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The Global Landscape of Media Multitasking: Identifying Research Gaps and Future Directions Through Bibliometric Synthesis (1991-2025)

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Abstract

Media multitasking has emerged as a pervasive behavior in contemporary digital environments, prompting a significant expansion in scholarly inquiry across psychology, education, and communication studies. This study presents a comprehensive bibliometric analysis of media multitasking research, mapping its global evolution, intellectual structures, and thematic trajectories over three decades. Using 1,093 publications retrieved from the Web of Science Core Collection (1991-2025), the study applies performance indicators, co-authorship and collaboration networks, co-citation structures, document coupling, and thematic evolution analyses using R and the bibliometrix package. Findings reveal a rapidly expanding yet unevenly distributed research landscape, dominated by high-impact journals and a small group of influential authors, institutions, and countries. Intellectual structures are anchored in cognitive-control and performance-oriented theories, which serve as central connectors between educational, socioemotional, advertising, and neurocognitive clusters. Thematic evolution demonstrates a clear transition from early dual-task and television-based paradigms toward socially embedded multitasking, academic performance concerns, and AI-driven analytical techniques. Despite significant development, the field remains fragmented, with limited integration across cognitive, educational, and socioemotional perspectives and persistent geographic imbalances. The study highlights methodological gaps, the need for improved measurement techniques, and the emerging role of computational and machine-learning methods in advancing the field. Implications for future interdisciplinary research, educational intervention design, and global knowledge equity are discussed.

Keywords: Media Multitasking, Bibliometric Analysis, Cognitive Control, Academic Performance, Thematic Evolution, Digital Behavior

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Introduction

Media multitasking, defined as the concurrent engagement in two or more media-related tasks or rapid switching between them, has become a pervasive behavioural pattern across contemporary digital environments. Foundational work conceptualizes media multitasking through cognitive-resource perspectives, emphasizing how limited attentional capacity constrains individuals' ability to process simultaneous streams of information (Circella et al., 2012; Kazakova et al., 2015). More recent scholarship extends these early conceptualizations by integrating self-regulation, attentional control, and neurocognitive adaptation models (Haverkamp et al., 2024; Wang et al., 2025). These developments reflect an increasingly complex understanding of how media-rich environments shape cognitive processing, learning behaviour, and socioemotional functioning.

The widespread adoption of portable and multiscreen digital technologies has been a primary driver of media multitasking's rise. Research shows that smartphones, tablets, and streaming platforms have created "multiscreen ecologies" that amplify the frequency and intensity of switching between tasks (Drody et al., 2025; Segijn et al., 2017). These technological environments interact with demographic and socio-cultural factors. Studies indicate that younger users, individuals with high media ownership, and populations in technologically saturated countries exhibit significantly higher levels of multitasking behaviour (Srivastava et al., 2016; Barbosa & Pedro, 2020). Cross-cultural comparisons further demonstrate substantial variation in multitasking prevalence, shaped by national media systems, cultural norms, and digital ecosystem characteristics (Segijn & Kononova, 2018; Lin et al., 2020).

A growing body of research explores the cognitive and behavioural consequences of media multitasking. Meta-analyses and experimental studies have linked high multitasking intensity with attentional failures, mind wandering, and reduced cognitive control (Parry & Le Roux, 2019; Ralph et al., 2014; Chen et al., 2025). Neurophysiological research further reveals structural and functional differences in heavy multitaskers, including reduced gray-matter density in attentional-control regions (Loh & Kanai, 2014) and altered neural responses during executive tasks (Zhang et al., 2022; Zhang et al., 2025). In educational contexts, multitasking has been consistently associated with impaired comprehension, lower academic achievement, and increased mind wandering during learning tasks (Lin et al., 2011; Loh et al., 2016; May & Elder, 2018). These findings underscore the need for a more integrated framework that accounts for cognitive, emotional, and contextual moderators of multitasking effects.

Despite the rapid growth of the field, research remains fragmented due to inconsistent operational definitions, diverse measurement tools, and methodological differences. The Media Multitasking Index (MMI) remains the main measurement tool, yet several studies criticize its validity and call for better behavioral and computational measures (Benbunan-Fich, 2011; Wiradhany & Baumgartner, 2019; Alghamdi & Li, 2025). In response, newer methods such as entropy-based indices, process-mining techniques, and culturally adapted scales have been developed to more accurately capture multitasking dynamics (Reza Putra & Mahendrawathi, 2024). The interdisciplinary nature of media multitasking research, which includes psychology, communication, education, and neuroscience, requires comprehensive approaches to map the field's intellectual structure and how themes evolve. Bibliometric studies show that research trends have shifted from

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early focus on cognitive load and attention deficits to more complex studies of socioemotional effects, technological features, and educational impacts (Beuckels et al., 2021; Różańska & Gruszka, 2020). Global collaboration networks reveal concentrated scholarly activity in the United States, China, and Western Europe (Segijn & Kononova, 2018; Hu et al., 2024), highlighting geographic imbalances and the need for broader cultural representation.

Given these developments, bibliometric analysis has become an essential methodological tool for synthesizing diverse findings, identifying conceptual and methodological gaps, and tracing the field's evolution. Recent methodological advancements, including AI-supported screening, dual-tool visualization, and integrated normalization techniques, further enhance the accuracy and interpretability of bibliometric insights (Stefanis et al., 2025; Öztürk et al., 2024; Lim et al., 2024; Rafiq et al., 2025). By systematically mapping research domains, bibliometrics enable scholars to contextualize fragmented findings, evaluate the maturity of conceptual frameworks, and identify emerging research frontiers within the rapidly expanding landscape of media multitasking scholarship.

Literature Review

Global Evolution of Media Multitasking Research

Media multitasking has become an increasingly prominent research topic due to its relevance across cognitive psychology, communication, and educational technology. Over time, scholarly production on media multitasking has grown in volume, diversity, and disciplinary reach. Early studies captured the prevalence of multitasking in adolescents and young consumers, especially in television and early digital environments (Lehmkuhl & Frölich, 2018; Bardhi et al., 2010). However, as digital technologies expanded, scholars recognized the need to understand how cultural, demographic, and technological factors shape multitasking behaviors. For instance, Srivastava et al. (2016) showed that age, media ownership, and education level significantly explain why certain populations multitask more than others, while Barbosa and Pedro (2020) revealed geographic differences in multitasking practices.

Cross-national comparisons highlight further disparities. Segijn and Kononova (2018) identified substantial differences between the Netherlands and the United States, demonstrating how cultural norms and media environments influence multiscreen behaviors. Similarly, Lin et al. (2020) found divergent multitasking patterns among American and Taiwanese users, linking practices to broader digital habits and screen addiction. Despite these contributions, no existing body of research provides a systematic mapping of *which* countries, institutions, or journals have emerged as global leaders, nor how international collaboration networks have evolved over time.

Although bibliometric analyses in adjacent areas (Hu et al., 2024; Roblek et al., 2022) illustrate the value of mapping global research patterns, the specific domain of media multitasking lacks such a comprehensive synthesis. Even studies that address broad thematic trends (Różańska & Gruszka, 2020) do not identify leading research hubs or trace the structural evolution of global scholarly production. This absence of consolidated knowledge about geographic, institutional, and journal-level contributions constitutes a core gap in the literature and directly motivates research focused on understanding the global structure and evolution of media multitasking scholarship.

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Intellectual Structures, Thematic Clusters, and Conceptual Linkages

The intellectual landscape of media multitasking research is characterized by conceptual diversity, spanning cognitive, educational, socioemotional, and neurological perspectives. The field's foundational cognitive cluster centers on attention, working memory, and executive control. Meta-analytic findings show that heavy media multitaskers demonstrate weaker attentional regulation, though effects vary widely by methodological design and measurement strategy (Kong et al., 2023; Parry & Le Roux, 2019). Related studies highlight behavioral outcomes, such as attentional lapses and everyday failures of cognitive control (Ralph et al., 2014), which collectively form a central conceptual thread across psychological research.

A second major cluster concerns educational contexts, where multitasking often interacts with task relevance and self-regulation. Zhou and Deng's (2023) systematic review identifies multitasking antecedents such as learner motivation, the difficulty of academic tasks, and environmental distractions. Experimental research also provides evidence that multitasking disrupts comprehension and learning outcomes (Song et al., 2013), supporting educational theories that emphasize limited cognitive capacity during study tasks. These educational insights align with broader theoretical expansions incorporating technology readiness, task–technology compatibility, and digital engagement (Jebril et al., 2024; Ayyash et al., 2024).

Beyond cognition and education, socioemotional dimensions represent an emerging intellectual cluster. Research demonstrates that multitasking during social interactions influences emotional well-being and interpersonal connection (Yang & Christofferson, 2020), while emotional states such as anxiety and stress mediate the extent to which individuals engage in multitasking (Shukla & Sharma, 2018). These findings broaden the field beyond cognitive cost frameworks toward more relational and affective dimensions. Neuroscientific investigations form another distinct conceptual pillar. Studies show that heavy multitaskers employ alternative neurocognitive strategies (Zhang et al., 2022) and display enhanced anticipatory responses in brain activity (Zhang et al., 2025). Structural imaging evidence even links frequent multitasking with differences in gray-matter density (Loh & Kanai, 2014). However, these neuroscientific findings remain largely disconnected from behavioral and educational frameworks, revealing a fragmented intellectual structure. The advertising and media-processing cluster adds yet another dimension to the literature. Research demonstrates that multiscreen exposure and concurrent media use shape memory, persuasion, and sensory processing (Garaus, 2020; Muraro & Kononova, 2025; Furlan et al., 2019). This area connects multitasking research with consumer behavior and marketing communication.

Across these clusters, the absence of an integrative intellectual map is evident. Although studies identify individual themes, no synthesis has systematically linked these domains to trace how foundational theories (e.g., cognitive control) connect to applied areas (e.g., educational technology or advertising effectiveness). Furthermore, inconsistent measurement instruments, such as the widespread but criticized Media Multitasking Index, complicate efforts to unify the field (Alghamdi & Li, 2025; Wiradhany & Baumgartner, 2019). This fragmentation underscores a major conceptual gap: the field lacks a comprehensive understanding of its own intellectual architecture, highlighting the need for research that identifies dominant clusters, thematic linkages, and underlying author and keyword networks.

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Thematic Evolution and Methodological Shifts Across Technological Eras

Thematic priorities in media multitasking research have evolved significantly alongside shifts in digital technology. Early studies largely focused on television and desktop-based multitasking, emphasizing cognitive load, attention switching, and performance decline (Lin et al., 2011; May & Elder, 2018). As new digital platforms emerged, research diversified into multiscreen environments, with evidence showing how concurrent device use affects memory and attention allocation (Segijn et al., 2017).

The rise of social media further transformed the field's focus. Studies began examining digital social multitasking, online communication behaviors, and socioemotional outcomes (Yang & Christofferson, 2020). Emotional and motivational predictors of digital multitasking also became more prominent, reflecting the growing integration of social identity and affective dynamics within the digital ecosystem (Shukla & Sharma, 2018). These shifts underscore that multitasking research increasingly grapples with complex, identity-linked behaviors rather than simple dual-task paradigms.

Methodological approaches have evolved in parallel with thematic shifts. Traditional self-report and laboratory methods have been supplemented by more sophisticated measurement techniques. Entropy-based measures (Benbunan-Fich, 2011) and network-based approaches (Wiradhany & Baumgartner, 2019) offer alternatives to self-report indices. Mixed-methods and longitudinal studies now capture multitasking as a dynamic, context-dependent behavior rather than a stable trait (Matthews et al., 2022). At the same time, neural measures such as ERP and MRI provide insight into the brain-based mechanisms underlying multitasking (Zhang et al., 2022; Zhang et al., 2025).

Recent advances in bibliometric methodology mirror broader changes in communication and information science research. AI-enabled screening methods, dual-tool mapping procedures, and integrated visual analytics represent a methodological leap in how research landscapes are synthesized (Stefanis et al., 2025; Lim et al., 2024; Öztürk et al., 2024). These developments indicate the growing need for large-scale, systematic synthesis as research complexity increases. Despite these advances, no existing literature synthesizes how thematic priorities shifted across technological eras, from print and broadcast multitasking, to early internet multitasking, to multiscreen and mobile multitasking, and finally to AI-driven learning environments. Similarly, there is no longitudinal overview of how methodological approaches (behavioral, computational, neurological, bibliometric) evolved in response to new platforms and analytical possibilities. This constitutes a significant gap that justifies further research examining how the field's thematic and methodological directions have changed over time. Based on these gaps, the following questions have been constructed:

RQ1. How has global scholarly production on media multitasking evolved over time, and which countries, institutions, and journals have emerged as the major contributors to this research domain?

RQ2. What intellectual structures, thematic clusters, and conceptual linkages define the research landscape on media multitasking, and how do foundational works connect with authors and dominant keywords?

RQ3. How have thematic priorities and methodological approaches evolved within media multitasking research, particularly in relation to the rise of social media, academic performance concerns, and AI-driven analytical techniques?

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Method

Data Source and Search Strategy

This study employed a comprehensive bibliometric design using data retrieved exclusively from the Web of Science (WoS) Core Collection, which is widely regarded for its rigorous indexing standards and suitability for advanced scientometric analysis (Mongeon & Paul-Hus, 2016). A structured Boolean search was conducted to identify all publications related to media multitasking and its associated constructs, including "media multitasking," "multiscreening," and "digital multitasking." No time restrictions were applied in order to capture the full historical development of the field, consistent with best practices in longitudinal bibliometric research (Donthu et al., 2021). The search output was exported in WoS-compatible plaintext format. After screening for conceptual relevance and removing duplicates, the final dataset consisted of 1093 documents published between 1991 and 2025.

Data Preparation and Cleaning

Data preparation followed standard procedures recommended in scientometric methodology. Author names, institutional affiliations, and country identifiers were normalized to reduce fragmentation caused by spelling variations, inconsistent abbreviations, and multi-affiliation formats (Perianes-Rodríguez et al., 2016). Keywords were harmonized by merging plural forms, hyphenated terms, and conceptual synonyms. Retracted documents and editorial materials were retained only for structural completeness but excluded from interpretive analysis, in line with established bibliographic cleaning standards (Zupic & Čater, 2015). These steps ensured the accuracy of subsequent co-authorship, co-citation, and co-word network constructions.

Analytical Framework and Software

All analyses were conducted using R and the bibliometrix package, an established open-source environment for comprehensive science mapping (Aria & Cuccurullo, 2017). The biblioshiny interface was used for visualization and interactive analytical procedures. The analytical framework combined performance analysis, collaboration mapping, and structural science-mapping techniques, following methodological guidelines by Donthu et al. (2021). Performance analysis captured annual scientific production, authorship patterns, source impact, and citation structures. Collaboration analysis examined author, institution, and country-level networks. Structural mapping relied on co-citation, bibliographic coupling, and co-word analyses to uncover intellectual foundations and thematic clusters. The study also incorporated temporal analyses to evaluate the evolution of themes and keyword trajectories. Visualization principles were guided by Van Eck and Waltman's (2014) recommendations for network mapping.

Indicators and Measurement Approach

A multidimensional set of bibliometric indicators was employed to assess productivity, influence, collaboration, and thematic development. Productivity indicators included document counts, authorship frequencies, and journal contributions. Influence indicators were derived from total citations, average citations per document, and normalized citation scores, consistent with widely accepted citation-impact frameworks (Waltman, 2016). Collaboration indicators included co-authorship intensity, international collaboration ratios, and network density. Structural indicators, such as cluster centrality and density, were used to evaluate the cohesiveness of thematic networks, following Zupic and Čater's (2015) guidelines for interpreting science-mapping structures. These indicators collectively

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enabled a deep assessment of the intellectual, social, and conceptual dynamics of media multitasking research.

Ethical Considerations

This study utilized secondary bibliographic data from the Web of Science, a publicly accessible database available through institutional subscription. As no human participants were involved, ethical approval was not required. All analyses complied with responsible research and data-management standards.

Results

The descriptive analysis of the dataset reveals a moderately sized yet widely dispersed body of research, comprising 1093 documents published between 1991 and 2025 across 547 distinct sources. This broad distribution across journals, books, and related outlets reflects a research field that is highly interdisciplinary, with scholarship not confined to a small cluster of core journals. The documents collectively cite 42,615 references, averaging nearly 40 references per publication, indicating that this domain is deeply embedded within an established intellectual tradition. Despite the long temporal span, the average document age is 4.96 years, highlighting that much of the research activity has accelerated in the recent decade. The average citation rate of 29.96 citations per document further points to the field's strong scholarly influence and sustained visibility within the broader academic ecosystem.

In terms of authorship and collaboration patterns, the dataset includes 3244 contributing authors, with 107 single-authored papers representing just under 10% of the output. The dominant collaborative culture is reflected in a co-authorship rate of 3.58 authors per document, demonstrating the prevalence of multi-author teams and shared expertise. Additionally, 23.42% of the publications involve international collaborations, suggesting that the field benefits from considerable cross-border intellectual exchange and global research partnerships. The document types are overwhelmingly journal articles (1060 papers), accompanied by a small number of early-access publications and other formats, including a single retracted item, which underscores the field's commitment to scholarly rigor and self-correction.

The annual scientific production displays a distinct and long-term growth trajectory, beginning with very low and sporadic output from 1991 to roughly 2008, where annual publications rarely exceeded a handful of documents. A gradual increase appears from 2009 to 2014, signaling the early formation of a more coherent research community. This is followed by a marked surge after 2015, where the field transitions from moderate to high productivity, reaching over 60 publications annually by 2017. The momentum strengthens further between 2020 and 2024, with research output surpassing 100 articles per year and peaking at more than 150 publications, indicating heightened global interest, expanding collaborations, and increased thematic diversification within the domain (Figure 1). The sharp decline observed for 2025 is typical of bibliometric datasets and reflects incomplete indexing rather than an actual reduction in scholarly activity. Taken together, the pattern illustrates a rapidly maturing and increasingly influential research field that has experienced its most significant expansion in the last decade.

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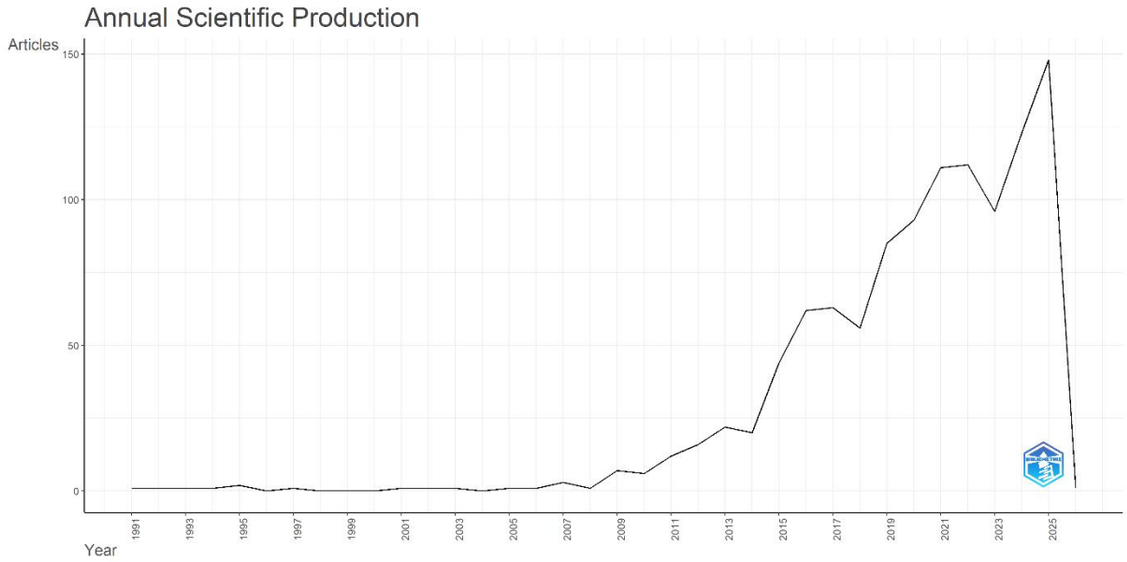

Figure 1: Annual Scientific Production

The trend in average citations per year demonstrates a dynamic citation landscape, with clear fluctuations that correspond to shifts in the field's maturity and publication volume. As shown in Figure 2, citation rates remain low and relatively unstable throughout the 1990s and early 2000s, reflecting both the small number of published documents and the limited visibility of early research outputs. A notable turning point emerges around 2005-2009, when the average citations per year sharply increase, peaking at above 12 citations. This surge suggests the emergence of influential publications or foundational studies that received significant scholarly attention during this period. However, following this peak, the trend gradually stabilizes and then declines from 2012 onwards, which is expected as the field's annual publication volume increased dramatically; newer documents naturally have less time to accumulate citations. The continued downward slope toward 2024 further reflects the citation lag effect, where recent publications have not yet reached their full citation potential. Overall, the pattern illustrates how citation dynamics evolve as the field expands in scale, output, and thematic diversity.

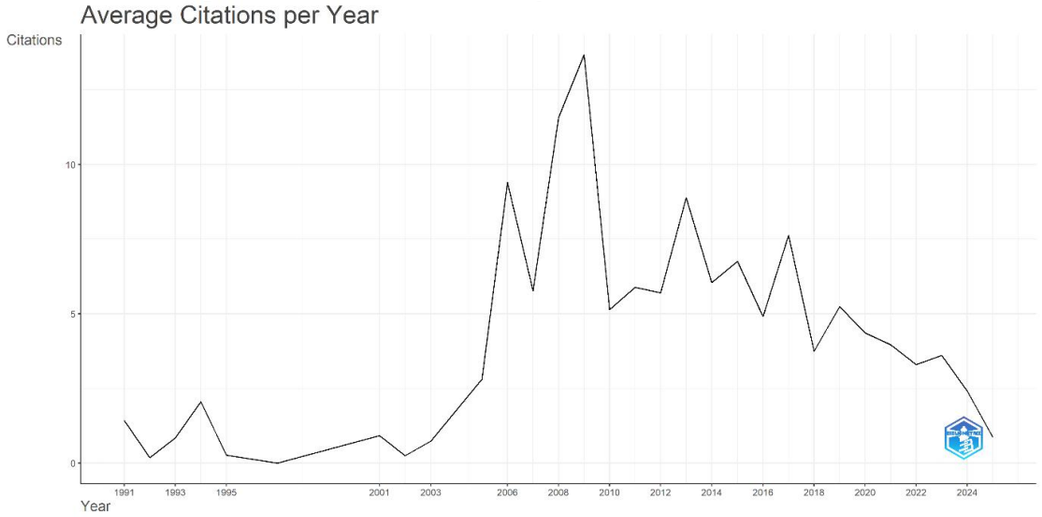

Figure 2: Average Citations per Year

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The three-field plot presented in Figure 3 provides a clear visual summary of how foundational references, key authors, and dominant research themes intersect within this scholarly domain. The left field (CR) highlights several highly cited works, such as Ophir et al. (2009), Minear et al. (2013), and Sanbonmatsu et al. (2013), that form the intellectual backbone of studies on media multitasking, attention, and cognitive control. These seminal studies are strongly linked to central authors including Susanne E. Baumgartner, Anastasia Kononova, Daniel Smilek, and Brandon C. W. Ralph, illustrating how contemporary researchers consistently draw on earlier cognitive and communication frameworks to develop and refine their investigations. The density and thickness of the connecting ribbons between CR and AU confirm that a relatively small set of influential studies continues to shape the theoretical direction of the field, especially in areas related to distraction, working memory, and multitasking performance.

The right side of Figure 3 further illustrates how authors' research trajectories align with specific thematic clusters, particularly around keywords such as "media multitasking," "performance," "attention," "cognitive control," and "distraction." These dominant themes reflect a strong cognitive-psychological orientation, complemented by a secondary but significant cluster centered on "social media," "behavior," "adolescents," and "communication," where authors like Se-Hoon Jeong emerge as pivotal contributors. The seamless flow from cited references to authors to keywords shows how foundational theories are being applied to contemporary digital behaviors, particularly among youth. Overall, the network structure demonstrates a highly interconnected research landscape where cognitive, behavioral, and communication perspectives converge, revealing both the central intellectual lineages and the thematic breadth of the field.

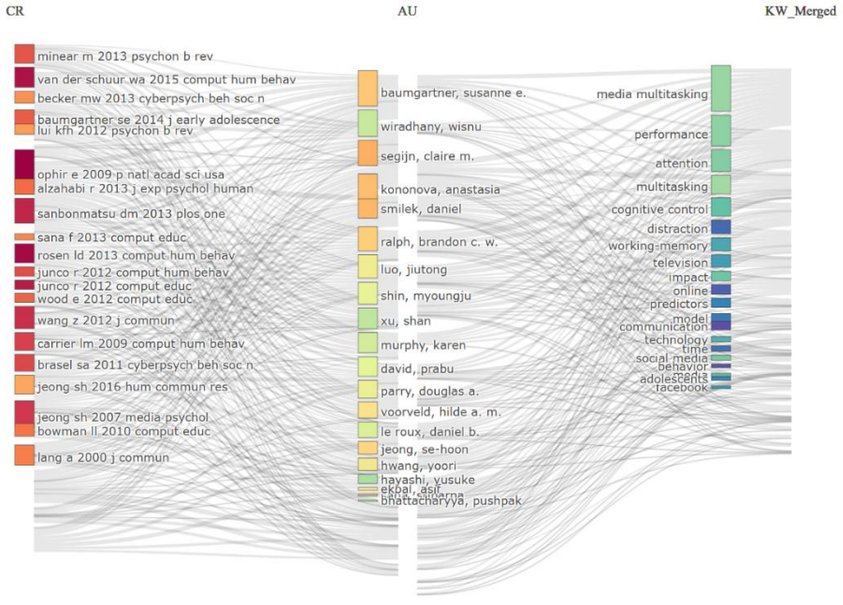

Figure 3: Three-Field Plot

The distribution of documents across sources, as illustrated in Figure 4, shows a clear concentration of scholarly output within a small number of high-impact journals.

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Computers in Human Behavior dominates the landscape with 89 publications, reflecting its central role as the primary outlet for research on media use, digital behavior, and technology-related psychological outcomes. This is followed by Computers & Education with 31 documents, indicating the strong presence of educational technology and learning-related studies within the dataset. Other prominent journals such as Media Psychology (21 articles) and Education and Information Technologies (19 articles) further highlight the interdisciplinary nature of the field, spanning cognitive psychology, communication studies, and technology-enhanced learning. The presence of Frontiers in Psychology (19 articles) suggests continued interest in experimental and cognitive perspectives, complementing the broader trends observed in the overall corpus.

Beyond these leading sources, the dataset shows meaningful contributions from journals focused on computational systems, social media behavior, and human–computer interaction. IEEE Transactions on Computational Social Systems and PLOS One each contribute 16 publications, indicating participation from computational and multidisciplinary outlets. Meanwhile, Cyberpsychology, Behavior and Social Networking and the International Journal of Human–Computer Interaction each provide 12 articles, reflecting strong engagement with digitally mediated behaviors and interaction design research. The inclusion of Journal of Advertising with 11 contributions highlights a smaller but notable thread of research focused on digital marketing, persuasion, and media effects. Collectively, these patterns demonstrate that while a few journals dominate in volume, the field overall is published across a diverse and interdisciplinary set of sources, reinforcing the broad thematic reach of the research domain.

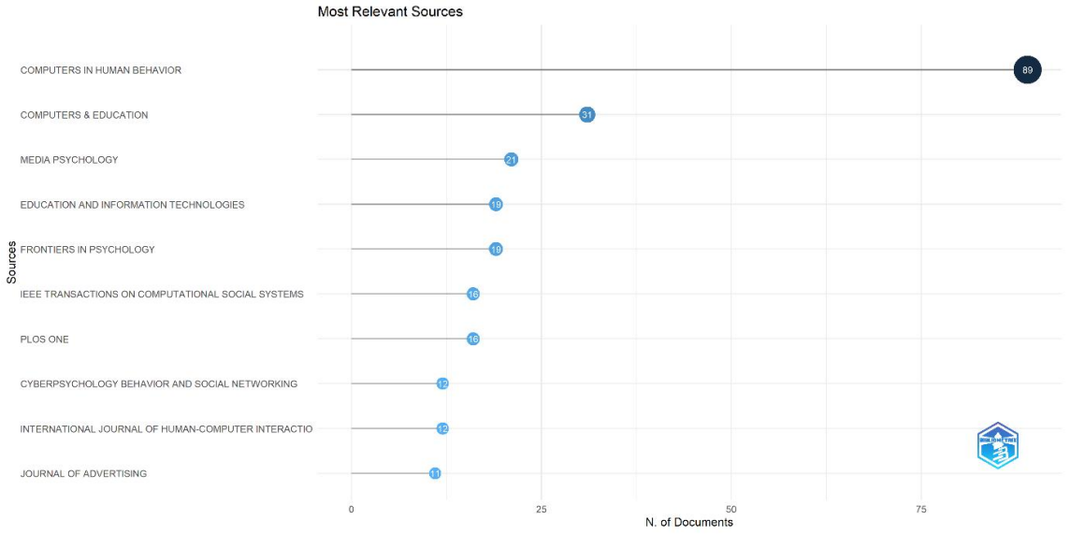

Figure 4: Most Relevant Sources

The longitudinal analysis of source productivity in Figure 5 demonstrates a clear divergence in publication trajectories among the leading journals in the field. Computers in Human Behavior shows the most substantial and consistent growth, with its cumulative output rising sharply after 2013 and continuing to accelerate through 2024, reflecting its role as the dominant outlet for research on digital behavior and media effects. Computers & Education also exhibits steady growth beginning around 2010, but at a slower pace, indicating a sustained yet more moderate contribution to the literature on educational technologies. In contrast, journals such as Media Psychology, Frontiers in Psychology, and

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Education and Information Technologies display more gradual and intermittent increases in productivity, with notable expansions beginning after 2015. This overall pattern highlights the centrality of a few key sources in driving scholarly output while illustrating how related journals have contributed to a diversified but uneven growth across the field.

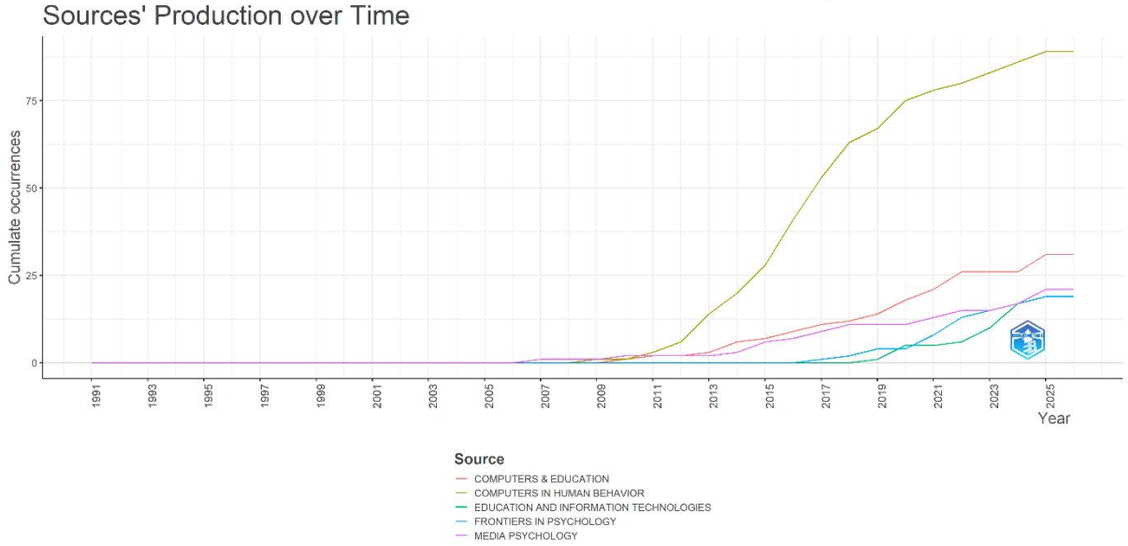

Figure 5: Sources' Production over Time

The analysis of author productivity presented in Figure 6 highlights a core group of scholars who have made substantial contributions to the field. Claire M. Segijn emerges as the most prolific author with 15 publications, followed closely by Daniel Smilek (14) and Anastasia Kononova (13), reflecting their central roles in shaping research on media multitasking, attention, and cognitive processes. Susanne E. Baumgartner and Brandon C. W. Ralph also demonstrate strong productivity with 11 documents each, indicating their sustained involvement in both experimental and behavioral investigations related to digital media use. A second tier of influential researchers, including Se-Hoon Jeong, Sriparna Saha, Hilde A. M. Voorveld, Asif Ekbal, and Yoori Hwang, each contribute between 9 and 10 publications, underscoring the field's diverse methodological and thematic scope. Collectively, these authors represent the intellectual backbone of the domain, with their high publication volumes suggesting long-term engagement and leadership in advancing the theoretical and empirical foundations of the research area.

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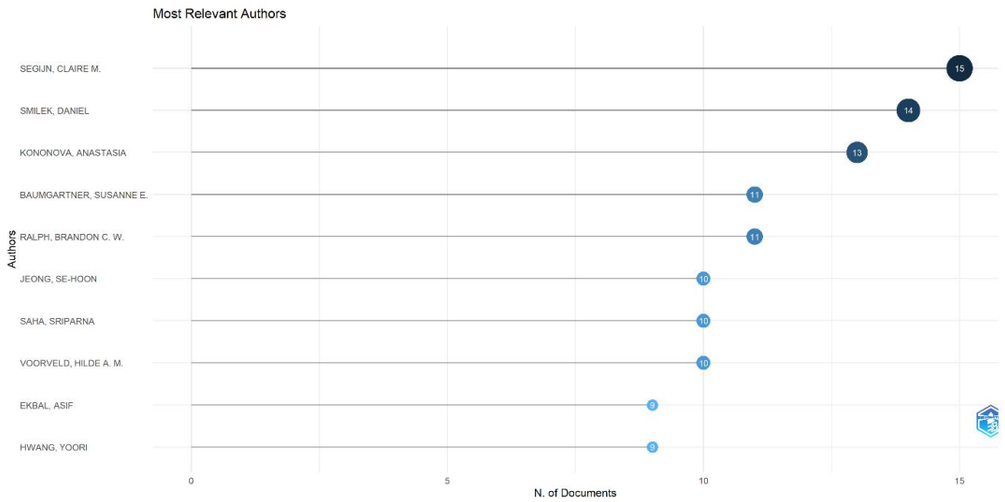

Figure 6: Most Relevant Authors

The temporal analysis of author productivity presented in Figure 7 highlights notable differences in publication trajectories, citation influence, and thematic evolution across leading scholars in the field. Authors such as Claire M. Segijn, Daniel Smilek, Anastasia Kononova, Susanne E. Baumgartner, and Brandon C. W. Ralph show consistent publication activity across multiple years, reflecting sustained engagement with media multitasking, attention, advertising, and cognitive outcomes. Their productivity patterns include visible citation peaks, particularly around 2014, 2016, 2019, and 2021, which correspond to the publication of several high-impact studies that shaped ongoing debates within the domain. In contrast, long-standing contributors like Se-Hoon Jeong display a much wider temporal span, beginning in 2007 and peaking significantly in 2016, driven by influential works on smartphone addiction, media multitasking effects, and meta-analytic evaluations. Conversely, emerging authors such as Sriparna Saha and Asif Ekbal exhibit shorter but rapidly growing publication timelines, with strong early citation performance linked to computational methods for sentiment analysis, misinformation detection, and emotion-driven machine learning applications.

Collectively, the visual patterns in Figure 7 point to two parallel developments within the field: the persistence of cognitive- and behavior-oriented research anchored by established scholars, and the rise of computationally driven studies led by newer researchers. Scholars like Hwang Yoori, despite shorter publication spans, achieved concentrated bursts of high impact, especially in 2016, demonstrating that short but thematically focused contributions can significantly shape discourse within the field. Furthermore, the recurring collaboration patterns, visible through overlapping publication years and shared citation peaks, underscore the extent to which co-authorship has contributed to impactful knowledge production. The overall distribution suggests a field that is both maturing and diversifying, with established authors reinforcing foundational themes and emerging researchers expanding methodological horizons through advanced AI, NLP, and deep learning approaches applied to digital communication phenomena.

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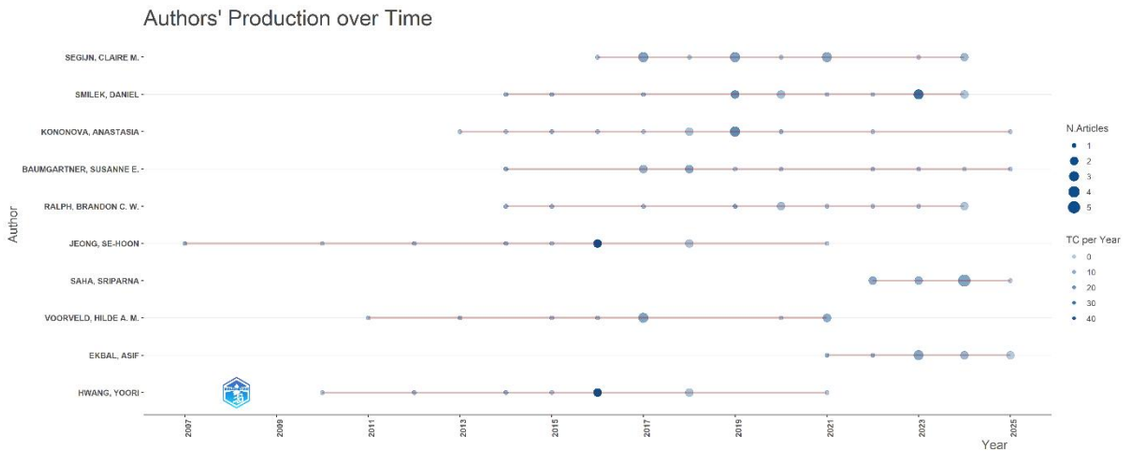

Figure 7: Authors' Production over Time

The analysis of institutional productivity in Figure 8 demonstrates that research output in this domain is strongly concentrated within a small number of influential university systems. The University of California System leads with 48 publications, reflecting its extensive research capacity and long-standing emphasis on psychology, communication, and technology-related behavioral studies. Close behind are the University System of Ohio (45 articles) and the University of Amsterdam (44 articles), both of which appear as central hubs for work on media effects, cognitive psychology, and digital behavior. Mid-tier but still highly active contributors include the Pennsylvania Commonwealth System of Higher Education (PCSHE) (37 articles) and Michigan State University (35 articles), highlighting their roles in advancing research on digital media use, multitasking, and communication processes. In addition, strong representation from technologically oriented institutions, such as the Indian Institute of Technology System (30 articles) and Stanford University (26 articles), points to the growing significance of computational and interdisciplinary approaches within the field. The remaining highly relevant affiliations, including the University of Minnesota System, University of Minnesota Twin Cities, and Ohio State University, each contributing between 22 and 24 publications, underscore the widespread institutional engagement and the broad, international research base supporting the development of this scholarly area.

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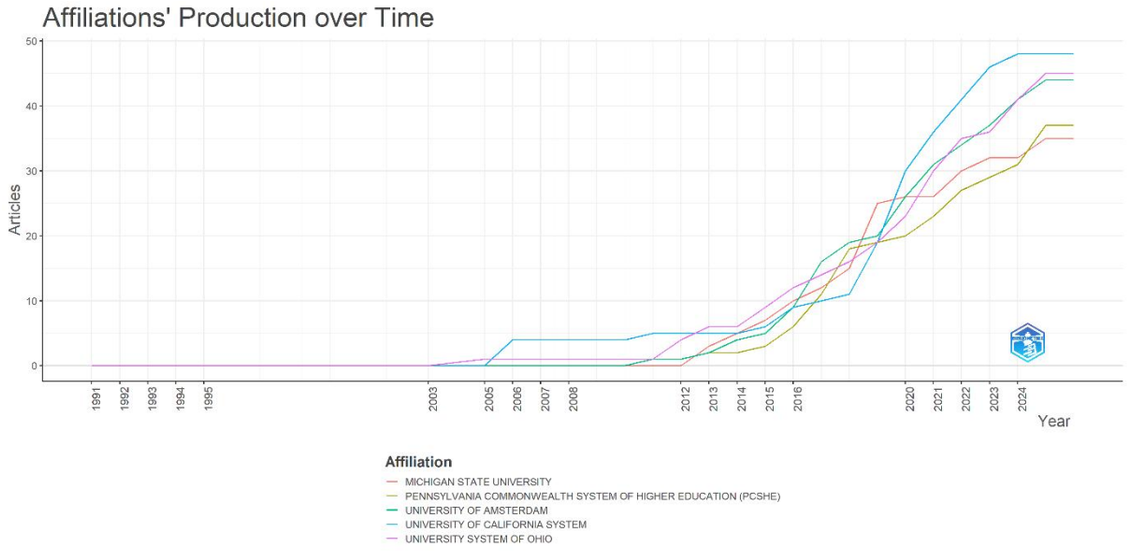

Figure 8: Affiliations' Production over Time

The analysis of corresponding authors' countries in Figure 9 reveals a highly uneven but globally distributed research landscape, with clear distinctions between nations that prioritize domestic scholarship and those that rely heavily on international collaboration. The USA emerges as the most dominant contributor, producing 311 publications, yet only 14.8% of these involve multiple countries, indicating that its vast research capacity largely supports self-sufficient, nationally anchored scholarship. China, the second most productive country with 181 publications, shows a more balanced profile with 25.4% MCPs, reflecting both strong domestic output and growing international engagement. Mid-tier contributors such as Germany, Canada, Netherlands, Australia, and the United Kingdom exhibit moderate MCP ratios ranging from 22% to nearly 39%, suggesting a dual strategy that blends national research strength with active cross-border collaboration. In contrast, smaller but strategically globalized research systems, including Singapore, Austria, Finland, and Saudi Arabia, display MCP ratios above 40%, indicating that international partnerships form a central pillar of their scientific output. A striking outlier in this dataset is Turkey, which shows 0% MCP despite producing 18 publications, underscoring a uniquely domestic orientation among Turkish corresponding authors within this research domain.

Overall, Figure 9 highlights how structural, institutional, and policy-driven factors shape global patterns of research collaboration. Countries with larger and more established academic ecosystems, such as the USA and India, tend to produce high volumes of single-country publications, while nations with smaller or more globally connected systems exhibit higher proportions of multi-country work. The distribution also shows that European and Asia-Pacific countries, such as the Netherlands, the United Kingdom, Korea, and Australia, occupy a middle ground, maintaining strong national contributions while actively engaging in international networks. These patterns reinforce the idea that collaboration is not solely a function of productivity but is also shaped by strategic orientation, funding incentives, disciplinary traditions, and the size of the domestic research base.

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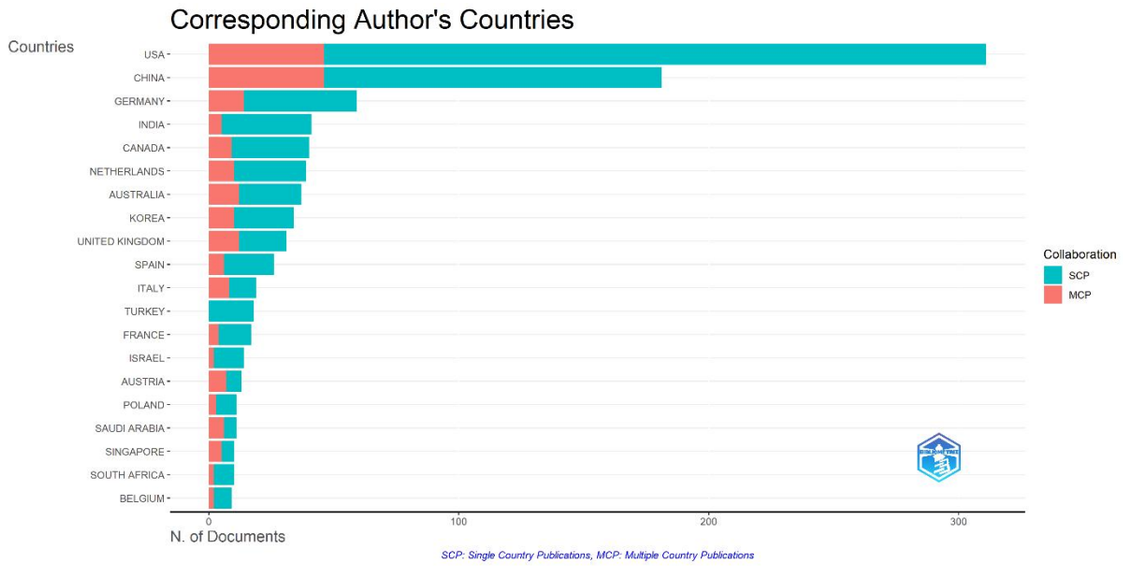

Figure 9: Corresponding Author's Countries

The global distribution of scientific production shown in Figure 10 highlights a highly uneven yet internationally dispersed research landscape. The United States clearly dominates with 774 publications, represented by the darkest shading on the map, underscoring its position as the central hub of scholarly output in this domain. China follows as the second-largest contributor with 430 publications, reflecting its rapidly growing research capacity and increasing global presence. A second tier of active research-producing nations includes Germany (132), Australia (99), Netherlands (99), India (93), United Kingdom (90), Canada (84), South Korea (75), and Spain (61). These countries display medium-to-high levels of productivity, forming a geographically diverse network spanning North America, Europe, and the Asia-Pacific region. The map further illustrates that while research contributions are widespread, large parts of Africa, the Middle East, and South America remain comparatively underrepresented, appearing in lighter shades or gray. This imbalance reflects ongoing disparities in global research infrastructure, funding availability, and institutional capacity. Overall, Figure 10 emphasizes that the field is driven by a combination of established Western research powers and rising Asian contributors, with significant but uneven participation across other regions.

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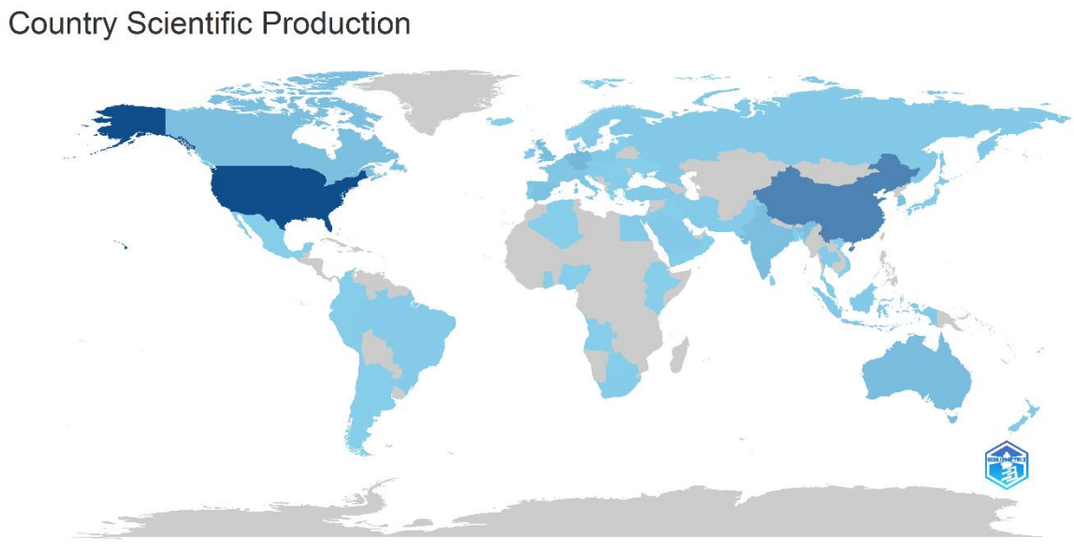

Figure 10: Country Scientific Production

The analysis of the most globally cited documents in Figure 11 highlights a small group of influential studies that have significantly shaped the intellectual foundations of this research field. Leading the list is Ophir et al. (2009) with 936 global citations, widely recognized for establishing the cognitive framework linking media multitasking to attention and executive control, an article that continues to anchor much of the subsequent scholarship. Following this is Alonso-Mora et al. (2017) with 800 citations, reflecting high-impact interdisciplinary work published in PNAS that resonates across computational and behavioral research domains. Similarly, Kabali et al. (2015) in Pediatrics has accrued 636 citations, underscoring the relevance of early childhood media exposure studies within both medical and communication-related discussions. Other prominent contributions include Rosen's two 2013 Computers in Human Behavior articles, each exceeding 450 citations, which solidify the behavioral and psychological dimensions of digital media research.

The remaining highly cited documents further illustrate the thematic breadth and interdisciplinary nature of the field. Twenge (2019) amassed 380 citations, reflecting the growing scholarly attention to mental health and social media effects, while Kirschner (2017) and Rashid (2016) contribute substantially to work on multitasking, digital learning, and computer-mediated behaviors with 376 and 338 citations, respectively. Jeong (2016) also stands out with 329 citations, highlighting the significance of digital addiction and media multitasking research in contemporary psychological and communication studies. The inclusion of Calamaro et al. (2009) with 326 citations indicates strong cross-disciplinary engagement with pediatric sleep research and its connections to digital device use. Collectively, Figure 11 demonstrates that the field's most influential works span cognitive science, pediatrics, psychology, digital behavior, and computational studies, reflecting the diverse scholarly streams that have shaped its evolution.

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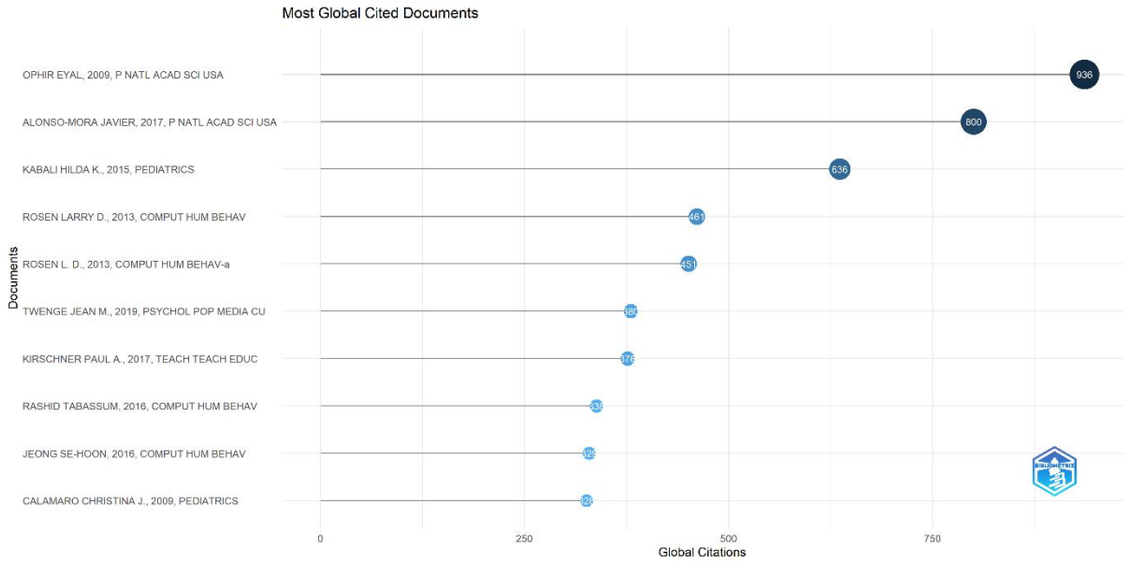

Figure 11: Most Global Cited Documents

The keyword tree map in Figure 12 provides a clear visual representation of the dominant thematic areas shaping this research field, revealing a strong concentration around concepts related to multitasking (432 occurrences), media multitasking (353), performance (202), and attention (156). These core clusters indicate that the field remains heavily anchored in examining how simultaneous media use affects cognitive processes, behavioral outcomes, and task performance. Surrounding these central themes are closely related concepts such as cognitive control (114), technology (101), working memory (99), and distraction (72), underscoring the field's sustained engagement with cognitive psychology and human information-processing frameworks. Additionally, keywords such as social media (135), Facebook (88), adolescents (82), and behavior (67) highlight a parallel line of research focused on youth digital behaviors, platform-specific effects, and broader communication patterns. The presence of emerging themes, including anxiety, depression, addiction, motivation, and self-regulation, suggests increasing interest in psychological well-being and digital media's emotional and behavioral consequences. Collectively, Figure 12 illustrates a mature yet expanding thematic structure, where established cognitive topics coexist with newer psychological, educational, and technology-driven research directions.

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Figure 12: Tree Map

The trend topic analysis in Figure 13 reveals a clear temporal evolution in the field, moving from foundational cognitive and media-use concepts toward highly specialized digital behavior and AI-driven methodological themes. Early years (2012–2016) are dominated by terms such as multicommunicating, task-switching, dual-task performance, and background television, reflecting an initial focus on basic cognitive mechanisms and traditional media environments. Between 2016 and 2020, research attention shifts toward understanding the broader effects of media use, with increasing prominence of terms like attention, impact, emotion, communication, and cognitive control, signaling growing interest in the psychological and behavioral consequences of media engagement. From 2020 onward, the field experiences a decisive shift, as topics such as media multitasking, academic performance, social media, and usage become central, alongside the emergence of sophisticated computational terms such as deep learning, feature extraction, multitask learning, and computational modeling. The increasing frequency and clustering of these latter terms demonstrate the integration of machine learning and AI methodologies into mainstream research, marking a new phase in which complex digital behaviors are examined through advanced analytical tools.

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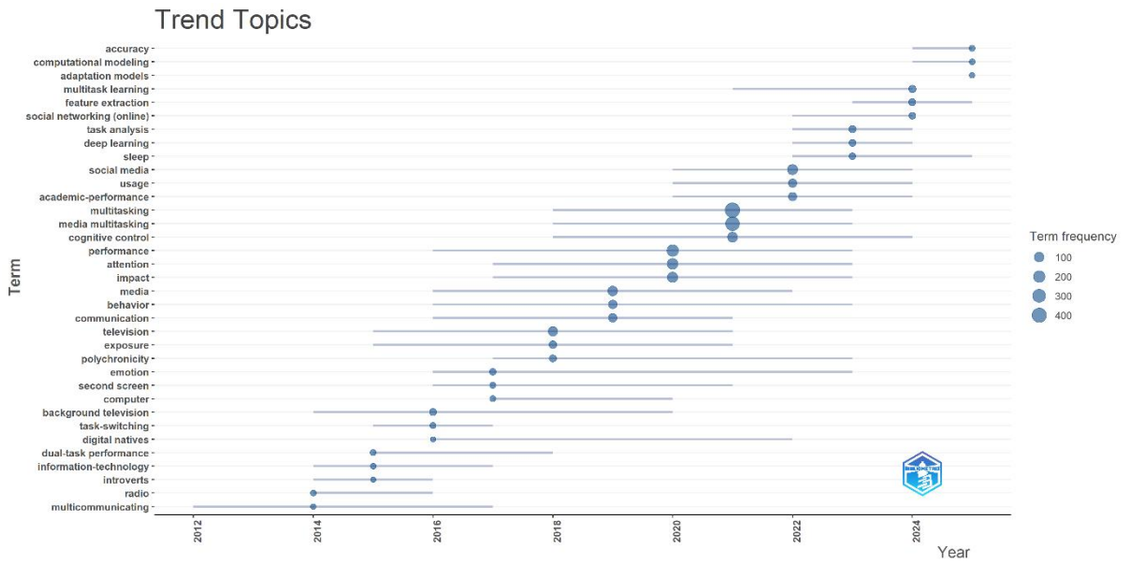

Figure 13: Trend Topics

The document coupling analysis in Figure 14 reveals four tightly connected thematic clusters, each representing a distinct yet overlapping strand of scholarship within the broader media multitasking research domain. All clusters show high impact values (impact = 1), indicating that each thematic grouping consists of frequently cited and influential documents. Cluster 1, comprised of terms such as multitasking, media multitasking, and social media, reflects research exploring behavioral and communicative dimensions of multitasking within digital environments. Cluster 2 brings together media multitasking, multitasking, and academic performance, signaling strong scholarly interest in how digital multitasking behaviors affect learning outcomes, a theme that has gained prominence in educational psychology. Cluster 3 adopts a similar thematic configuration but places additional emphasis on academic performance, demonstrating that this topic is central across multiple document groups. Cluster 4 is the most structurally distinctive, combining media multitasking, attention, and executive function, which represents the cognitively oriented branch of the field focused on understanding the neural and psychological mechanisms underlying multitasking behaviors. The relatively higher centrality value of Cluster 4 (0.472) indicates that cognitive-control research plays a bridging role across thematic subfields, linking behavioral, educational, and psychological perspectives within the overall intellectual structure.

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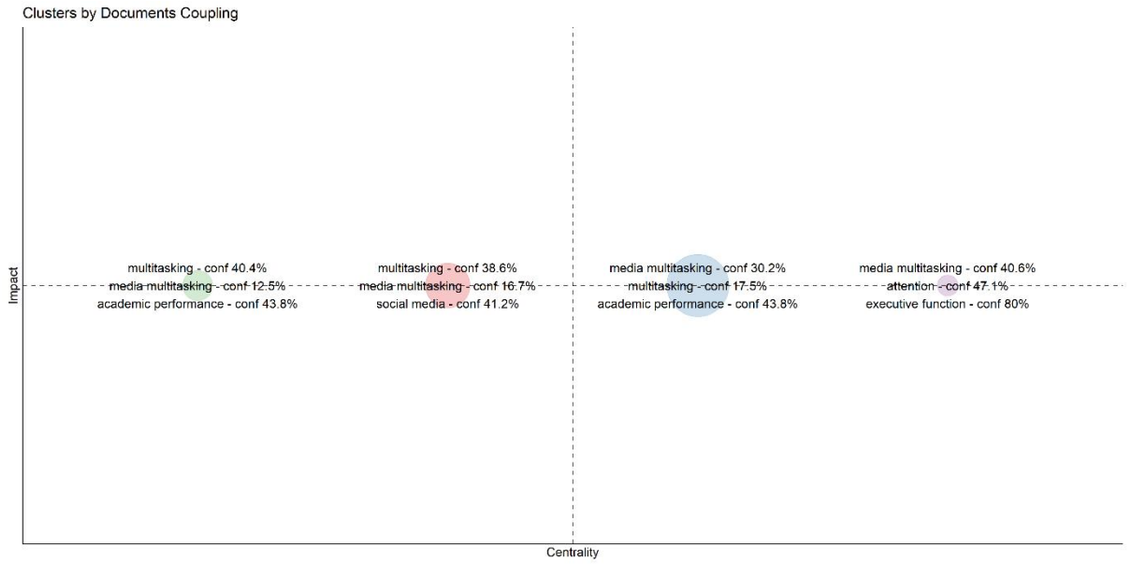

Figure 14: Cluster by Document Coupling

The word co-occurrence network in Figure 15 reveals two tightly interconnected thematic clusters that define the field's intellectual structure: a socio-educational cluster (blue) centered on multitasking, which links to concepts such as social media, academic performance, students, smartphone use, and engagement, and a cognitive-mechanistic cluster (red) anchored by media multitasking, connecting to performance, attention, cognitive control, working memory, and executive function. The strong bridging role of the term multitasking, the largest and most central node, demonstrates how these two communities intersect, indicating that research on multitasking spans both real-world behavioral consequences and experimentally studied cognitive processes. Overall, Figure 15 shows a cohesive yet multidimensional research landscape in which educational, social, and cognitive perspectives converge to explain the complex dynamics of digital multitasking.

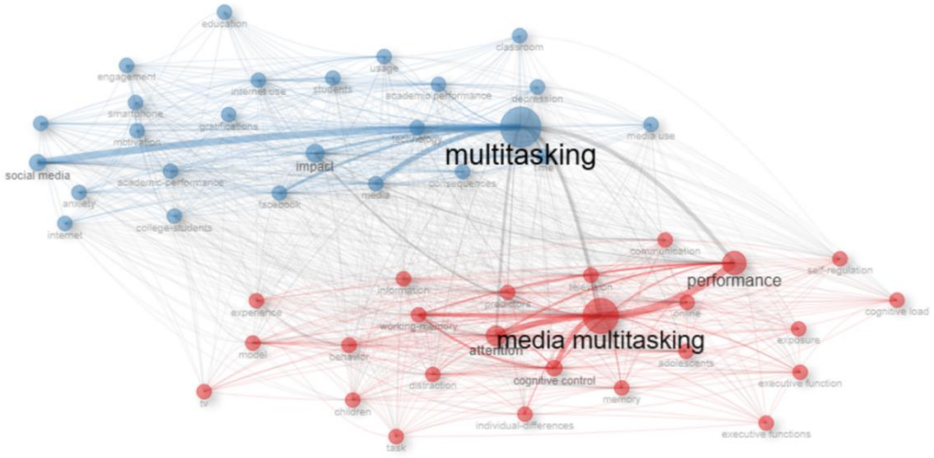

Figure 15: Word co-occurrence network

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The strategic diagram in Figure 16 highlights four distinct thematic zones within the field, showing how topics vary in maturity, relevance, and development. The Motor Themes in the upper-right quadrant, anchored by clusters such as media multitasking, performance, attention, and technology/impact/Facebook, represent the most influential and well-developed areas driving the field forward, integrating cognitive performance research with the broader impacts of social technologies. In contrast, Niche Themes positioned in the upper-left, including feature extraction, deep learning, and training, reflect highly specialized but methodologically robust areas, indicating growing technical sophistication but limited integration with the field's core conceptual debates. The lower-right quadrant houses Basic Themes, such as multitasking, media, and social media, which function as foundational concepts with high relevance but lower internal cohesion, supporting a wide range of related sub-topics. Finally, the lower-left quadrant captures Emerging or Declining Themes, such as sentiment analysis, multitask, and emotion, which currently show low centrality and weak development, suggesting they are either nascent research directions or areas losing momentum. Overall, Figure 16 demonstrates a research landscape anchored by strong cognitive and technological themes, supported by emerging computational methods, and enriched by foundational social media concepts that continue to shape evolving scholarly trajectories.

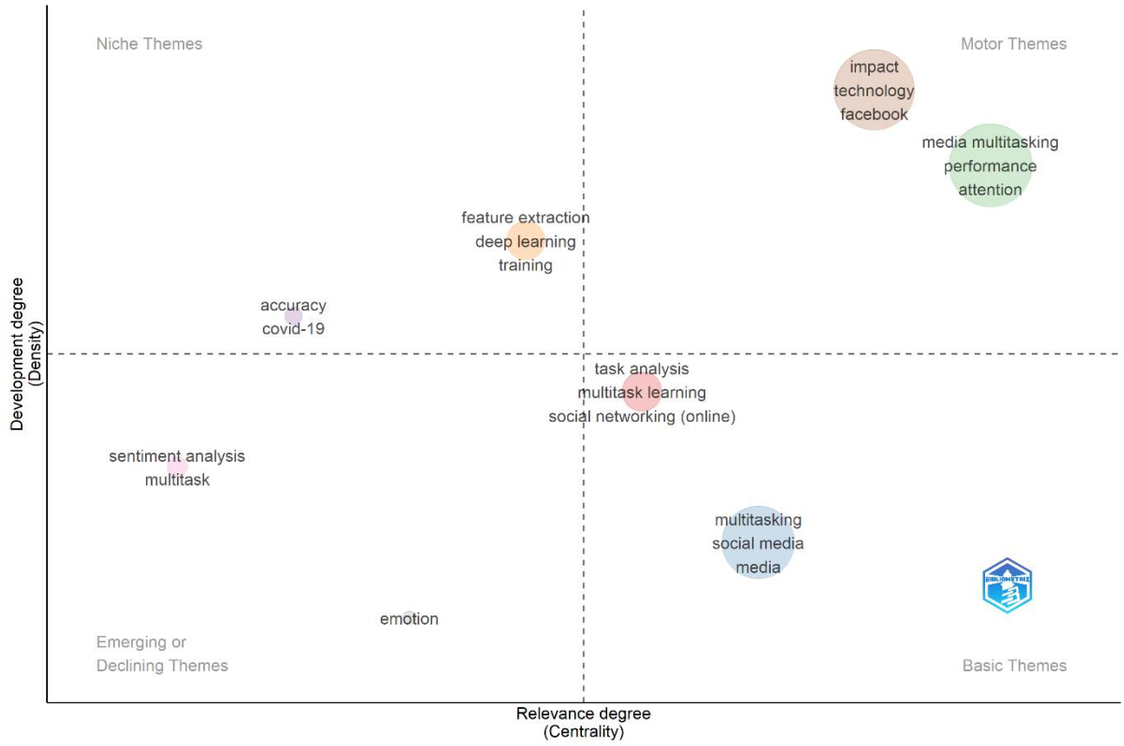

Figure 16: Thematic Map

The Country Collaboration Map (Figure 17) shows a highly centralized and uneven global research network, with the United States emerging as the dominant hub of scientific collaboration, indicated by its darkest shading and the dense web of connections extending to nearly all major research nations. Strong transatlantic partnerships link the USA with the United Kingdom, Germany, France, and other Western European countries, forming one of the most active collaboration corridors. Equally notable is the USA's deep

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engagement with China, Japan, South Korea, and Australia, reflecting a powerful Asia–Pacific research axis. China itself also demonstrates substantial outward collaboration, connecting with both Western and regional partners, underscoring its growing global influence. In contrast, collaboration networks in South America, Africa, and parts of Asia appear far more limited, with only a few countries, such as Brazil and South Africa, showing visible international ties. Overall, Figure 17 reveals a globally interconnected but asymmetrical scientific landscape, dominated by North America, Western Europe, and East Asia/Oceania, with the USA positioned as the central node bridging these major research regions.

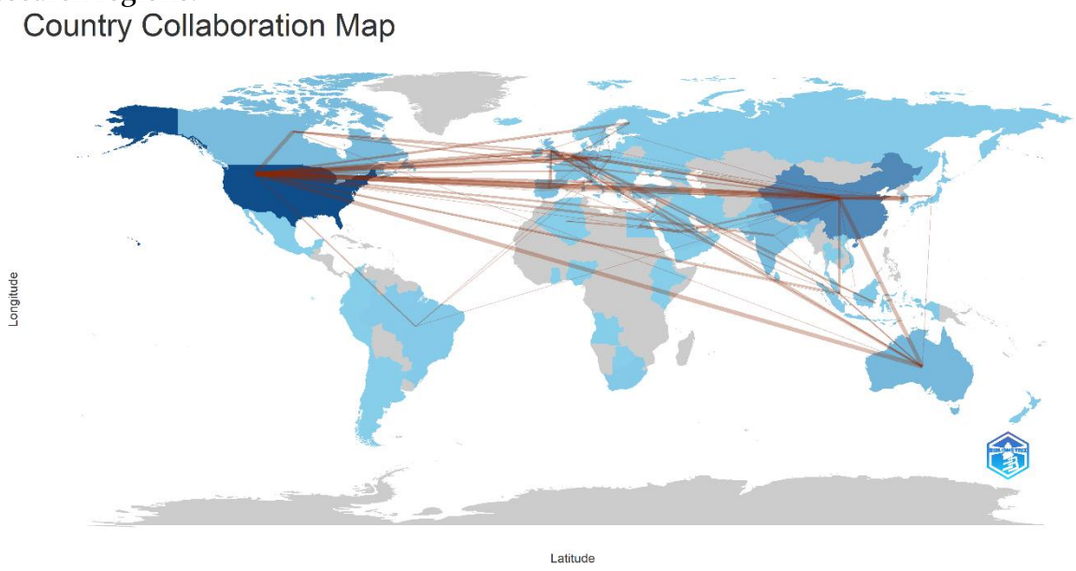

Figure 17: Collaboration Map

Discussion

The present bibliometric analysis portrays media multitasking as a rapidly maturing but unevenly distributed field, both intellectually and geographically. Over a three-decade span, research output has shifted from scattered, low-volume contributions to a dense, collaborative, and highly cited body of work. A small number of journals, institutions, and countries function as structural hubs, while many others contribute intermittently at the periphery. At the same time, author and collaboration patterns reveal a core of long-standing scholars whose work anchors the field, complemented by newer, computationally oriented researchers who are expanding its methodological and thematic scope.

Intellectually, the field remains strongly rooted in cognitive and performance-oriented perspectives, but the current landscape is clearly more multidimensional than early work suggested. Foundational cognitive-control studies and educational experiments coexist with emerging strands on socioemotional well-being, social media use, academic performance, and AI-enabled analytics. The mapping of keywords, co-occurrence structures, and thematic clusters shows that media multitasking is no longer a niche topic within attention research but an interdisciplinary research space connecting psychology, communication, education, neuroscience, and computational sciences. The strategic positioning of cognitive and technological themes as “motor” clusters, alongside basic social media concepts and emerging AI-related methods, indicates that the field is simultaneously consolidating and diversifying.

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RQ1: Global Scholarly Production and Leading Contributors

The longitudinal patterns in this study show that media multitasking has evolved from a scattered niche topic into a sustained and interdisciplinary research field. Early work appeared sporadically and was largely exploratory, often situated within broader discussions of digital media use (Bardhi et al., 2010; Frölich & Lehmkuhl, 2018). Over time, however, output expanded and stabilized, particularly in the last decade, mirroring broader growth trends in digital behavior and social media scholarship documented in related bibliometric studies (Hu et al., 2024; Roblek et al., 2022). The concentration of publications in a small number of high-impact journals, most prominently *Computers in Human Behavior*, *Computers & Education*, and *Media Psychology*, confirms that media multitasking is firmly anchored at the intersection of communication, psychology, and educational technology (Beuckels et al., 2021; Różańska & Gruszka, 2020).

Institutionally and geographically, the field is driven by large, well-resourced university systems in North America and Western Europe, alongside rapidly rising Asian contributors. This pattern aligns with earlier work showing that media multitasking behavior itself varies across cultural and infrastructural contexts (Srivastava et al., 2016; Lin et al., 2020; Barbosa & Pedro, 2020), but the present mapping makes clear that knowledge *about* media multitasking is similarly unevenly distributed. High output and relatively low international collaboration ratios in countries such as the United States suggest self-sufficient domestic research ecosystems, whereas smaller systems rely more on cross-border partnerships. The relative absence of institutions and authors from underrepresented regions underscores a structural gap in the evidence base: theoretical models of multitasking are largely developed in affluent, high-connectivity settings, raising questions about their applicability to more diverse global contexts.

RQ2: Intellectual Structures, Thematic Clusters, and Conceptual Linkages

The science-mapping results reveal a coherent but multi-layered intellectual structure centered on cognitive control and performance, with several applied strands radiating outward. Core clusters focus on attention, working memory, executive function, and everyday failures of cognitive control among heavy media multitaskers (Ralph et al., 2014; Kong et al., 2023; Chen et al., 2025). These foundations are tightly connected to educational work showing that media multitasking during study tasks is associated with increased mind wandering and reduced learning outcomes (Lin et al., 2011; Loh et al., 2016; May & Elder, 2018; Haverkamp et al., 2024). The coupled-document and keyword analyses show that academic performance has become a shared focal point across multiple clusters, bridging basic cognitive theories of limited capacity with applied concerns about study habits and digital learning environments (Zhou & Deng, 2023; Rasyadan Reza Putra & ER, 2024).

At the same time, the field contains distinct socioemotional and communication-oriented subfields. Research on digital social multitasking and emotions demonstrates that multitasking is embedded in social interaction patterns and affective states, not just in cognitive efficiency (Shukla & Sharma, 2018; Yang & Christofferson, 2020). Another cluster links media multitasking to advertising and media-processing outcomes, showing nuanced effects on memory and persuasion in multiscreen environments (Furlan et al., 2019; Garaus, 2020; Muraro & Kononova, 2025). Methodologically, debates around measurement tools, particularly critiques of the Media Multitasking Index and calls for behavioral, network-based, and psychometrically improved instruments, appear as a cross-cutting theme

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(Benbunan-Fich, 2011; Wiradhany & Baumgartner, 2019; Rafiq et al., 2025; Alghamdi & Li, 2025). Overall, the intellectual structure is best described as a set of interlinked but partially siloed clusters, with cognitive-control research playing a central integrative role but with considerable room for theoretical and methodological cross-fertilization between cognitive, educational, socioemotional, and advertising perspectives.

RQ3: Thematic Priorities and Methodological Shifts Across Technological Eras

The thematic evolution captured in this study maps closely onto broader shifts in the digital media environment. Initial research focused on traditional media and simple dual-task paradigms, such as background television and basic task-switching, framing media multitasking primarily as a cognitive-load problem (Lin et al., 2011; Bardhi et al., 2010). As social media and mobile devices became ubiquitous, the field shifted toward digital social multitasking, smartphone use, and students' academic performance, reflecting growing concern about how constant connectivity shapes learning, attention, and well-being (May & Elder, 2018; Shukla & Sharma, 2018; Yang & Christofferson, 2020). Recent work extends these concerns to complex learning environments and multi-document processing, often emphasizing self-regulation and task–technology alignment (Zhou & Deng, 2023; Haverkamp et al., 2024; Ayyash et al., 2024).

Methodologically, the trajectory moves from self-report scales and lab experiments toward more sophisticated, computational, and longitudinal approaches. Entropy-based indices, network approaches, and psychometric refinements reflect dissatisfaction with purely self-reported multitasking measures and a turn toward behaviorally grounded metrics (Benbunan-Fich, 2011; Wiradhany & Baumgartner, 2019; Alghamdi & Li, 2025; Matthews et al., 2022). In parallel, AI-driven techniques and advanced bibliometric workflows, such as AI-supported screening, dual-tool analysis, and integrated visual analytics, are increasingly used to synthesize large research corpora and model complex digital behaviors (Donthu et al., 2021; Lim et al., 2024; Öztürk et al., 2024; Stefanis et al., 2025; Aria & Cuccurullo, 2017). The trend-topic analysis in this study suggests that these computational themes are gaining momentum but have not yet fully permeated the conceptual core of the field, indicating that media multitasking research is currently in a transition phase where traditional experimental paradigms and emerging AI-based approaches coexist and, in many cases, remain only partially integrated.

Practical Implications

The findings have several practical implications for researchers, educators, practitioners, and policymakers. For researchers, the mapped intellectual and geographic structures highlight the need for more integrative and collaborative designs. Cognitive, educational, socioemotional, and advertising clusters share common concerns around attention, distraction, and performance, yet they often operate in isolation. Designing studies that explicitly connect neural and cognitive mechanisms (e.g., Loh & Kanai, 2014; Zhang et al., 2022, 2025; Wang et al., 2025) with classroom outcomes (Lin et al., 2011; Loh et al., 2016) or interpersonal dynamics (Yang & Christofferson, 2020) could yield richer, more ecologically valid insights into how media multitasking operates in real-world contexts.

For educators and academic support professionals, the centrality of academic performance within multiple thematic clusters underscores that media multitasking is not merely a background concern but a structural feature of contemporary learning environments. Rather than relying solely on prohibition or blanket discouragement, institutions could draw on evidence about mind wandering, cognitive control, and digital

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self-regulation to design interventions that help students manage their digital ecology during study tasks. This might include redesigning learning tasks to reduce opportunities for disruptive multitasking, integrating metacognitive training on attention management, or using technology readiness and task–technology fit frameworks to align digital tools with pedagogical goals (Rafiq et al., 2024).

Finally, the geographic imbalances identified in this study should concern policymakers and funding agencies. Concentration of expertise in a few high-income countries risks producing models of media multitasking that are implicitly tailored to their infrastructure, cultural norms, and educational systems. Funding schemes that support cross-regional collaborations, capacity building, and context-sensitive research in underrepresented regions would not only promote equity but also improve the generalizability of theories and interventions.

Limitations

This study has several limitations that should be acknowledged when interpreting its findings. First, the analysis relies exclusively on the Web of Science Core Collection. Although WoS is widely used and offers high-quality metadata for scientometric work, it does not capture all relevant scholarship, particularly regional journals, conference proceedings, and non-English outlets. The resulting bias likely underestimates contributions from emerging research systems and non-Western contexts. Second, bibliometric approaches inherently privilege citation-based indicators and cannot fully capture the conceptual richness, methodological rigor, or practical impact of individual studies. Highly cited works may be influential but also controversial, while low-citation studies may offer innovative insights that have not yet diffused. The present analysis mitigated this limitation by combining performance, collaboration, and structural mapping, but it nonetheless remains descriptive at the level of article content and theoretical nuance.

Third, despite careful data cleaning and normalization of author names, institutions, and keywords, some residual ambiguities are inevitable, especially for large university systems and common surnames. This may affect fine-grained estimates of institutional or author productivity, even if broader patterns are robust. Additionally, the most recent years in the dataset are affected by indexing lags and incomplete citation accrual, which can make emerging themes and authors appear less central than they will ultimately become. Finally, the choice of analytical tools and parameters, such as relying on *bibliometrix* in R for network construction and using specific thresholds for co-occurrence or coupling, may shape the visibility of certain clusters over others. Alternative tools, such as VOSviewer or CiteSpace, or different parameter settings, might yield slightly different cluster boundaries or centrality rankings, even if the broad structural picture remains similar.

Future Research Directions

Building on these limitations and findings, several avenues for future research can be identified. First, there is a need for integrative theoretical frameworks that explicitly connect the cognitive-control, educational, socioemotional, and advertising clusters identified in this study. Multi-method projects that combine behavioral experiments, neuroimaging, classroom interventions, and digital trace analysis would help bridge current silos and clarify when, how, and for whom media multitasking is most detrimental or adaptive.

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Second, future bibliometric work could incorporate additional databases such as Scopus, PubMed, or regional indexing services to correct for WoS coverage biases and to trace how media multitasking research evolves across linguistic and cultural boundaries. Finally, given the centrality of academic performance, future work should engage more directly with policy and practice by evaluating interventions that redesign digital learning environments. This includes testing how task–technology fit, technology readiness, and self-regulation training can be combined to reduce harmful forms of multitasking while leveraging beneficial ones. Such intervention-focused research would move the field beyond documenting correlations toward developing evidence-based guidelines for educators, platform designers, and policymakers.

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