204), including ethnic Chinese, non-Chinese East Asians, and individuals from diverse cultural backgrounds.	The findings indicated that while the unidimensional model demonstrated a coherent pattern of external correlates, the bidimensional model better captured independent dimensions of heritage and mainstream cultural identifications, supporting its validity in explaining acculturation and psychosocial outcomes.