



Global trends and hotspots in the research on fashion and gender

Emel Aksoy ^{1*}

 0000-0002-5199-2236

¹ Department of Journalism, Faculty of Communication, Akdeniz University, Antalya, TURKEY

* Corresponding author: emelozdemir@akdeniz.edu.tr

Citation: Aksoy, E. (2026). Global trends and hotspots in the research on fashion and gender. *Online Journal of Communication and Media Technologies*, 16(1), Article e202619. <https://doi.org/10.30935/ojcm18360>

ARTICLE INFO

Received: 7 Dec 2025

Accepted: 16 Mar 2026

ABSTRACT

This bibliometric study examines the evolution of scholarly research on fashion and gender over a thirty-year period, with the aim of identifying key trends, intellectual structures, and emerging research hotspots in the field. Accordingly, 1,940 documents on fashion and gender were indexed in the Web of Science database between 1990 and 2022 were analyzed. Network visualization and in-depth bibliometric analyses were conducted using the CiteSpace software. The results indicate that the USA, the UK, Canada, and Australia are not only the most prolific contributors to the literature but also serve as central hubs connecting other countries engaged in fashion and gender research. The most highly cited journals include Journal of Consumer Research, Fashion Theory, Sex Roles, and Journal of Personality and Social Psychology, highlighting the interdisciplinary character of the field, which spans fashion studies, consumer research, social psychology, business, marketing, and management. Citation burst analysis reveals that authors such as D. Crane, R. Lewis, and B. Barry have recently gained increased scholarly attention. Furthermore, keyword burst analysis demonstrates a clear shift in research focus toward themes such as social media, politics, and antecedents, reflecting broader sociocultural and technological transformations. Overall, the findings provide valuable insights for researchers by illustrating how fashion, gender, sustainability, and social media are increasingly interconnected, and how these intersections contribute to ongoing debates on inclusion and diversity within the fashion industry.

Keywords: fashion, gender, bibliometrics, CiteSpace

INTRODUCTION

Research on fashion and gender has expanded considerably over the past decades, reflecting broader social, cultural, and political transformations. Fashion is no longer understood merely as a system of aesthetic choices or consumption practices; rather, it functions as a powerful medium through which gender identities are constructed, negotiated, and contested. New tendencies in fashion and gender studies not only shape individual behavior but also influence collective memory, social norms, and dominant imaginaries within society. Through clothing, bodily appearance, and stylistic choices, gendered identities can be reproduced, challenged, or reconfigured. Gender, while often associated with biological differences, is widely theorized as a socially constructed phenomenon maintained through cultural, symbolic, and institutional practices. Bourdieu (2007) conceptualizes gender as embedded in social structures that reproduce power relations through taste, distinction, and cultural capital. In a similar vein, Butler (2015) argues that gender should be understood as performative rather than fixed, emphasizing that repeated acts, gestures, and styles, such as dress, actively constitute gendered subjects. Fausto-Sterling (2020) further problematizes binary understandings of sex and gender, demonstrating how cultural norms shape scientific and social interpretations of bodies. Following these theoretical trajectories, fashion emerges as a central arena for the performative expression of gendered identities.

Fashion plays a crucial role in shaping social status, cultural identity, and self-expression, while simultaneously intersecting with issues such as sustainability, ethics, and globalization. A growing body of interdisciplinary scholarship has examined the relationship between fashion and gender from diverse perspectives. For example, Kaiser and Flury (2005) explored how color and design contribute to the gendered meanings of clothing, while Roach-Higgins and Eicher (1993) analyzed the historical role of dress in constructing and maintaining gender identities, particularly within Western contexts. Jones and Stallybrass (2000) demonstrated how clothing functioned as a mechanism of social control in early modern Europe, reinforcing hierarchies of gender and class. More recent studies have addressed consumption patterns (O'Sullivan et al., 2017), digital fashion practices (Noris et al., 2021), and perceptions of genderless fashion through big data analysis (Kim et al., 2022).

Despite the growing volume of scholarship, existing studies on fashion and gender remain fragmented across disciplines such as sociology, psychology, cultural studies, business, and communication. Although several systematic reviews have examined specific aspects of fashion research (Akter et al., 2002; Karaosman et al., 2017; Thorisdottir & Johannsdottir, 2019) to the best of the author's knowledge, no comprehensive bibliometric analysis has been conducted that maps the intellectual structure, research trends, and emerging hotspots at the intersection of fashion and gender.

To address this gap, the present study applies bibliometric analysis to the literature on fashion and gender published between 1990 and 2022. Using data retrieved from the Web of Science (WoS) database and analyzed through the CiteSpace software, the study aims to visualize the evolution of the field, identify influential authors, journals, countries, and cited references, and detect emerging research trends through keyword and citation burst analyses. By doing so, this research makes three main contributions. First, it provides a systematic overview of the development of fashion and gender research over three decades. Second, it identifies the intellectual foundations and interdisciplinary connections that shape the field. Third, it highlights emerging themes and research directions that can inform future studies.

DATA COLLECTION AND RESEARCH METHODOLOGY

This study adopts a bibliometric research design to systematically map the intellectual structure, evolution, and emerging trends of scholarly research on fashion and gender between 1990 and 2022. Bibliometric analysis enables the quantitative examination of large bodies of academic literature and is particularly suitable for identifying research patterns, influential actors, and thematic developments across time. Broadus (1987) defines bibliometrics as the quantitative analysis of publication-related units or their proxies, while subsequent studies emphasize its effectiveness in classifying scientific output according to variables, such as authors, journals, institutions, countries, and citation relationships (Gross & Pritchard, 1969; Small, 1973; White & McCain, 1998).

The primary objective of this study is to examine the chronological growth of publications, identify leading countries, authors, journals, and highly cited works, and reveal the conceptual structure of the field through keyword co-occurrence, citation bursts, and network clustering. By integrating mathematical, statistical, and visualization-based techniques, bibliometric analysis captures both the structural and temporal dynamics of a research field and highlights hidden patterns and emerging research fronts (Chen, 2017). In this respect, the present study goes beyond narrative or systematic reviews by offering a macro-level, data-driven overview of fashion and gender research.

Data were retrieved from the WoS core collection, one of the most comprehensive and widely used international citation databases for bibliometric research (Falagas et al., 2008; Mongeon & Paul-Hus, 2016). WoS was preferred over other databases to ensure data consistency, access to complete bibliographic records, and the elimination of duplicate documents. All records were downloaded in plain text format on January 21, 2023, including full bibliographic information and cited references.

The search strategy was based on the keywords "fashion" and "gender," applied to titles, abstracts, and author keywords. The time span was limited to publications from 1990 to 2022. To ensure conceptual relevance, the analysis was restricted to the following WoS research categories: humanities multidisciplinary, business, women's studies, history, sociology, management, social sciences Interdisciplinary, communication, cultural studies, physiology, philosophy, urban studies, ethics, folklore, education and educational research,

Table 1. Research questions, bibliometric indicators, and analytical techniques

| Research question | Bibliometric indicators | Analytical techniques | Software |
|----------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------|-----------|
| RQ1. Intellectual structures and thematic clusters | Co-cited references, keyword co-occurrence, centrality, modularity Q, silhouette score | Co-citation and clustering analysis | CiteSpace |
| RQ2. Thematic evolution and emerging hotspots | Citation bursts, keyword bursts, temporal trends | Burst detection and timeline analysis | CiteSpace |

physiology multidisciplinary, physiology social, literature, anthropology, literary theory and criticism, history of social sciences, and literary review. Publications related to medicine and clinical sciences were excluded. Only documents published in English were selected. Based on these criteria, a total of 1,940 academic publications constituted the final dataset.

CiteSpace (version 6.1.R1) was employed for data analysis and visualization, as it is a well-established tool for identifying intellectual structures, theoretical foundations, and emerging trends within scientific domains (Cui & Liu, 2018, p. 839). CiteSpace generates visual networks composed of nodes and links representing entities such as authors, journals, references, or keywords and their relationships. Structural indicators including modularity Q, mean silhouette score, and betweenness centrality were used to assess the quality, cohesion, and significance of network clusters (Chen et al., 2014). Citation burst analysis was applied to detect periods of intensified scholarly attention, while timeline visualizations were used to trace the evolution and continuity of research themes over time.

CiteSpace is selected as the primary bibliometric tool due to its strength in detecting emerging trends, citation bursts, and the temporal evolution of scientific knowledge. Unlike visualization-oriented tools such as VOSviewer, CiteSpace is specifically designed to trace intellectual turning points and identify research frontiers through time-based network analysis. This makes it particularly suitable for longitudinal analyses aiming to uncover how thematic structures and influential works evolve across extended periods. Through this methodological framework, the study provides a comprehensive and replicable mapping of fashion and gender research, offering robust insights into the field's development, dominant themes, and future research directions.

This study aims to systematically analyze the scientific literature on fashion and gender published between 1990 and 2022 by employing bibliometric analysis. Bibliometrics enables the quantitative examination of large bodies of academic literature in order to identify publication patterns, intellectual structures, and emerging research trends. Broadus (1987, p. 376) defines bibliometrics as the quantitative analysis of "physical units of publication or bibliographic units or their proxies." More broadly, bibliometrics examines bibliographic material from a quantitative perspective (Hérubel, 1999: 380), classifying scientific output according to variables such as journals, authors, institutions, and countries (Merigó et al., 2015, p. 421). By applying mathematical and statistical techniques, bibliometric analysis facilitates the identification of hidden structures, thematic patterns, and developmental trajectories within a research field (Daim et al., 2006, p. 983).

RESEARCH DESIGN AND ANALYTICAL FRAMEWORK

The present study focuses on the chronological growth of publications on fashion and gender, identifying leading countries, authors, journals, and highly cited works, while also examining prominent keywords, thematic clusters, and citation bursts. In doing so, the analysis captures both the structural composition and the temporal evolution of the field. Bibliometric techniques integrating mathematics, statistics, and information science are applied to comprehensively analyze the distribution, development, and trends of research output, with results presented through network visualizations (Gu et al., 2017, p. 23). This approach allows for a macro-level understanding of fashion-gender scholarship and provides a foundation for identifying new research directions and interdisciplinary connections.

To ensure methodological transparency, the research questions, indicators, and analytical techniques were explicitly aligned, as summarized in [Table 1](#).

Table 2. Data collection and selection criteria

| Criterion | Description |
|---------------------|-----------------------------|
| Database | WoS (core collection) |
| Time period | 1990-2022 |
| Language | English |
| Document types | Articles and reviews |
| Categories excluded | Medicine, clinical sciences |
| Keywords | Fashion, gender |
| Date of data export | January 21, 2023 |
| Final dataset | 1,940 documents |

Bibliometric Tool and Network Analysis

CiteSpace (version 6.1.R1) was selected as the primary bibliometric tool due to its capacity to identify emerging trends, citation bursts, and the temporal evolution of scientific knowledge (Cui & Liu, 2018, p. 839). Unlike visualization-oriented tools such as VOSviewer, CiteSpace is specifically designed to trace intellectual turning points and research frontiers through time-based network analysis, making it particularly suitable for longitudinal studies examining conceptual change. Network visualizations generated by CiteSpace consist of nodes and links, where nodes represent analytical units (e.g., references, authors, journals, or keywords) and links indicate relationships such as co-citation or co-occurrence.

Structural metrics were employed to assess the quality and reliability of the generated networks, including modularity Q, mean silhouette score, and betweenness centrality. Modularity Q values above 0.30 indicate a significant community structure, while silhouette scores above 0.70 suggest strong internal consistency within clusters. In this study, silhouette values exceeding 0.90 indicate that the identified thematic clusters are highly homogeneous and conceptually coherent. Betweenness centrality was used to identify nodes that function as intellectual bridges across clusters, highlighting influential works and concepts within the field. Timeline visualizations were further employed to illustrate the evolution and persistence of thematic clusters over time.

To assess the quality and reliability of the clustering results, modularity Q and silhouette scores were employed. Modularity Q values above 0.3 indicate a significant community structure, while silhouette scores above 0.7 suggest high internal consistency within clusters. In this study, silhouette values exceeding 0.9 indicate that the identified thematic clusters are highly homogeneous and conceptually coherent.

Cluster labels were generated automatically by CiteSpace using keyword extraction algorithms. To ensure thematic validity, the labels were reviewed by examining the most frequently cited publications and recurring keywords within each cluster, allowing for confirmation of conceptual coherence.

Data Collection and Selection Criteria

The data for this study were retrieved from the WoS core collection, one of the most comprehensive international citation and analytical databases (K. Li et al., 2018, p. 2; Pranckute, 2021, p. 2). WoS comprises multiple sub-databases and covers more than two hundred research categories, making it suitable for large-scale bibliometric analysis (Liu, 2019). WoS was selected as the sole data source in order to ensure consistency of citation data, access to complete bibliographic records, and elimination of duplicate documents.

All records were exported in plain text format, including full bibliographic information, on January 21, 2023. The search was conducted using the keywords "fashion" and "gender." The time span was limited to publications from 1990 to 2022. Only documents written in English were included. Articles classified under medicine and clinical sciences were excluded in order to maintain focus on social sciences and humanities perspectives.

The final dataset consisted of 1,940 academic publications. The data collection and selection criteria are summarized in [Table 2](#).

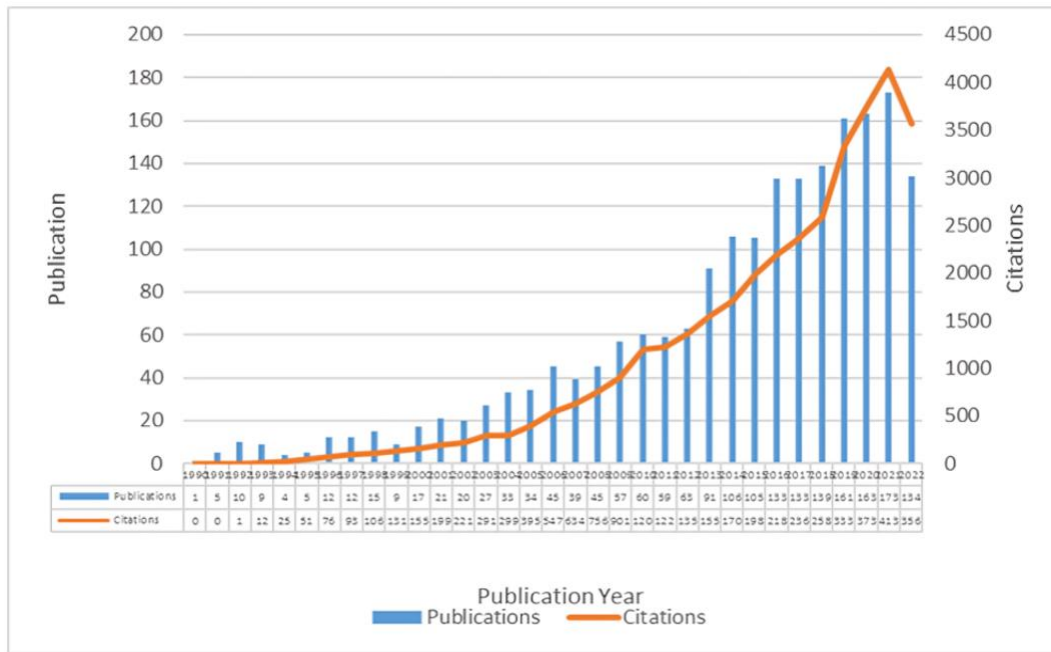


Figure 1. Trends in publications and citations by years (WoS core collection data visualized using CiteSpace)

RESULTS AND DISCUSSION

Publication and Citation Trends

Between 1990 and 2022, a total of 1,940 scientific documents addressing the intersection of fashion and gender were published by 3,196 authors. Figure 1 illustrates the annual distribution of publications and citations over the examined period. The results reveal a clear and sustained growth trend, particularly after the mid-2000s, indicating an increasing scholarly interest in this research area.

The overall h-index of the dataset is 79, while the average number of citations per document is 18.5, suggesting a substantial academic impact of the literature. The steady rise in publication output demonstrates the consolidation of fashion and gender as a distinct interdisciplinary research field. At the same time, the parallel increase in citation counts indicates that studies in this domain attract attention from a wide range of disciplines, including sociology, psychology, cultural studies, and business research. Overall, these trends confirm that research on fashion and gender has evolved from a niche topic into a globally recognized and increasingly influential area of scientific inquiry.

Figure 1 illustrates the annual distribution of publications on fashion and gender between 1990 and 2022. Figure 1 clearly demonstrates a gradual increase in scholarly output during the early years, followed by a pronounced acceleration after 2010. This sharp rise suggests that fashion and gender have become increasingly salient research topics in response to broader social transformations, including the expansion of digital media, the visibility of gender diversity, and growing public debates on identity, inclusion, and sustainability.

The h-index of publications in this field is 79, indicating a high level of citation impact. When compared to other interdisciplinary areas within fashion studies, such as sustainability-focused or consumption-oriented research, this value reflects the strong academic visibility and influence of gender-focused fashion scholarship. The combination of sustained publication growth and a high h-index underscores the maturation of the field and its consolidation as a significant interdisciplinary research domain.

Overall, the upward trend observed in Figure 1 mirrors wider cultural and societal shifts, including changing gender norms, the politicization of the body, and the increasing role of fashion as a site of social meaning and symbolic struggle. Figure 1 demonstrates a clear and steady increase in the number of publications on fashion and gender, particularly after 2010, indicating the growing academic interest in this field. The h-index of publications in this domain is 79, which is comparable to other established

interdisciplinary research areas within cultural studies and consumer research. This value reflects not only the quantitative growth of the literature but also its qualitative impact, suggesting that fashion and gender studies have achieved a significant level of academic visibility and influence.

The h-index of 79 indicates that fashion and gender research has achieved a level of cumulative impact comparable to established interdisciplinary fields such as consumer culture studies and gender-focused sociology, suggesting a mature and influential body of literature. When considered alongside the steady increase in publication and citation counts shown in [Figure 1](#), this metric reflects not only quantitative growth but also the consolidation of the field's scholarly relevance.

This upward trajectory coincides with broader societal transformations, including the expansion of feminist and queer movements, the globalization of fashion markets, the rise of digital and social media platforms, and increasing public debates on gender diversity, identity politics, and sustainability. As fashion has become a visible site where these transformations are articulated and contested, academic interest in the intersection of fashion and gender has intensified. Thus, the observed publication and citation trends reflect not merely academic dynamics but also deeper social and cultural shifts shaping contemporary understandings of gender and consumption.

The observed increase in publications and citations can be closely associated with broader social and cultural transformations. The rise of digital media, the expansion of social networking platforms, and the increasing visibility of gender diversity have fundamentally reshaped both fashion practices and scholarly agendas. In parallel with movements such as fourth-wave feminism, LGBTQ+ activism, body positivity, and debates on sustainability and ethical consumption, fashion has become a central site for negotiating identity, power, and representation. Consequently, the growth trend illustrated in [Figure 1](#) reflects not only academic developments but also the intensified engagement of fashion and gender research with contemporary social change.

Co-Citation Analysis

Co-citation analysis is a widely used bibliometric technique for identifying intellectual relationships among scientific publications based on their shared citation patterns (Cho et al., 2022). When two documents are frequently cited together, they are assumed to be conceptually or thematically related. This method has been extensively applied to map the knowledge structures, core themes, and foundational works of scientific fields (Cho et al., 2022; Shiau et al., 2017). The more co-citations a publication receives, the more likely it is to be semantically related (Shiau et al., 2015). Due to the features of co-citation analysis, scientists apply it to discover a field's main area of interest.

In the context of fashion and gender research, co-citation analysis enables the identification of influential theoretical frameworks and seminal studies that shape the field's intellectual foundation. By examining co-citation patterns, it becomes possible to detect dominant research orientations and understand how different strands of scholarship are interconnected.

Document Co-Citation Analysis

Document co-citation analysis (DCA) was conducted to examine the intellectual structure of fashion and gender research and to identify clusters of closely related studies. This approach facilitates knowledge integration by reducing fragmentation across disciplines and revealing shared theoretical foundations (Trujillo & Long, 2018).

Based on the 1,940 documents retrieved from the WoS database, a total of 88,839 cited references were identified, of which 87,441 (98.43%) were valid. The resulting co-citation network consists of 1,143 nodes and 2,863 links, with each reference connected to an average of 2.5 other references. [Figure 2](#) presents an overview of this network.

The color gradient of the nodes, ranging from purple (earlier publications) to yellow (more recent publications), reflects the temporal evolution of influential references. The increasing presence of yellow nodes indicates a growing concentration of highly cited studies in recent years, suggesting the consolidation and expansion of the field.

reference is a book by Crane (2012) that examines the relationship between fashion and society, with a particular focus on how fashion serves as a vehicle for expressing cultural, social, and political values. She discusses the role of fashion in constructing gender, class, and racial identities, and how it reinforces social hierarchies and power relations. The book also offers a critical perspective on the fashion industry and its impact on individuals and society as a whole.

The co-citation analysis reveals that Bourdieu's (2010) *Distinction: A social critique of the judgement of taste* occupies a structurally central position within the intellectual network of fashion and gender studies. Bourdieu's (2010) prominence is not solely the result of high citation frequency; rather, his work functions as a conceptual bridge connecting diverse thematic clusters, including body politics, consumption practices, gender performance, and cultural identity.

Bourdieu's (2010) central position in the co-citation network can be explained by his ability to theorize fashion not merely as an aesthetic or economic phenomenon, but as a key mechanism through which social hierarchies, gender relations, and symbolic power are produced and reproduced. In Bourdieu (2010), fashion and taste are conceptualized as forms of cultural capital that operate through embodied practices, making Bourdieu's (2010) framework particularly relevant for studies examining gendered bodies, consumption patterns, and identity formation. Critically, Bourdieu's (2010) influence persists because his theory allows scholars to connect micro-level practices of dress and consumption with macro-level structures of inequality. Within fashion and gender research, his work is frequently mobilized to interrogate how norms of femininity and masculinity are naturalized, how classed and gendered tastes are legitimized, and how symbolic domination is enacted through everyday aesthetic choices. As a result, Bourdieu (2010) functions as a conceptual anchor that links otherwise distinct research strands, such as body politics, gender performativity, and consumer culture, thereby explaining his high betweenness centrality in the co-citation network.

The cluster labels generated by CiteSpace were initially produced using the log-likelihood ratio (LLR) algorithm based on the titles, abstracts, and keywords of the citing documents. To ensure conceptual coherence and analytical validity, these automatically generated labels were subsequently manually verified by the author. This manual validation involved examining the most cited references and representative articles within each cluster to confirm that the assigned labels accurately reflected the dominant thematic focus. Where necessary, minor adjustments were made to standardize terminology and improve interpretability, while preserving the original structure of the algorithmically generated clusters.

DCA Clustering Analysis

Clustering is a further bibliometric analysis enrichment technique with the main purpose of building thematic or social clusters (based on the kind of analysis performed). Organizing clusters of networks and noting their progress is probably going to be valuable for learning more about how a field of research emerges and evolves. For instance, topical clusters constructed through citation analysis and bibliographic matching highlight the main themes that underpin the research area's intellectual structure and their evolution over time (Donthu et al., 2021, p. 291). The graph shows a modularity Q-index of 0.9211 and an average silhouette of 0.943. The nodes thus form a network that can be divided into separate modules, each of which is remarkably homogeneous (Carollo et al., 2021, p. 4). Cluster labels are generated automatically by CiteSpace using keyword extraction algorithms. To ensure thematic validity, the labels were reviewed by examining the most cited publications and recurring keywords within each cluster, allowing for confirmation of conceptual coherence.

The 1,940 scientific studies are categorized into 9 clusters. **Figure 3** shows the largest clusters, labeled #0 affect, #1 shopping orientation, #2 body, #3 queering, #4 hybrid masculinity, #5 religion, #6 purchase intention, #11 instagram, and #17 individualism. Cluster analysis helps us understand the main features of science mapping Chen et al. (2014). The main clusters identified in DCA were fairly homogeneous (see **Figure 3**). The greatest cluster identified, cluster #0 affect, consists of 61 nodes and has a silhouette score of 0.930, and the references that make up this cluster were published on average in 2009.

Identified clusters start with the largest set of 0. The cluster whose name does not appear in the cluster with a low silhouette value and the program does not automatically write that cluster (considerably smaller than 0.5). For the analysis of nodes, temporal metrics are examined as well as structural metrics. The first

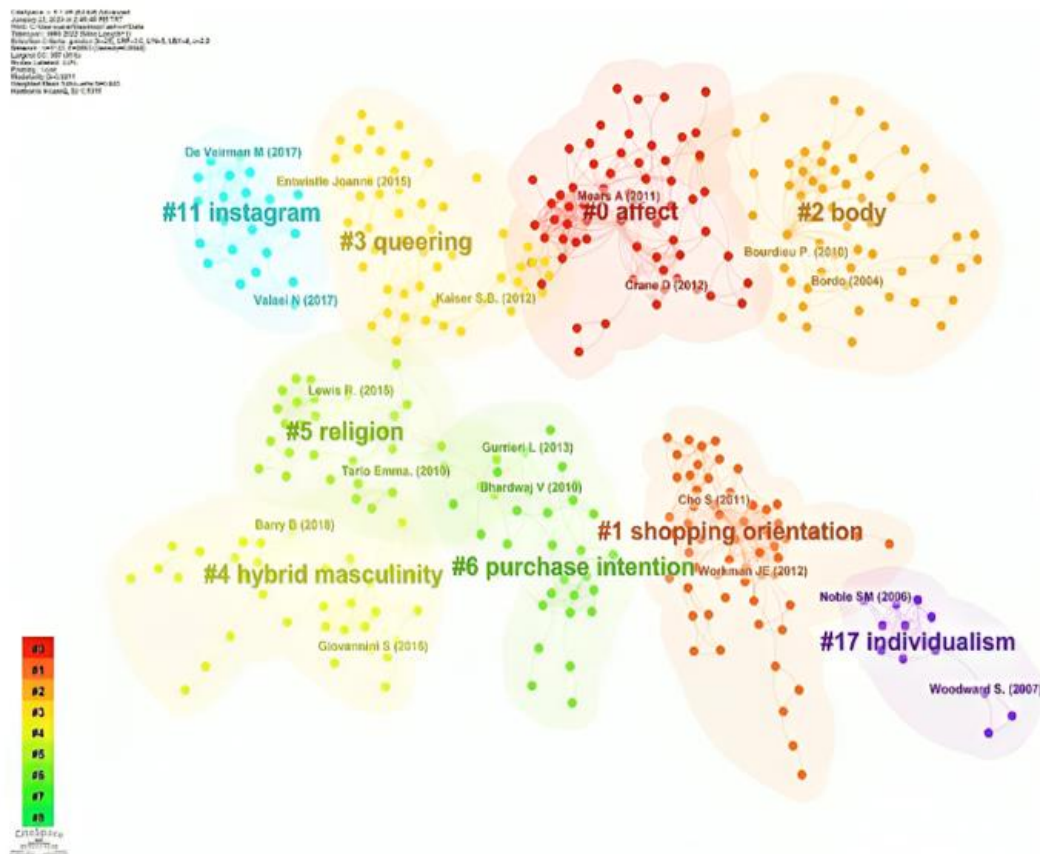


Figure 3. Network map of the cluster's co-citation reference (WoS core collection data visualized using CiteSpace)

Table 4. Thematic clusters identified through keyword co-occurrence analysis in fashion and gender research (1990-2022)

| Cluster ID | Cluster Label | Size | Silhouette | Mean year |
|------------|----------------------|------|------------|-----------|
| #0 | Affect | 61 | 0.930 | 2009 |
| #1 | Shopping orientation | 58 | 0.959 | 2009 |
| #2 | Body | 56 | 0.930 | 2003 |
| #3 | Queering | 51 | 0.903 | 2014 |
| #4 | Hybrid masculinity | 35 | 0.964 | 2016 |
| #5 | Religion | 32 | 0.964 | 2013 |
| #6 | Purchase intention | 30 | 0.938 | 2013 |
| #11 | Instagram | 21 | 0.979 | 2017 |
| #17 | Individualism | 13 | 0.993 | 2006 |

Note. Cluster size indicates the number of cited references within each cluster, the silhouette score reflects cluster homogeneity, with values above 0.7 indicating high consistency, & mean publication year represents the average publication year of documents within each cluster

metric in this group is the citation burst, a key point in research. A citation burst is defined in the literature as a keyword, author, institution, or document that changes frequently over time (X.-J. Li et al., 2021).

Table 4 presents the major document co-citation clusters that structure the intellectual landscape of fashion and gender research. All identified clusters exhibit high silhouette values (above 0.90), indicating strong internal consistency and well-defined thematic cohesion. This finding contradicts any assumption of randomness or lack of structure within the field and confirms the robustness of the clustering results generated through CiteSpace.

The largest clusters, *affect* (#0) and *shopping orientation* (#1), both with a mean publication year of 2009, reflect the early consolidation of research focusing on emotional dimensions of fashion consumption and gendered decision-making processes. These clusters suggest that affective responses and consumer behavior constituted foundational themes during the maturation phase of the field. The *body* cluster (#2), with an

earlier mean year (2003), highlights the centrality of embodiment, body politics, and feminist theory in shaping early fashion and gender scholarship.

More recent clusters, such as *queering* (#3), *hybrid masculinity* (#4), *religion* (#5), *purchase intention* (#6), and *Instagram* (#11), indicate a conceptual shift toward more diverse, intersectional, and digitally mediated perspectives. In particular, the emergence of the *Instagram* cluster (mean year 2017) reflects the growing influence of social media platforms in reshaping gender representations, identity performance, and fashion consumption practices. Similarly, clusters related to hybrid masculinity and religion signal an expanding interest in non-binary gender expressions, cultural diversity, and modest fashion.

Overall, the temporal distribution of clusters demonstrates a clear evolution from body-centered and consumption-focused studies toward more complex analyses that incorporate digital media, identity politics, and intersectionality. This progression underscores the dynamic and interdisciplinary nature of fashion and gender research and highlights emerging directions for future scholarly inquiry.

Although the field of fashion and gender research is highly interdisciplinary and thematically diverse, the DCA revealed a well-structured intellectual landscape. The high modularity and silhouette values indicate that the identified clusters are both internally consistent and conceptually coherent. In total, nine meaningful thematic clusters were identified, reflecting the evolution of the field from earlier body- and affect-oriented studies toward more recent themes such as queering, hybrid masculinities, religion, social media (Instagram), and individualism.

DCA Strongest Citation Bursts Analysis

Eleven nodes in the network showed a citation burst in their past, as presented in [Figure 4](#). Citation bursts indicate periods during which specific publications attract an exceptional level of scholarly attention, often reflecting conceptual shifts, emerging debates, or broader socio-cultural transformations within a research field. In the context of fashion and gender studies, the observed citation bursts are closely linked to major theoretical and empirical turning points. Early bursts, such as Bordo's (2004) *Unbearable weight: Feminism, Western culture, and the body* and Bourdieu's (2010) *Distinction: A social critique of the judgement of taste*, correspond to the consolidation of feminist theory and cultural consumption frameworks that foreground the body, power, and social inequality. Subsequent bursts, including works by Cho and Workman (2011), Hansen and Jensen (2009), and Mears (2011), reflect a growing engagement with consumer behavior, market dynamics, and the gendered dimensions of fashion consumption. More recent citation bursts, particularly those associated with Crane (2012), Lewis (2015), and Barry (2018), coincide with the rise of research on hybrid masculinities, modest fashion, identity politics, and digital and media-driven transformations of fashion. These patterns suggest that citation bursts are not random fluctuations but are systematically connected to shifts in theoretical emphasis and societal debates shaping the evolution of fashion and gender research.

The citation bursts identified in [Figure 4](#) indicate periods in which specific works attracted unusually high scholarly attention within a relatively short timeframe. These bursts can be interpreted as responses to broader social transformations, theoretical shifts, and methodological expansions in fashion, gender, and body studies. Rather than reflecting transient popularity, citation bursts often signal moments when particular texts become conceptual reference points for emerging debates or newly consolidated research agendas.

Several citation bursts coincide with periods marked by intensified discussions on identity politics, embodiment, and power relations, particularly in the aftermath of feminist and postfeminist theoretical developments. Works addressing the body as a site of social regulation, distinction, and resistance gained prominence during these phases, suggesting that scholars increasingly turned to established theoretical frameworks to interpret contemporary cultural phenomena. This pattern is especially visible in bursts associated with foundational authors whose concepts could be flexibly applied to new empirical contexts.

Additionally, the emergence of digital media, fashion blogging, and social media platforms has reshaped the visibility and circulation of fashion-related practices, contributing to renewed interest in earlier theoretical contributions. Citation bursts during the mid-2010s, for example, align with the rise of online self-presentation, influencer culture, and digital activism, which prompted scholars to revisit classic theories of taste, identity, and bodily discipline in order to interpret these new modes of cultural production.

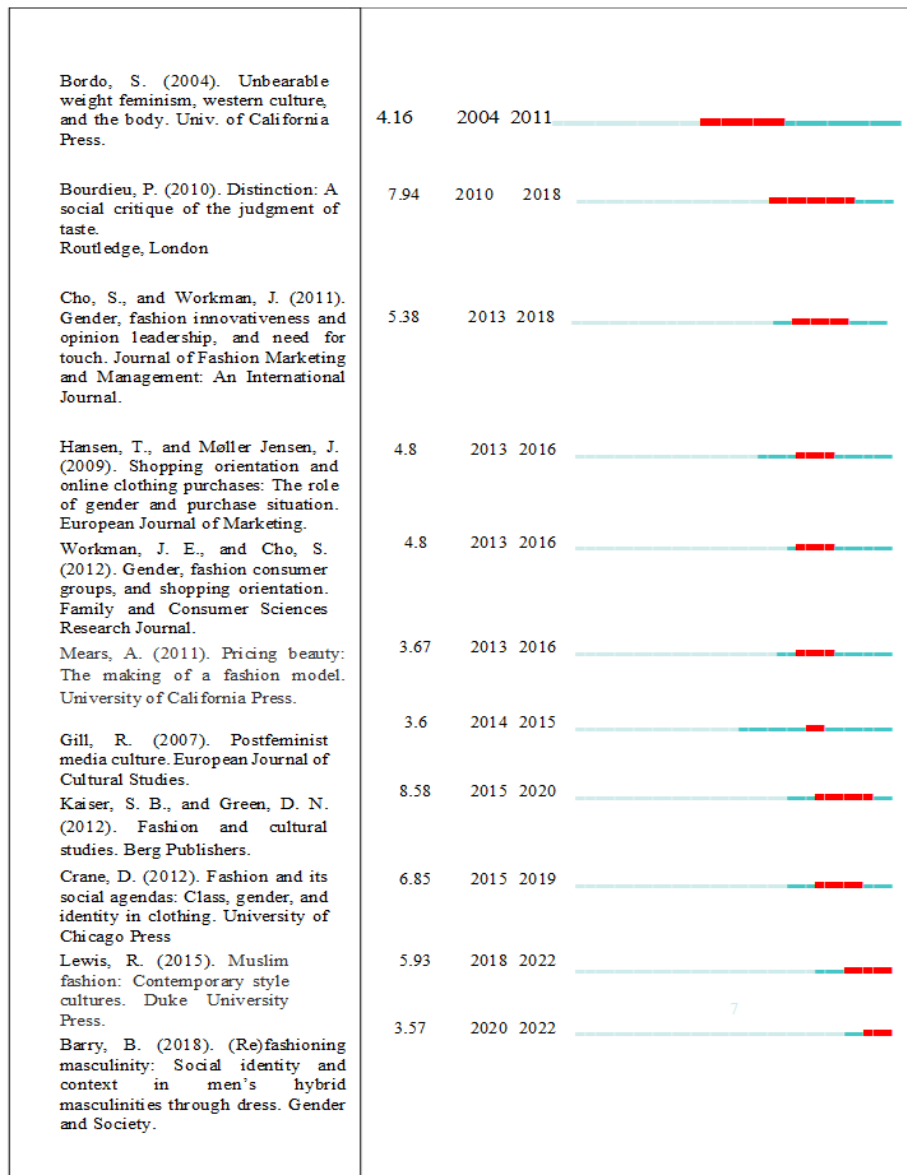


Figure 4. The best references with the greatest citation bursts (WoS core collection data visualized using CiteSpace)

Finally, citation bursts may also reflect institutional and methodological dynamics, such as the expansion of interdisciplinary research and the increased use of bibliometric and network-based approaches. As the field diversified, certain works functioned as common theoretical denominators across disciplines, resulting in sharp but time-bound increases in citations. Taken together, the observed citation bursts illustrate how intellectual attention in the field is shaped by the interplay between social change, theoretical relevance, and evolving research practices.

If a cluster contains a large number of scientific works with strong citation bursts, the cluster is regarded as capturing an active research area as a whole, for instance, a rising trend. The last three references presented in [Figure 4](#), Crane (2012), Lewis (2015), Barry (2018), show recent bursts of citations. The timeline view finally provides an overview of the evolution of clusters in the field over time and shows whether these developments have continued over the years. Crane (2012) discusses the impact of fashion on the formation of gender, class, and racial identities and how it reinforces social hierarchies and power relations. Modest fashion is becoming increasingly popular among Muslim women and beyond. This includes clothing that covers and does not expose the body, while at the same time being fashionable (Lewis, 2015). In his research, Barry (2018) nuances the hybrid masculinities construct by showing how men are characterized by the

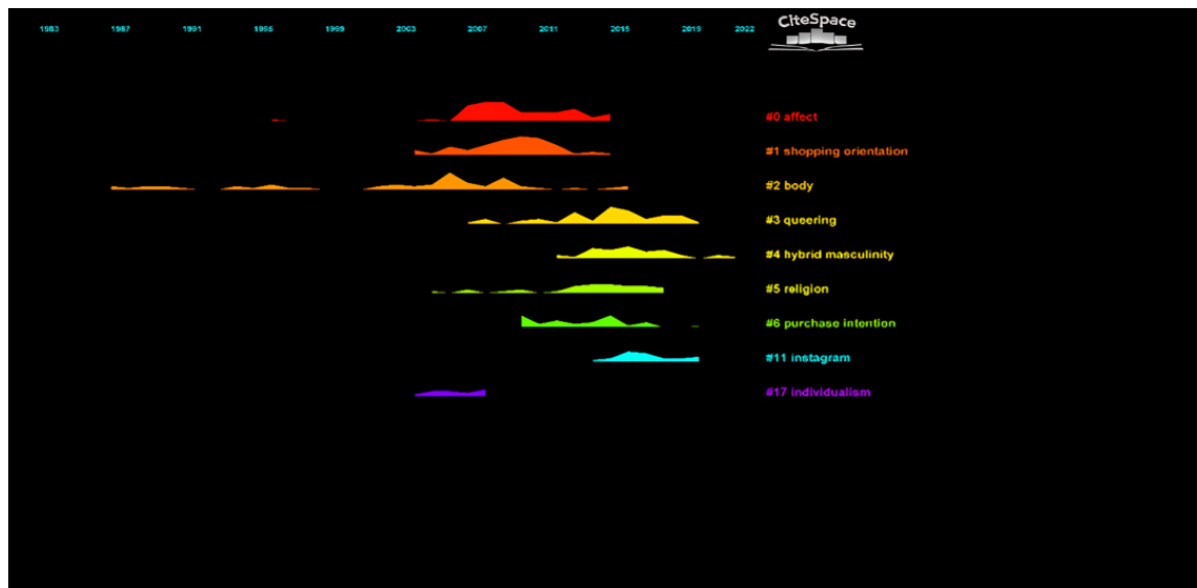


Figure 5. Document co-citation network maps timeline (WoS core collection data visualized using CiteSpace)

intersection between their social identities and social environments. Moreover, other significant author is Bourdieu (2010), who argues that cultural consumption is used as a means of social distinction and a way to signal one's social class. Those with higher social class and cultural capital use their consumption of high culture as a way to signal their social status and to differentiate themselves from those with lower social class and cultural capital. Overall, Bourdieu's (2010) *Distinction: A social critique of the judgement of taste* highlights the ways in which cultural consumption and taste are not neutral but rather are shaped by and contribute to social inequalities.

The chronological order in which the references appear in each cluster is shown in **Figure 5**. As seen in **Figure 5**, hybrid masculinity is the most active group, followed by queering and Instagram. For Bridges and Pascoe (2018, p. 246), hybrid masculinity refers to men's selective incorporation of aspects of performance and identity linked with marginalized and subordinated maleness and femaleness. In this regard, Ging (2019) examined the main characteristics of the manosphere and theorized the masculinities that typically characterize the discursive area. Further relevant studies in this field were conducted by Anderson and McCormack (2018), Bridges and Pascoe (2018), De Boise (2014), Messerschmidt and Messner (2018), Diefendorf and Bridges (2020), and Bridges and Pascoe (2018).

Keyword Analysis

A keyword analysis is used to identify the most frequently used terms or concepts in a research field, to understand the focus of research over time, and to identify emerging or declining topics. The analysis can be performed on abstracts, titles, or full texts of publications.

In general, keyword analysis is an important method in bibliometric studies and can provide valuable insights into the content and evolution of scientific literature. The keyword co-occurrence analysis is made for frequently used keywords in fashion and gender research. An overview of the keyword analysis is given in **Figure 6**.

Figure 6 explains the network map of the DCA. Each of the nodes in the map represents different references with colors ranging from 1990 (purple nodes) to 2022 (yellow nodes). The purple line around the node represents a high centrality value. The red nodes represent citation bursts.

The top keywords in frequency and centrality are presented in **Table 5**. A node with a centrality is greater than 0.1 is a critical node that plays a significant role in connecting other nodes. The network has a modularity Q value of 0.391 and an average silhouette value of 0.7714. The most popular keyword in terms of frequency (f = 264) and centrality (0.45), reaching triple digits, is gender. Gender refers to the socially constructed roles, behaviors, and characteristics associated with being male or female. The second popular keyword is women (f = 104 and centrality 0.24). This keyword refers to individuals who identify themselves as women or are

© 2026, All rights reserved.
 ISSN: 2691-1493
 DOI: 10.24018/ojcm.2026.16.2.19
 www.ojcm.com



Figure 6. Network map of document co-citation analysis (WoS core collection data visualized using CiteSpace)

Table 5. Top keywords in frequency and centrality

| Rank | Keywords | Frequency | Centrality |
|------|-------------------|-----------|------------|
| 1 | Gender | 264 | 0.45 |
| 2 | Women | 104 | 0.24 |
| 3 | Gender difference | 68 | 0.18 |
| 4 | Fashion | 62 | 0.07 |
| 5 | Behavior | 58 | 0.07 |
| 6 | Consumption | 51 | 0.11 |
| 7 | Consumer | 47 | 0.06 |
| 8 | Perception | 46 | 0.09 |
| 9 | Attitude | 39 | 0.10 |
| 10 | Identity | 37 | 0.05 |
| 11 | Men | 33 | 0.03 |
| 12 | Model | 32 | 0.04 |
| 13 | Image | 29 | 0.06 |
| 14 | Body | 29 | 0.03 |
| 15 | Impact | 29 | 0.01 |
| 16 | Culture | 27 | 0.03 |
| 17 | Politics | 25 | 0.02 |
| 18 | Work | 24 | 0.03 |
| 19 | Body image | 22 | 0.04 |
| 20 | Experience | 18 | 0.02 |

perceived as women based on their physical appearance or gender expression. Other keywords such as gender difference ($f = 68$), fashion ($f = 62$), behavior ($f = 58$), or consumption ($f = 51$) have reached double digits. Gender difference refers to differences in behavior, attitudes, and experiences between men and women influenced by social and cultural norms, while fashion refers to clothing, accessories, and beauty styles and trends that are popular at a particular time and place. Behavior refers to the actions, reactions, and responses of individuals in different situations, while consumption refers to the act of buying and using goods and services.

The keyword bursts related to “social media,” “politics,” and “antecedents” indicate a thematic shift in fashion and body studies from predominantly structural analyses toward digitally mediated, politicized, and process-oriented research frameworks. However, for these bursts to be analytically meaningful, the concepts must be clearly operationalized and empirically grounded.

First, the burst of “social media” keywords refers primarily to specific digital platforms; most notably Instagram and TikTok that function as visual and algorithmic environments shaping body visibility, aesthetic norms, and modes of self-presentation. Empirical studies in this cluster focus on platform-specific practices such as influencer cultures, hashtag activism, algorithmic amplification, and user-generated fashion content.

These platforms enable new forms of digital activism, particularly in relation to body positivity, modest fashion, and queer or plus-size representation, while simultaneously reproducing market-driven aesthetic hierarchies.

Second, the keyword “politics” does not denote formal political institutions but instead captures a range of cultural and ideological struggles embedded in fashion practices. Empirically, this burst is associated with feminist critiques of beauty norms, debates around pinkwashing and commodified empowerment, and practices of symbolic resistance through dress. Fashion is thus positioned as a site where power relations concerning gender, race, religion, and body size are negotiated, contested, and occasionally neutralized through commercialization.

Finally, the burst of “antecedents” points to a growing scholarly interest in the underlying conditions that shape fashion-related behaviors and identities. Rather than constituting a homogeneous category, this concept encompasses both psychological antecedents; such as self-esteem, body image, and identity salience and sociocultural antecedents, including gender norms, media exposure, class position, and religious or cultural frameworks. The emergence of this keyword reflects a methodological shift toward explanatory models that connect individual agency with broader structural influences.

Taken together, these bursts reveal an evolving research agenda in which fashion and body studies increasingly integrate digital infrastructures, political meaning-making, and multi-level causal explanations. Clarifying these conceptual boundaries strengthens the analytical coherence of the burst analysis and demonstrates how recent scholarship responds to wider societal transformations, particularly the digitization of everyday life and the politicization of bodily visibility.

In this study, centrality refers to the *betweenness centrality* metric used in bibliometric network analysis, which indicates the extent to which a node (e.g., a keyword or reference) functions as a bridging element between different clusters or thematic areas. High centrality values therefore do not merely reflect frequency of use but signal a concept’s structural importance in connecting otherwise weakly related research streams. In this sense, keywords or references with high centrality play a critical role in shaping the intellectual architecture of the field.

While frequency-based keyword analysis identifies dominant topics, a keyword co-occurrence analysis is essential to understand how concepts are relationally constructed. The co-occurrence patterns in this study reveal that gender-related keywords frequently intersect with themes such as identity, body image, and consumption, indicating that gender is not treated as an isolated variable but as a structuring dimension embedded within broader cultural and social frameworks. The absence of dense co-occurrence links for some emerging concepts suggests that certain themes remain theoretically fragmented or under-integrated within the literature.

A particularly notable finding is the substantial imbalance between the keywords “women” and “men,” with an approximate ratio of 3:1. This disparity reflects a longstanding tendency in fashion and body studies to conceptualize the body primarily through women’s experiences, often positioning femininity as the default analytical lens. While this focus aligns with feminist critiques of beauty norms and bodily discipline, it simultaneously renders masculinities under-theorized and less visible. The imbalance thus points not only to an empirical trend but also to a theoretical asymmetry, where men’s fashion practices and embodied identities are more often treated as peripheral or exceptional cases rather than integral components of the field.

Equally significant is the finding that “sustainability” does not appear among the top 20 keywords. Given the growing prominence of sustainability debates in fashion studies more broadly, its relative absence suggests that research on gender and the body has, to date, prioritized identity, representation, and power relations over environmental and ethical concerns. This gap indicates a potential disconnection between critical body-focused scholarship and sustainability-oriented fashion research, highlighting an important avenue for future interdisciplinary integration.

Overall, these findings underscore both the conceptual strengths and blind spots of the existing literature. By combining centrality measures with keyword co-occurrence analysis, the study demonstrates how dominant gendered frameworks structure the field while simultaneously revealing underexplored themes; such as masculinity and sustainability that warrant greater scholarly attention.

Journal of Communication and Media Technologies
 Volume 16(2) 2026
 ISSN 2158-3464
 Copyright © 2026
 All rights reserved.



Figure 7. Clusters of keywords (WoS core collection data visualized using CiteSpace)

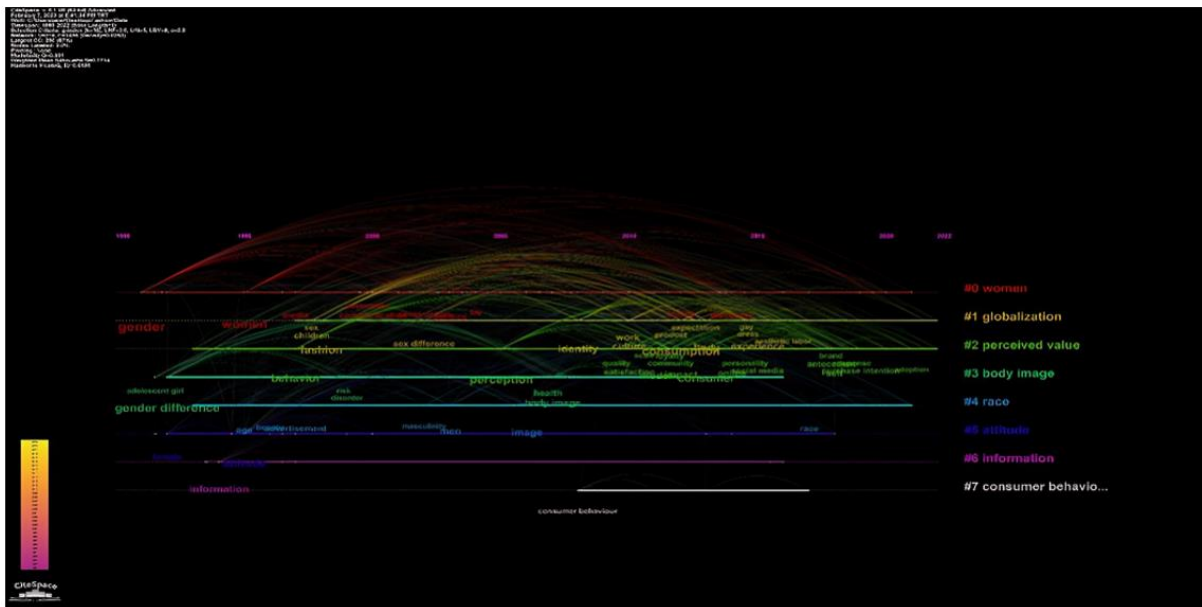


Figure 8. Timeline of keyword clusters (WoS core collection data visualized using CiteSpace)

Figure 7 shows the main clusters of keywords. The largest cluster, grouped in red, #0 women, is a 70-element cluster with a silhouette value of 0.708 and an average publication year of 2006. The second cluster grouped in yellow, #1 globalization, is a 53-element cluster (silhouette value 0.708) with an average publication year of 2011. The third cluster #2 perceived value (green) is a 48-element cluster (silhouette value 0.718) with an average publication year of 2014. Other clusters are #3 body image (37-element cluster, silhouette value 0.892), #4 race (30-element cluster, silhouette value 0.769), #5 attitude (23-element cluster, silhouette value 0.875), #6 information (11-element cluster, silhouette value 0.968), #7 consumer behavior (8-element cluster, silhouette value 0.947).

Figure 8 presents the change of keywords in a given period time. The timeline also provides an overview of the evolution of clusters over time. Currently, #1 globalization and #2 perceived value are active clusters. Keyword burst analysis is performed to identify the research hotspots and the emerging trends over a specific period time (Figure 9). The blue bar shows the time change interval of the keywords and the red bar shows the year in which the keyword exploded. For instance, fashion first cited in 1998 is a hotspot between 2019-2020. Current hotspots are politics, social media, and antecedents. Keyword burst analysis is conducted to identify research hotspots and shifting thematic priorities within fashion and gender studies over time. The

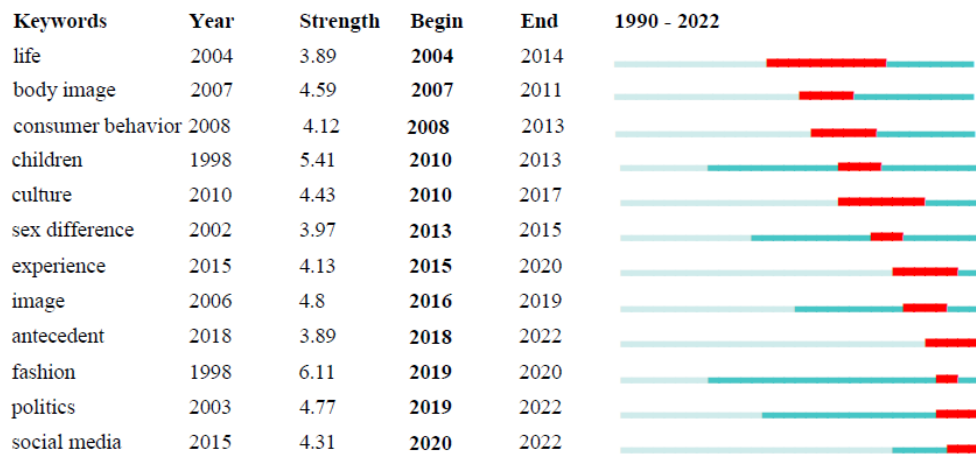


Figure 9. Keywords with the greatest citation bursts (WoS core collection data visualized using CiteSpace)

results reveal a clear conceptual transition in the field. Earlier bursts were predominantly associated with body, identity, and feminism-oriented discussions, reflecting foundational debates on gendered embodiment and representation. In contrast, more recent citation bursts highlight keywords such as *social media*, *Instagram*, *politics*, *hybrid masculinity*, and *purchase intention*, indicating a growing interest in digitally mediated identities, platform-based fashion cultures, and consumer-oriented perspectives.

This shift suggests that fashion and gender research has progressively moved from structural and theoretical debates toward more contextual, media-driven, and market-oriented frameworks. At the same time, emerging bursts related to sustainability, diversity, and inclusion point to an increasing awareness of intersectionality, linking gender to environmental concerns, ethical consumption, religion, and cultural identity. Rather than representing isolated trends, these bursts reflect broader societal transformations in which fashion operates as a site where power relations, visibility, and identity politics are continuously negotiated.

Overall, the keyword burst analysis not only maps emerging research topics but also captures the evolving epistemological orientation of the field, demonstrating how fashion and gender scholarship respond to technological change, global cultural flows, and shifting social norms.

Keyword burst analysis reveals not only shifts in research intensity but also the changing conceptual priorities within fashion and gender scholarship over time. Early keyword bursts, such as *life* and *body image*, are closely associated with feminist theory and sociological approaches that emphasize embodiment, self-perception, and the regulation of bodies within gendered cultural frameworks. These bursts correspond to a period in which fashion was primarily examined as a site of bodily discipline, identity formation, and symbolic representation.

From the late 2000s onward, bursts in keywords such as *consumer behavior* indicate a gradual reorientation of the field toward market-oriented and behavioral perspectives, reflecting the growing influence of consumer culture theory and the expansion of fashion studies into marketing and management disciplines. This shift parallels the increasing commercialization and globalization of the fashion industry.

More recent keyword bursts, including *politics*, *social media*, and *antecedents* signal a further conceptual transformation driven by digitalization, platform economies, and heightened attention to power relations and identity politics. Fashion and gender research have increasingly engaged with social media as a mediating space where gender norms are negotiated, contested, and rearticulated. At the same time, the emergence of antecedent-focused keywords reflects an effort to theorize the structural, cultural, and technological conditions shaping fashion-related behaviors. Overall, the temporal progression of keyword bursts illustrates a movement from body- and identity-centered analyses toward digitally mediated, politically informed, and structurally grounded approaches, underscoring the dynamic and interdisciplinary evolution of the field.

Table 6. Top cited journals in frequency and centrality

| Cited journal | Frequency | Centrality | Year |
|----------------------------------------------|-----------|------------|------|
| Journal of Consumer Research | 237 | 0.10 | 1997 |
| Fashion Theory | 219 | 0.13 | 2004 |
| Sex Roles | 209 | 0.17 | 1992 |
| Journal of Personality and Social Psychology | 209 | 0.18 | 1992 |
| Thesis | 180 | 0.02 | 2005 |
| Journal of Business Research | 174 | 0.02 | 2008 |
| Journal of Fashion Marketing and Management | 166 | 0.02 | 2009 |
| Journal of Marketing | 146 | 0.01 | 2009 |
| Gender & Society | 144 | 0.08 | 1999 |
| Psychological Bulletin | 141 | 0.06 | 1995 |

Cited Journal Analysis

In bibliometric analysis, cited journal analysis refers to the examination of cited journals in a particular research field or topic. This type of analysis provides information about the most frequently cited journals, their impact and visibility, and the distribution of citations across different journals. The information is able to use to make out the most influential journals in a field, the quality of scientific research published in these journals, and to identify trends and patterns in researchers' citation behaviors.

Table 6 shows the highly cited journals in the research area of fashion and gender, namely, Journal of Consumer Research (f 237), Fashion Theory (f 219), Sex Roles (f 209), and Journal of Personality and Social Psychology (f 209). Sex Roles and Journal of Personality and Social Psychology were the first journals to be cited in 1992.

The distribution of cited journals reveals a distinctly interdisciplinary intellectual structure underlying fashion and gender research. Journals such as *Journal of Consumer Research* and *Fashion Theory* exhibit the highest citation frequencies, indicating their role as primary publication venues where empirical and theoretical discussions are most intensively concentrated. However, frequency alone does not fully capture a journal's structural importance within the citation network.

Centrality values provide a more nuanced perspective by highlighting journals that function as bridges between disciplinary clusters. In this respect, *Journal of Personality and Social Psychology* and *Sex Roles* display relatively high centrality despite not always having the highest citation counts. This suggests that psychological and gender-focused journals play a key mediating role, connecting consumer research, sociology, cultural studies, and feminist theory. Similarly, *Fashion Theory* combines both high frequency and high centrality, underscoring its dual function as a core domain-specific journal and a conceptual crossroads for multiple theoretical traditions.

The temporal distribution further reflects the historical layering of the field. Journals with earlier peak years, such as *Sex Roles* (1992) and *Psychological Bulletin* (1995), point to the foundational influence of gender psychology and social psychological frameworks in shaping early debates. In contrast, the increasing prominence of marketing- and business-oriented journals after the mid-2000s (*Journal of Business Research*, *Journal of Fashion Marketing and Management*) corresponds with the growing attention to consumption, branding, and market-mediated identity construction. Overall, this pattern indicates that the field has evolved from psychologically and sociologically grounded gender analyses toward a more market-oriented and media-sensitive research agenda, while still relying on high-centrality journals to integrate diverse epistemological approaches. The coexistence of high-frequency domain journals and high-centrality cross-disciplinary journals highlights the hybrid and evolving nature of fashion and gender scholarship.

The Country Collaboration Analysis

Each author of a paper contributes significantly to the writing of the study and the author's affiliation with his/her country is an essential parameter when assessing research outputs (Borgohain et al., 2022). 90 countries have contributed to the existing literature. The first 10 countries in terms of publications centrality are listed in **Table 7**. The most influential country with the highest centrality value in this field is the USA (f = 723, 37.26 %). Together with the UK and Canada, these countries are in a key position connecting other countries.

Table 7. Most productive countries

| Countries | Frequency | Centrality | Year |
|----------------------------|-----------|------------|------|
| USA | 723 | 0.46 | 1991 |
| UK | 281 | 0.25 | 1995 |
| Canada | 129 | 0.14 | 1998 |
| Australia | 103 | 0.19 | 1999 |
| People's Republic of China | 42 | 0.02 | 2000 |
| Germany | 37 | 0.02 | 2004 |
| Netherlands | 36 | 0.07 | 2003 |
| Sweden | 35 | 0.02 | 2007 |
| India | 34 | 0.01 | 2002 |
| France | 29 | 0.06 | 1997 |

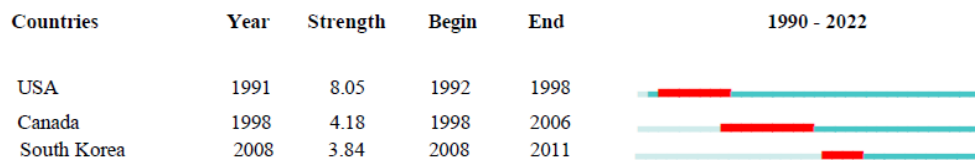
**Figure 10.** The first three countries with the strongest citation bursts (WoS core collection data visualized using CiteSpace)

Table 7 presents the countries with the strongest citation bursts. The USA first cited in 1991 was a hotspot between 1992-1998. Current hotspots are politics, social media, and antecedents. In 1998, the USA's hotspot was transferred to Canada for the period 1998-2006. In 2008, the hotspot in North America shifted to Asia, particularly South Korea for the period 2008-2011 (**Figure 10**).

The country-level distribution reveals a pronounced Anglo-American dominance in fashion and gender research. The USA and the UK not only exhibit the highest publication frequencies but also the strongest centrality values, indicating their pivotal role in structuring scholarly communication and shaping dominant theoretical and methodological frameworks. Canada and Australia follow a similar trajectory, reinforcing the hegemony of Western, English-speaking academic contexts in defining key research agendas. Although South Korea does not rank among the top countries in cumulative frequency, its post-2008 rise represents a notable thematic and cultural shift. This increase coincides with the global circulation of K-fashion, K-pop, and digital influencer cultures, as well as the expansion of fashion-related research linked to social media platforms. South Korea's growing contribution reflects an orientation toward youth culture, digital aesthetics, and hybrid gender performances, positioning the country as an emergent cultural node rather than a traditional academic center.

In contrast, the relatively low representation of China, despite its central role in global fashion production and consumption, points to persistent structural and linguistic barriers in international academic publishing. The dominance of English-language journals indexed in WoS and the prioritization of Western theoretical frameworks likely contribute to the underrepresentation of Chinese scholarship, highlighting ongoing issues related to knowledge hierarchies and epistemic inequality.

Finally, a comparison across countries suggests clear thematic divergences. Research from the USA and the UK tends to emphasize identity, power, and feminist theory, while countries such as South Korea foreground media, popular culture, and digital fashion practices. European contributions, particularly from France and the Netherlands, are more closely aligned with cultural theory and fashion history, whereas emerging economies often remain positioned at the periphery of conceptual innovation. Together, these patterns illustrate how national contexts shape not only the volume of research output but also the conceptual focus and epistemological boundaries of fashion and gender studies.

LIMITATIONS

Despite the contributions of this bibliometric analysis in mapping the intellectual structure and thematic evolution of fashion and gender research, several limitations should be acknowledged. First, the study relies exclusively on the WoS core collection as its data source. Although WoS is one of the most authoritative and

widely used bibliographic databases, its coverage is inherently selective. Journals indexed in WoS tend to privilege established, high-impact publications, which may result in the underrepresentation of emerging journals, regional outlets, and interdisciplinary venues that are influential within fashion and gender studies but not indexed in WoS. Consequently, the findings should be interpreted as reflecting the dynamics of WoS-indexed scholarship rather than the entirety of global academic production on fashion and gender.

Second, the analysis includes only English-language publications, which constitutes an important linguistic limitation. Fashion and gender are deeply embedded in cultural, historical, and local contexts, and significant bodies of scholarship are produced in languages other than English. The exclusion of non-English publications may therefore obscure regionally grounded theoretical traditions, locally specific debates, and alternative epistemological perspectives. This linguistic bias is likely to reinforce existing asymmetries in knowledge visibility and may partially explain the dominance of Anglo-American scholarship observed in the results. As fashion and gender are culturally embedded phenomena, incorporating non-English literature could offer richer and more geographically diverse insights.

Third, related to database and language constraints, the study reflects a pronounced Global North bias, with limited representation of research originating from the Global South. While this pattern mirrors broader inequalities in global knowledge production, it should not be interpreted as an absence of scholarly engagement with fashion and gender in non-Western contexts. Rather, it highlights structural barriers related to indexing practices, publication language, and academic visibility. As a result, perspectives from regions such as Africa, Latin America, South Asia, and parts of East Asia remain underrepresented, limiting the study's ability to fully capture the diversity of cultural meanings and gendered fashion practices worldwide.

Finally, the study employs automatically generated cluster labels produced by CiteSpace, which, although based on statistically significant co-citation and keyword patterns, may not always fully capture the conceptual richness or theoretical nuance of the clustered literature. While these labels provide a useful heuristic for identifying dominant themes, they may oversimplify complex intellectual relationships or mask overlaps between clusters. Although interpretive discussion was used to contextualize the clusters, future research could benefit from a more systematic manual validation process, combining bibliometric techniques with qualitative content analysis to enhance conceptual precision.

Taken together, these limitations suggest that the findings should be understood as indicative rather than exhaustive. Future studies could address these constraints by integrating multiple databases (e.g., Scopus and regional indexes), including non-English literature, and applying mixed-method approaches that combine bibliometric mapping with in-depth qualitative analysis. Such efforts would contribute to a more inclusive and theoretically nuanced understanding of fashion and gender scholarship.

DISCUSSION & CONCLUSION

The findings of this bibliometric analysis offer valuable insights for scholars working in the fields of fashion and gender, as well as for researchers in communication studies, consumer research, and cultural sociology. However, beyond mapping publication trends, citation structures, and thematic clusters, the results also invite a more critical interpretation of the intellectual dynamics shaping the field.

First, the observed dominance of publications originating from the Global North, particularly the USA, the UK, and Western Europe, reflects broader structural inequalities in global knowledge production. This pattern resonates with ongoing debates on epistemic hegemony, the coloniality of knowledge, and the marginalization of non-English and non-Western academic contributions. The reliance on English-language journals indexed in major databases such as WoS may inadvertently reinforce these asymmetries, limiting the visibility of locally grounded research traditions and alternative epistemologies in fashion and gender studies.

Second, the evolution of clusters and research hotspots suggests not only topical diversification but also deeper conceptual shifts within the field. Earlier research clusters centered predominantly on the body, feminism, and gender difference, reflecting foundational concerns with embodiment, identity, and inequality. Over time, these themes have increasingly intersected with newer research trajectories focused on social media, digital fashion practices, hybrid masculinities, modest fashion, religion, and sustainability. This

transition indicates a move from relatively stable theoretical frameworks toward more fluid and intersectional approaches that account for digitalization, globalization, and cultural pluralism.

In particular, the emergence of clusters related to hybrid masculinities and modest fashion highlights the growing scholarly interest in negotiating gender norms beyond binary and Western-centric models. Similarly, the rising prominence of social media-related keywords reflects a shift toward examining fashion as a mediated, algorithmic, and participatory cultural practice. These developments underscore how fashion and gender research is increasingly shaped by contemporary sociopolitical transformations, technological infrastructures, and global cultural flows.

Taken together, the bibliometric patterns identified in this study should not be read merely as descriptive indicators of productivity or influence, but as signals of broader theoretical reorientations and power relations within the field. By situating these patterns within critical debates on knowledge production and conceptual change, the study contributes to a more reflexive and theoretically informed understanding of the evolution of fashion and gender scholarship.

A key contribution of this study lies in situating the identified bibliometric patterns within established theoretical debates in fashion and gender studies. Rather than treating clusters as isolated thematic groupings, the findings can be read as indicators of conceptual shifts and tensions documented in earlier scholarship.

The emergence of the *hybrid masculinity* cluster reflects a significant theoretical development within gender and fashion scholarship. Earlier studies on masculinity in fashion largely focused on hegemonic masculinity and its visual reinforcement through dress codes (Connell, 2013; Entwistle, 2015). More recent work, however, emphasizes how masculinity is increasingly negotiated through selective appropriations of femininity, queerness, and alternative aesthetics (Barry, 2018, 2019). The bibliometric prominence of this cluster confirms that fashion has become a key site for examining how masculinities are reconfigured rather than merely reproduced. This shift mirrors broader sociocultural transformations linked to neoliberal individualism, identity politics, and the commodification of difference.

The *queering* cluster resonates strongly with queer theory and LGBTQ+ fashion studies, which conceptualize dress as a form of resistance against normative gender binaries (Butler, 2015; Connell, 2013). Earlier feminist and body-centered research emphasized visibility and representation, whereas queer fashion scholarship foregrounds performativity, subversion, and counter-discourse. The increasing citation of queering-related studies suggests that fashion is no longer examined solely as a gender-differentiated system, but as a fluid and contested cultural practice through which identities are destabilized and renegotiated. This finding aligns with literature that frames fashion blogging, social media, and digital platforms as spaces of queer visibility and activism.

One notable finding is the absence of sustainability as a dominant keyword or cluster, despite its growing prominence in fashion studies more broadly. Previous literature positions sustainability as a central ethical and political concern in fashion research (Karaosman et al., 2017; Thorisdottir & Johannsdottir, 2019). Its marginal presence in fashion and gender bibliometrics suggests a conceptual disconnect between gender-focused analyses and sustainability-oriented frameworks. This gap indicates an important avenue for future research, particularly at the intersection of gender, labor, environmental justice, and ethical consumption. The finding also reflects how gender debates in fashion have historically prioritized identity, representation, and consumption over production-side inequalities and ecological concerns.

Taken together, the nine identified clusters that affect, shopping orientation, body, queering, hybrid masculinity, religion, purchase intention, Instagram, and individualism can be theoretically synthesized into three overarching dimensions. First, clusters such as body, affect, and individualism correspond to micro-level analyses of identity formation and embodied experience. Second, shopping orientation, purchase intention, and Instagram reflect meso-level concerns with consumption, mediation, and market structures. Third, queering, hybrid masculinity, and religion represent macro-level engagements with ideology, power, and sociopolitical transformation.

This synthesis demonstrates that fashion and gender research has evolved from relatively stable feminist and body-centered frameworks toward more intersectional, digitally mediated, and culturally plural

perspectives. Rather than indicating fragmentation, the diversity of clusters reflects the field's responsiveness to global social change, technological infrastructures, and shifting identity politics.

The nine clusters identified in this bibliometric analysis, affect, shopping orientation, body, queering, hybrid masculinity, religion, purchase intention, Instagram, and individualism—can be theoretically synthesized as reflecting three interconnected analytical levels within fashion and gender scholarship:

- (1) embodied subjectivity,
- (2) mediated consumption practices, and
- (3) sociocultural regulation and resistance.

At the first level, clusters such as body, affect, and individualism correspond to foundational theoretical approaches that conceptualize fashion as a site of embodied meaning-making. These clusters resonate with feminist and post-structuralist theories emphasizing the body as a socially constructed and politically regulated entity (e.g., Bordo, 2004; Butler, 2015; Entwistle, 2015). Research within these clusters foregrounds how clothing, appearance, and affective experience participate in the formation of gendered subjectivities, linking fashion to emotions, self-perception, and identity work. The prominence of these clusters reflects the enduring influence of embodiment and affect theories in framing fashion as a lived and experiential practice rather than merely a symbolic or economic one.

The second analytical level is represented by clusters such as shopping orientation, purchase intention, and Instagram, which collectively signal a shift toward consumer culture and digital mediation. These clusters align with theories of consumer identity, symbolic consumption, and presumption, highlighting how gendered meanings are produced and negotiated through market interactions and digital platforms. The rise of social media-related research, particularly centered on Instagram, marks a transition from traditional consumption models to platform-based fashion cultures characterized by visibility, algorithmic curation, and participatory self-branding. Within this framework, gender expression becomes increasingly entangled with metrics of engagement, influence, and commercial value, reflecting broader transformations in late capitalist cultural production.

The third level encompasses clusters such as queering, hybrid masculinity, and religion, which point to more recent critical and intersectional interventions in the field. These clusters challenge binary and Western-centric models of gender by foregrounding non-normative identities, alternative masculinities, and culturally situated fashion practices such as modest fashion. Drawing on queer theory, masculinity studies, and postcolonial feminist perspectives, this body of research conceptualizes fashion as a site of both resistance and negotiation, where dominant gender norms are destabilized, rearticulated, or strategically accommodated. The co-existence of queering and religion-oriented clusters is particularly significant, as it illustrates how fashion operates simultaneously as a medium of subversion and moral regulation, depending on sociocultural context.

Taken together, the synthesis of these nine clusters reveals that fashion and gender research has evolved from relatively discrete theoretical concerns toward a multi-layered and intersectional field. Earlier emphases on the body and gender difference have increasingly intersected with analyses of digital mediation, consumer capitalism, and sociopolitical identity formation. Importantly, the absence of sustainability as a dominant cluster suggests a theoretical gap between fashion's environmental discourse and gender-focused analyses, highlighting an area where future research could productively integrate feminist political economy, ecofeminism, and ethical fashion studies.

Overall, the nine-cluster structure should be understood not as a fragmented landscape but as an evolving theoretical ecology, in which embodied experience, mediated consumption, and sociocultural power relations are continuously reconfigured. This synthesis demonstrates that bibliometric patterns can serve as indicators of deeper conceptual transformations, reinforcing the value of bibliometric analysis as a tool not only for mapping research activity but also for tracing theoretical change. This study provides the first comprehensive bibliometric analysis of the scientific literature on fashion and gender, offering a longitudinal and structural perspective on the evolution of the field between 1990 and 2022. By analyzing 1,940 documents indexed in the WoS database through CiteSpace, the study maps publication trends, intellectual foundations, thematic clusters, and emerging research trajectories.

The findings demonstrate a sustained and accelerating global interest in fashion and gender research, with scholarly contributions originating from 90 countries. The USA, the UK, Canada, and Australia emerge as central hubs within the international collaboration network, reflecting the continued dominance of Global North academic production. At the same time, the growing participation of other regions indicates a gradual diversification of scholarly engagement, although important geographical and linguistic imbalances remain.

The DCA reveals a well-structured and conceptually coherent intellectual landscape. Contrary to fragmented interpretations, the high modularity and silhouette values indicate that the field is organized around nine relatively homogeneous thematic clusters, including affect, shopping orientation, body, queering, hybrid masculinity, religion, purchase intention, Instagram, and individualism. These clusters reflect both enduring theoretical concerns, such as embodiment, consumption, and gender performance, and more recent shifts toward digital cultures, mediated identities, and alternative masculinities.

Keyword and citation burst analyses further highlight the dynamic nature of the field, revealing a transition from earlier emphases on gender differences and consumer behavior toward emerging hotspots related to social media, politics, and antecedents of consumption and identity formation. In particular, the growing prominence of social media-related research underscores its transformative role in shaping visibility, inclusion, and diversity within the fashion industry. These developments align with broader debates on intersectionality, sustainability, body positivity, race, ethnicity, and religion, suggesting an expanding critical agenda within fashion and gender studies.

Overall, this study contributes to the literature by moving beyond descriptive reviews and offering a relational and temporal mapping of fashion and gender research. By identifying both stable intellectual cores and emerging thematic directions, it provides scholars with a structured foundation for future research and encourages theoretically informed, interdisciplinary, and globally inclusive approaches to the study of fashion and gender.

Funding: The author received no financial support for the research and/or authorship of this article. No external funding was received for this study.

Ethics declaration: This study does not involve human participants, animals, or any confidential personal data. Therefore, ethical approval and informed consent were not required. All data used in this study were obtained from publicly available sources and analyzed in accordance with ethical research standards.

AI statement: Generative AI tools (e.g., ChatGPT) were used in a limited capacity to assist with language editing. The author takes full responsibility for the content, interpretation, and conclusions of the study.

Declaration of interest: The author declared no competing interests.

Data availability: The data used in this study are publicly available and can be accessed through the relevant databases referenced in the article.

REFERENCES

- Akter, M., Rahman, M., & Radicic, D. (2022). Gender-aware framework in international entrepreneurship: How far developed? A systematic literature review. *Sustainability*, 14(22), Article 15326. <https://doi.org/10.3390/su142215326>
- Anderson, E., & McCormack, M. (2018). Inclusive masculinity theory: Overview, reflection and refinement. *Journal of Gender Studies*, 27(5), 547-561. <https://doi.org/10.1080/09589236.2016.1245605>
- Barry, B. (2018). (Re)fashioning masculinity: Social identity and context in men's hybrid masculinities through dress. *Gender & Society*, 32(5), 638-662. <https://doi.org/10.1177/0891243218774495>
- Barry, B. (2019). Fabulous masculinities: Refashioning the fat and disabled male body. *Fashion Theory*, 23(2), 275-307. <https://doi.org/10.1080/1362704X.2019.1567064>
- Bordo, S. (2004). *Unbearable weight: Feminism, Western culture, and the body*. University of California Press.
- Borghain, D. J., Nazim, M., & Verma, M. K. (2022). Cluster analysis and network visualization of research in mucormycosis: A scientometric mapping of global publications from 2011 to 2020. *Library Hi Tech*, 42(1), 54-78. <https://doi.org/10.1108/LHT-04-2022-0171>
- Bourdieu, P. (2007). *Masculine domination*. Polity Press.
- Bourdieu, P. (2010). *Distinction: A social critique of the judgement of taste*. Routledge.

- Bridges, T., & Pascoe, C. J. (2018). On the elasticity of gender hegemony. In J. W. Messerschmidt, P. Y., Martin, M. A. Messner, & R. Connell (Eds.), *Gender reckonings: New social theory and research* (pp. 254-274). NYU Press. <https://doi.org/10.2307/j.ctt1pwtb3r.21>
- Broadus, R. N. (1987). Early approaches to bibliometrics. *Journal of the American Society for Information Science*, 38(2), 127-129. [https://doi.org/10.1002/\(SICI\)1097-4571\(198703\)38:2<127::AID-ASI6>3.0.CO;2-K](https://doi.org/10.1002/(SICI)1097-4571(198703)38:2<127::AID-ASI6>3.0.CO;2-K)
- Butler, J. (2015). *Gender trouble: Feminism and the subversion of identity*. Routledge.
- Carollo, A., Balagtas, J. P. M., Neoh, M. J.-Y., & Esposito, G. (2021). A scientometric approach to review the role of the medial preoptic area (MPOA) in parental behavior. *Brain Sciences*, 11(3), Article 393. <https://doi.org/10.3390/brainsci11030393>
- Chen, C. M. (2017). Science mapping: A systematic review of the literature. *Journal of Data and Information Science*, 2(2), 1-40. <https://doi.org/10.1515/jdis-2017-0006>
- Chen, C. M., Dubin, R., & Kim, M. C. (2014). Emerging trends and new developments in regenerative medicine: A scientometric update (2000-2014). *Expert Opinion on Biological Therapy*, 14(9), 1295-1317. <https://doi.org/10.1517/14712598.2014.920813>
- Cho, I., Kim, D., & Park, H. (2022). Bibliometrics and co-citation network analysis of systematic reviews of evidence-based nursing guidelines for preventing inpatient falls. *CIN: Computers, Informatics, Nursing*, 40(2), 95-103. <https://doi.org/10.1097/CIN.0000000000000819>
- Cho, S., & Workman, J. (2011). Gender, fashion innovativeness and opinion leadership, and need for touch. *Journal of Fashion Marketing and Management*, 15(3), 363-372. <https://doi.org/10.1108/13612021111151941>
- Connell, C. (2013). Fashionable resistance: Queer "fa(t)shion" blogging as counterdiscourse. *WSQ: Women's Studies Quarterly*, 41(1-2), 209-224. <https://doi.org/10.1353/wsqs.2013.0049>
- Crane, D. (2012). *Fashion and its social agendas: Class, gender, and identity in clothing*. University of Chicago Press.
- Cui, Y., Mou, J., & Liu, Y. P. (2018). Knowledge mapping of social commerce research: A visual analysis using CiteSpace. *Electronic Commerce Research*, 18(4), 837-868. <https://doi.org/10.1007/s10660-018-9288-9>
- Daim, T. U., Rueda, G., Martin, H., & Gerdzi, P. (2006). Forecasting emerging technologies: Use of bibliometrics and patent analysis. *Technological Forecasting and Social Change*, 73(8), 981-1012. <https://doi.org/10.1016/j.techfore.2006.04.004>
- De Boise, S. (2014). I'm not homophobic, "I've got gay friends.": Evaluating the Validity of Inclusive Masculinity. *Men and Masculinities*, 18(3), 318-339. <https://doi.org/10.1177/1097184X14554951>
- Diefendorf, S., & Bridges, T. (2020). On the enduring relationship between masculinity and homophobia. *Sexualities*, 23(7), 1264-1284. <https://doi.org/10.1177/1363460719876843>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285-296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Entwistle, J. (2015). *The fashioned body: Fashion, dress, and modern social theory*. Polity Press.
- Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2008). Comparison of PubMed, Scopus, Web of Science, and Google Scholar: Strengths and weaknesses. *The FASEB Journal*, 22(2), 338-342. <https://doi.org/10.1096/fj.07-9492LSF>
- Fausto-Sterling, A. (2020). *Sexing the body: Gender politics and the construction of sexuality*. Basic Books.
- Gill, R. (2007). Postfeminist media culture: Elements of a sensibility. *European Journal of Cultural Studies*, 10(2), 147-166. <https://doi.org/10.1177/1367549407075898>
- Ging, D. (2019). Alphas, betas, and incels: Theorizing the masculinities of the manosphere. *Men and Masculinities*, 22(4), 638-657. <https://doi.org/10.1177/1097184X17706401>
- Giovannini, S., Xu, Y., & Thomas, J. (2015). Luxury fashion consumption and generation Y consumers. *Journal of Fashion Marketing and Management*, 19(1), 22-40. <https://doi.org/10.1108/JFMM-08-2013-0096>
- Gross, O. V., & Pritchard, A. (1969). Documentation notes. *Journal of Documentation*, 25(4), 344-349. <https://doi.org/10.1108/eb026482>
- Gu, D. X., Li, J., Li, X., & Liang, C. (2017). Visualizing the knowledge structure and evolution of big data research in healthcare informatics. *International Journal of Medical Informatics*, 98, 22-32. <https://doi.org/10.1016/j.ijmedinf.2016.11.006>

- Hansen, T., & Jensen, J. M. (2009). Shopping orientation and online clothing purchases: The role of gender and purchase situation. *European Journal of Marketing*, 43(9/10), 1154-1170. <https://doi.org/10.1108/03090560910976410>
- Hérubel, J. P. V. M. (1999). Historical bibliometrics: Its purpose and significance to the history of disciplines. *Libraries & Culture*, 34(4), 380-388. <https://www.jstor.org/stable/25548766>
- Jones, A. R., & Stallybrass, P. (2000). *Renaissance clothing and the materials of memory*. Cambridge University Press.
- Kaiser, S. B., & Flury, A. (2005). Women in pink: On the semiotics of the colours of clothes. *Zeitschrift für Semiotik*, 27(3), 223-239. https://www.researchgate.net/publication/298917418_Women_in_pink_On_the_semiotics_of_the_colours_of_clothes
- Kaiser, S. B., & Green, D. N. (2012). *Fashion and cultural studies*. Berg Publishers.
- Karaosman, H., Morales-Alonso, G., & Brun, A. (2017). From a systematic literature review to a classification framework: Sustainability integration in fashion operations. *Sustainability*, 9(1), Article 30. <https://doi.org/10.3390/su9010030>
- Kim, H., Cho, I., & Park, M. (2022). Analyzing genderless fashion trends of consumers' perceptions on social media: Using unstructured big data analysis through latent Dirichlet allocation-based topic modeling. *Fashion and Textiles*, 9(1), Article 6. <https://doi.org/10.1186/s40691-021-00281-6>
- Lewis, R. (2015). *Muslim fashion: Contemporary style cultures*. Duke University Press. <https://doi.org/10.1515/9780822375340>
- Li, K., Rollins, J., & Yan, E. (2018). Web of Science use in published research and review papers 1997-2017: A selective, dynamic, cross-domain, content-based analysis. *Scientometrics*, 115(1), 1-20. <https://doi.org/10.1007/s11192-017-2622-5>
- Li, X.-J., Li, C.-Y., Bai, D., & Leng, Y. (2021). Insights into stem cell therapy for diabetic retinopathy: A bibliometric and visual analysis. *Neural Regeneration Research*, 16(1), 172-178. <https://doi.org/10.4103/1673-5374.286974>
- Liu, W. S. (2019). The data source of this study is Web of Science core collection? Not enough. *Scientometrics*, 121(3), 1815-1824. <https://doi.org/10.1007/s11192-019-03238-1>
- McRobbie, A. (2009). *The aftermath of feminism: Gender, culture and social change*. SAGE.
- Mears, A. (2011). *Pricing beauty: The making of a fashion model*. University of California Press. <https://doi.org/10.1525/9780520950214>
- Merigó, J. M., Gil-Lafuente, A. M., & Yager, R. R. (2015). An overview of fuzzy research with bibliometric indicators. *Applied Soft Computing*, 27, 420-433. <https://doi.org/10.1016/j.asoc.2014.10.035>
- Messerschmidt, J. W., & Messner, M. A. (2018). Hegemonic, nonhegemonic, and "new" masculinities. In J. W. Messerschmidt, P. Y., Martin, M. A. Messner, & R. Connell (Eds.), *Gender reckonings: New social theory and research* (pp. 35-56). NYU Press. <https://doi.org/10.2307/j.ctt1pwtb3r.7>
- Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: A comparative analysis. *Scientometrics*, 106(1), 213-228. <https://doi.org/10.1007/s11192-015-1765-5>
- Noris, A., Nobile, T. H., Kalbaska, N., & Cantoni, L. (2021). Digital fashion: A systematic literature review: A perspective on marketing and communication. *Journal of Global Fashion Marketing*, 12(1), 32-46. <https://doi.org/10.1080/20932685.2020.1835522>
- O'Sullivan, G. A., Hanlon, C., Spaaij, R., & Westerbeek, H. (2017). Women's activewear trends and drivers: A systematic review. *Journal of Fashion Marketing and Management*, 21(1), 2-15. <https://doi.org/10.1108/JFMM-07-2015-0059>
- Peters, L. D. (2014). You are what you wear: How plus-size fashion figures in fat identity formation. *Fashion Theory*, 18(1), 45-71. <https://doi.org/10.2752/175174114X13788163471668>
- Pranckute, R. (2021). Web of Science (WoS) and Scopus: The titans of bibliographic information in today's academic world. *Publications*, 9(1), Article 12. <https://doi.org/10.3390/publications9010012>
- Roach-Higgins, M. E., & Eicher, J. B. (1993). Definition and classification of dress: Implications for analysis of gender roles. In R. Barnes, & J. B. Eicher (Eds.), *Dress and gender: Making and meaning* (pp. 8-28). Berg.
- Shiau, W. L., Dwivedi, Y. K., & Tsai, C. H. (2015). Supply chain management: Exploring the intellectual structure. *Scientometrics*, 105(1), 215-230. <https://doi.org/10.1007/s11192-015-1680-9>

- Shiau, W. L., Dwivedi, Y. K., & Yang, H. S. (2017). Co-citation and cluster analyses of extant literature on social networks. *International Journal of Information Management*, 37(5), 390-399. <https://doi.org/10.1016/j.ijinfomgt.2017.04.007>
- Small, H. (1973). Co-citation in the scientific literature: A new measure of the relationship between two documents. *Journal of the American Society for Information Science*, 24(4), 265-269. <https://doi.org/10.1002/asi.4630240406>
- Tarlo, E. (2010). *Visibly Muslim: Fashion, politics, faith*. Berg Publishers. <https://doi.org/10.2752/9781847888624>
- Thorisdottir, T. S., & Johannsdottir, L. (2019). Sustainability within fashion business models: A systematic literature review. *Sustainability*, 11(8), Article 2233. <https://doi.org/10.3390/su11082233>
- Trujillo, C. M., & Long, T. M. (2018). Document co-citation analysis to enhance transdisciplinary research. *Science Advances*, 4(1), Article e1701130. <https://doi.org/10.1126/sciadv.1701130>
- Turner, D. M. (2002). *Fashioning adultery: Gender, sex, and civility in England, 1660-1740*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511496103>
- White, H. D., & McCain, K. W. (1998). Visualizing a discipline: An author co-citation analysis of information science, 1972-1995. *Journal of the American Society for Information Science*, 49(4), 327-355. [https://doi.org/10.1002/\(SICI\)1097-4571\(19980401\)49:4<327::AID-ASI4>3.0.CO;2-4](https://doi.org/10.1002/(SICI)1097-4571(19980401)49:4<327::AID-ASI4>3.0.CO;2-4)
- Workman, J. E., & Cho, S. (2012). Gender, fashion consumer groups, and shopping orientation. *Family and Consumer Sciences Research Journal*, 40(3), 267-283. <https://doi.org/10.1111/j.1552-3934.2011.02110.x>

