

Bibliometric analysis of the journal literature on women's studies

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Abstract This study uses bibliometric techniques to investigate the characteristics and implications of women's studies literature over the period from 1900 to 2013. Using computer analysis for bibliometric techniques, the results of the present study demonstrate that the journal literature on women's studies has grown exponentially, with an annual growth rate of 10.6% for over one century. Most of the document types in the area of women's studies are in the form of research articles, review articles and book reviews. The United States of America and the United Kingdom contribute the largest number of articles. One hundred and seventeen core journals containing 33% of the women's studies journal articles have been identified through the application of Bradford's law on journal distribution. More than half of the 117 core journals began publishing from 1970 to 1990, and most of these core journals deal with the humanities (including literature, history and philosophy), women's studies, medical science, psychology, political science and sociology. The highly productive journals associated with highly cited times are *Signs: Journal of Women in Culture and Society*, *Women's Studies International Forum*, *Sex Roles, Feminism and Psychology*, *Gender and Society*, *European Journal of Women's Studies*, *American Historical Review*, *Psychology of Women Quarterly* and *Feminist Studies*.

Keywords Women's studies · Bibliometric studies · Core journal · Literature growth · Highly cited journal · Bradford's law

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Introduction

Women's studies, which considers the roles and experiences of women in various cultural and social aspects, has helped to improve the actual status of women in many ways. During the mid-1960s, women started to speak more loudly for increased freedom and rights. At that time, women's studies was primarily an extension of the feminist movement and focused on campaigning for women's rights, including the right to vote, to work, to education, to earn fair wages or equal pay, to enter into contracts, to own property, to have equal rights within marriage, etc. Women's studies has, therefore, developed as a discipline since the 1960s (Krikos and Ingold 2004; National Women's Studies Association 2014).

Giving a definition of women's studies is difficult since it is difficult to limit it to any single academic discipline. It can be considered as an independent topic of study, although women's studies in fact has great influence on a wide variety of different research areas (Robinson and Richardson 1993). In the 1970s, women's studies became more generally recognized as a professional field of research, expanding the horizons of feminism and stimulating the development of journals specifically focusing on women's studies (Krikos and Ingold 2004). The research area employs multidisciplinary and interdisciplinary theories and methods that enable an issue or area to be examined from a variety of scholarly standpoints. Women's studies is a sustainable field of research that interacts dynamically with society. It is not constrained to a certain nation or territory, nor can it be defined by certain research areas or strategies. The number of women's studies programs has grown steadily worldwide, and as these programs have developed, a substantial body of scholarly literature also has accumulated.

In the present study, the journal literature on women's studies is defined as those with women's studies or its synonyms and related terms given in the online version of the Library of Congress Subject Headings (2014), appearing in the field of Title, Abstract, Author Keywords and KeyWords Plus in Web of Science database. As will be seen later in the section of Research Method, a broader concept of "gender studies" is not included in the synonyms.

As indicated by Krikos (1994, p. 66), women's studies generally falls into two main categories, scholarship and activism. Both categories include journal titles that provide interdisciplinary or general coverage, titles that focus on a specific field or subject, and titles that present numbers of established or alternative viewpoints. Both categories also include current foreign and domestic issues. The content covers issues and perspectives pertaining to the diverse voices of women of color, lesbians, Jewish women, international women, women in developing nations, and others. Therefore, it is of significant interest to better understand the nature of scholarly literature on women's studies.

This study uses bibliometric techniques to investigate the characteristics of journal literature on women's studies and its implications from 1900 to 2013. A bibliometric technique is a simple statistical method of bibliography counting to evaluate and quantify the growth of research topics. Bibliometrics is the quantitative study of literature as it is reflected in bibliographies. Its task, broadly speaking, is to provide evolutionary models of science, technology, and scholarship (White and McCain 1989). Bibliometric study of journal literature can evaluate factors such as the rate of growth, country and language distribution, as well as document types as specified in the Web of Science (WoS), i.e., articles, book reviews, editorial material, etc. (see Table 5 below). The core journals of women's studies literature may be identified using Bradford's law so that the subject field and characteristics of core journals may then be analyzed. Accordingly, the most prominent model for the distribution of bibliographic items is the Bradford distribution, which

addresses the way that subject literature is distributed among certain journals. Bradford initially proposed the idea of core and scattered concepts, where the core refers to a small number of journals that publish the majority papers in a field; while scatter refers to the broader spread of an area of literature over many publications.

Using the computer as a tool and employing bibliometric techniques, the present study has the following objectives:

1. To explore the growth-pattern and rate of growth of journal literature on women's studies, 1900–2013.
2. To evaluate the national and linguistic distribution of journal literature on women's studies, 1900–2013.
3. To investigate the document types of journal literature on women's studies, 1900–2013.
4. To explore the journal literature distribution and determine the nucleus of primary journals (core journals) that contains a substantial portion of the overall journal literature on women's studies from 1900 to 2013 and to investigate the features of these core journals.
5. To identify the subject fields of the highly productive journals of the women's studies literature, 1900–2013.
6. To investigate the characteristics of core journals and the highly cited articles and journals.

The year of 1900 is chosen to be the beginning of the study of growth-pattern and the rate of growth as it is the starting year covered by the Web of Science (WoS), the most comprehensive database for science, social sciences and art and humanities—all of which disciplines are included in the field of women's studies. To obtain a more meaningful observation of growth-pattern and growth rate it is necessary to have a coverage period. To serve the purpose of this study, the journal literature on women's studies is defined as those with women's studies or its synonyms given in the online version of the Library of Congress Subject Headings (2014) in the Title, Abstract, Author Keywords and KeyWords Plus.

Related bibliometric studies on women's studies literature

Pritchard's definition of bibliometrics as “the application of mathematics and statistical methods to books and other media of communication” is commonly cited and serves as the basis of this investigation (Pritchard 1969). A brief explanation of the fundamental bibliometric principles to this investigation follows.

The Bradford distribution is a bibliometric regularity first described by S.C. Bradford in 1934. He proposed the “law of scattering” which states that “if scientific journals are arranged in the order of decreasing productivity of articles on a given subject, they may be divided into a nucleus of periodicals and several groups or zones of periodicals, where nucleus are particularly devoted to the subject while the total numbers of articles contained in the remaining zones are almost the same as the nucleus. In this case, the number of periodicals in the nucleus and succeeding zones will be as $1:n:n^2$ ” (Bradford 1948, p. 86). The main point of Bradford's law is that only a few sources will contain the largest proportion of literature for any discipline, while the remainder of the literature is published in a huge range of sources, which may include only one or two articles each. Sources in the

nucleus (zone one) form the core of the literature and can be calculated to determine the most productive serials in a discipline.

Bradford's original work was later extended and clarified by many studies. The most influential of which was that of Brookes, who combined Bradford's law and Zipf's law to produce the Bradford–Zipf plot. He showed that when the cumulative number of articles is plotted against the natural logarithm of the cumulative number of journals, the resulting graph takes the form of an S-shaped curve, the central portion of which is linear. The curve displays the characteristics of three distinct regions: (1) a rapid rise for the first few points, (2) a major portion of linear relation between the two variables and (3) a “droop” at the tail end of the distribution indicating the incompleteness of the bibliography. A few highly productive journals especially devoted to the subject account for the initial short rise (Brookes 1969).

In the literature there are only a few bibliometric studies, using Bradford's law and other theoretical bases, investigating women's studies in a single journal. In one of these studies, employing citation analysis techniques Mack (1991) identified an evaluation method that assisted library collection managers in developing and maintaining a group of useful and influential women's studies journals. The sample journal considered in this study is *Signs: Journal of Women in Culture and Society*. Approximately, 1266 citations from *Signs* were analyzed, and it was found most of these citations came from 11 various subject areas of psychology, sociology, history, economic, anthropology, philosophy, literature, political science and law. In addition, the study found that 20 titles comprised a core collection of women's studies journals. Table 1 shows the core list of 20 journals for women's studies, all of which were cited five or more times in at least one of the following three years, 1976, 1981, and 1986.

In 1995, over 100 journals has been categorized under Women's studies in the Ulrich Periodical Directory (Krikos and Ingold 2004). With such a large number, it becomes critical for a library to identify the important core journals in order to manage the task of journal collection and cancellation. The identification of core journals can also serve as guidance for a database producer to decide the coverage of the database. Early works on women's studies journals have focused on the analysis of the bibliographies covered by the indexing and abstracting databases to determine the core journals.

Using the standards of depth of indexing, currency/time-lag/cost, publisher/editor, format/arrangement, and vocabulary/subject headings, Krikos (1994) compared the 1989 volumes of three women's studies periodical indexes, including WSA (Women's Studies Abstracts), SWA (Studies on Women Abstracts) and WSI (Women's Studies Index). Her study identified 28 journals indexed by these three abstracting and indexing services, and these 28 journal titles are covered in Table 1. Moreover, Gender and Women's Studies Section (GWSS) of the Association of College and Research Libraries, (ACRL) has listed 35 core journals, which were covered by at least three indexing and abstracting databases, and core monographs for the area of women's studies since 2008 (ACRL, GWSS 2008).

Table 1 illustrates the core journal list developed by Mack (1991), Krikos (1994) and GWSS (2008), respectively. It can be found that there are five titles appearing in each of the three lists, namely *Feminist Studies*, *Frontiers: A Journal of Women's Studies*, *Signs: Journal of Women in Culture and Society*, *Women's Studies International Forum*, *Women's Studies Quarterly*. Among them, *Women's Studies International Quarterly* changed its name to *Women's Studies International Forum* in 1982 and *Feminist Issues* was renamed as *Gender Issues* in 1998. This table demonstrates the importance of these five core journals in the women's studies area from 1991 to 2008. There are nine journals appearing in SWA, WSA, WSI and GWSS together.

Table 1 Core journal list of women’s studies (1991, 1994, 2008)

	1991 (Mack)	1994 (Krikos)	2008 (ACRL, GWSS)
1	• Feminist Studies	• Feminist Studies	• Feminist Studies
2	• Frontiers: A Journal of Women’s Studies	• Frontiers: A Journal of Women’s Studies	• Frontiers: A Journal of Women’s Studies
3	• Signs: Journal of Women in Culture and Society	• Signs: Journal of Women in Culture and Society	• Signs: Journal of Women in Culture and Society
4	• Women’s Studies International Forum	• Women’s Studies International Forum	• Women’s Studies International Forum
5	• Women’s Studies Quarterly	• Women’s Studies Quarterly	• Women’s Studies Quarterly
6	■ Sex Roles	■ Sex Roles	◆ Women’s Studies: An Interdisciplinary Journal
7	◆ Women’s Studies: An Interdisciplinary Journal	✓ Affilia: Journal of women and social work	✓ Affilia: Journal of women and social work
8	American Anthropologist	✓ Feminist Issues	✓ Feminist Teacher
9	American Economic Review	✓ Feminist Teacher	✓ Gender and Society
10	American Journal of Sociology	✓ Gender and Society	✓ Gender Issues
11	American Sociological Review	✓ Genders	✓ Genders
12	International Journal of Women’s Studies	✓ Hypatia: a journal of feminist philosophy	✓ Hypatia: a journal of feminist philosophy
13	Journal of Consulting and Clinical Psychology	✓ Ms.	✓ Ms.
14	Journal of Marriage and Family	✓ Off our backs: A Women’s News Journal	✓ Off our backs: A Women’s News Journal
15	Journal of Social History	✓ Psychology of Women Quarterly	✓ Psychology of Women Quarterly
16	Monthly Labor Review	✓ Tulsa Studies in Women’s Literature	✓ Tulsa Studies in Women’s Literature
17	Review of Radical Political Economics	✓ Women and Health: A Multidisciplinary Journal of Women’s Health Issues	✓ Women and Health: A Multidisciplinary Journal of Women’s Health Issues
18	Science	✓ Women and Therapy	✓ Women and Therapy
19	Social Problems	Adolescence	Camera Obscura
20	Women’s Studies in Communication	Atlantis	Differences: A Journal of Feminist Cultural Studies
21		Health right	Feminist Collections
22		Hecate	Feminist Periodicals
23		New Directions for Women	Feminist Review
24		Resources for Feminist Research	Feminist Theory
25		SAGE	Journal of Feminist Studies in Religion
26		Women and Politics	Journal of Lesbian Studies

Table 1 continued

1991 (Mack)	1994 (Krikos)	2008 (ACRL, GWSS)
27	(ISIS-WICCE) Women's World	Journal of Women, Politics and Policy: A Quarterly Journal of Research and Policy Studies
28		Journal of Women's History
29		Meridians: Feminism, Race, Transnationalism
30		Nashim: A Journal of Jewish Women's Studies and Gender Issues
31		New Books on Women and Feminism
32		NWSA Journal
33		Social Politics: International Studies in Gender, State and Society
34		Women: A Cultural Review
35		Women's Review of Books

Journals marked with same symbols stand for overlapping: ● Overlap in 1991, 1994, and 2008; ■ Overlap in 1991 and 1994; ◆ Overlap in 1991 and 2008; ✓ Overlap in 1994 and 2008

The 20 core journals identified by Mack (1991) consist of nine journals in women's studies and 11 journals in other subjects, such as anthropology, economics, and sociology. Moreover, unlike the analysis of bibliographies contained in the indexing and abstracting databases of SWA, WSA, and WSI, Mack employed citation and subject analyses. As a result, the core journal list determined by Mack is quite different from those of SWA, WSA, and WSI.

In 1994, the core journals reported by Krikos on women's studies, included only two journals with the word "Gender" in their title, while the other core journals used "Women" or "Feminism" in their titles. Fourteen years later, the core journals reported in GWSS in 2008, included five journals with "Gender" in their titles. In addition to "Women" and "Feminism," in their titles, "Lesbian," "Transnationalism", and "Race" also appeared in the core journal titles. This suggests the evolution of women's studies in its research subject and scope.

In summary, there are only a few bibliometric works investigating women's studies in a single journal. Significantly, there is no study on women's studies literature using an approach employing the Bradford and Bradford–Zipf's distribution laws. Therefore, the present study is unique in its exploration of women's studies on the basis of a quantitative bibliometric analysis of the literature in the subject area of women's studies.

Research methods

Given that bibliometrics is the most frequently used research method for scholarly evaluation, and especially for scientific communication, it was chosen in the current study as the means of establishing a baseline study of the literature on women's studies. In this study, Web of Science (WoS) (2014) including Science Citation Index Expanded (SCIE), Social Sciences Citation Index (SSCI), and Arts and Humanities Citation Index (A&HCI) was selected because it is one of the most important databases for science, social sciences and art and humanities. The WoS 2014 database indexes over 8641 journals (dating from

1823) from all over the world in more than 150 different languages, and it contains records for over 12 million. Substantive editorials, letters, biographies are indexed in addition to articles. Moreover, the depth of indexing is one of the strong features of WoS as a bibliographic source because a searcher does not need rely on the title of an article alone to determine the article's scope.

To obtain comprehensive and precise search results, an advanced topic search (TS) with truncation operation was employed. The related terms of women's studies were identified by a vocabulary-controlled thesaurus, namely the Library of Congress Subject Headings (2014), LCSH. As indicated by Lancaster (1979), a controlled vocabulary controls the synonyms, nearly synonyms, homographs, and related terms; so the search for a descriptor field retrieve items with particular and comprehensive subject meanings. In the LCSH online version, conducting a basic search by the terms of feminism and women's studies results in all synonyms, including women studies, female studies, feminist studies, feminism, feminist movement, women's liberation and women's movement.

The search terms and the search strategy exercised by the advanced search function in the WoS are as follows:

TS = ("wom*n stud*" or "female stud*" or "feminist stud*" or feminism or "feminis* movement" or "wom*n liberation" or "wom*n movement" or "wom*n liberation movement"), where * indicates a truncation operator, and TS indicates a topic search. Search fields are limited in the Title, Abstract, Author Keywords and KeyWords Plus with the dates from 1900 to 2013. This search statement was developed to retrieve as comprehensive a set of relevant material from the article level in the database as possible. The data retrieved provides such a broad picture of the literature that a complete study of women's studies literature growth will be developed. The search was conducted on 22 January 2014, and 16, 852 items were retrieved.

It should be noted that a TS search in the WoS search is in the article level, i.e., for those articles published in the study period with women studies and its synonyms and related terms given in the LCSH online version in their Title, Abstract, Author Keywords and KeyWords Plus. "Women's studies" also appears in the field of WoS Subject Area (SU) and Web of Science Category (WC), both of which are based on the subject of a journal. A search based on subject area, i.e., SU search, or Web of Science Category, i.e., WC search, will result in all articles in the journals with or without a subject area of women studies. Therefore, a SU search or WC search may yield much more literature, but without containing articles related to women's studies in other journals. Table 2 illustrates that most of the articles in women's studies, 14,741 out of 17,650, have been published in journals without a subject area of "women's studies".

For the study of the characteristics of women's studies literature, the search was then limited by the date from 1900 to 2013 and four database fields including publication type, source, language, and publication country. The subject scope of the core journals was identified by *Ulrich's International Periodical Directory* database of Ulrichsweb (2014) as well as the web pages of the journals. All entries in the WoS database were edited in a uniform style. Each relevant bibliographic record was downloaded to compact disks, then analyzed and processed by Access database software, EXCEL PERL programming language, and SPSS.

Detailed verification and editing of data were conducted as discussed below. Several journal titles may refer to the same journal if the name of the journal changes, or if the compilers of the database are inconsistent regarding the form used to cite the journal. In such cases, it would seem appropriate to correct the data by checking with the *Ulrich's International Periodical Directory* or the journal website and sum the citations under the

Table 2 Difference between topic search (TS) and subject area/web of science category search

Set	Search result	Search strategy
#5	17,650	TS = (“wom*n stud*” or “female stud*” or “feminist stud*” or feminism or “feminis* movement” or “wom*n liberation” or “wom*n movement” or “wom*n liberation movement”)\ <i>Indexes = SCI-EXPANDED, SSCI, A&HC Timespan = 1900–2013</i>
#6	47,563	WC = (“wom*n stud*” or “female stud*” or “feminist stud*” or feminism or “feminis* movement” or “wom*n liberation” or “wom*n movement” or “wom*n liberation movement”)\ <i>Indexes = SCI-EXPANDED, SSCI, A&HC Timespan = 1900–2013</i>
#9	47,563	SU = (Women’s studies) <i>Indexes = SCI-EXPANDED, SSCI, A&HC Timespan = 1900–2013</i>
#10	14,741	#5 not #9 <i>Indexes = SCI-EXPANDED, SSCI, A&HC Timespan = 1900–2013</i>

This search was provided by Ms. Renee Guan of Clarivate Analytics (formerly the IP and Science business of Thomson Reuters) Taiwan Office after the first review in November, 2016. The article number of 17,650 from TS search is somewhat larger than the 16,852 from TS search in January 2014

more recent or better-known name. For example, *Women’s Studies International Forum* was used instead of its former title of *Women’s Studies International Quarterly*. To determine which journals changed names, the complete list was compared with the list of name changes in *Ulrich’s International Periodical Directory*, 2014.

Limitations

There are several limitations to this work. The present study was based on the topic search of women’s studies within the WoS, which covers mainly articles in journals falling under rather exclusive criteria of WoS. The synonyms of women’s studies in the present WoS search were based on those given in the online version of LCSH, which, as indicated earlier, includes women studies, female studies, feminist studies, feminism, feminist movement, women’s liberation and women movement. Clearly, the much broader concept of “gender studies” is missing. Therefore, those articles in gender studies without “women’s studies” and its synonyms listed above in the search fields were excluded. This could have resulted in underestimating the number of articles on women’s studies especially for recent decades, during which there was a shift in focus from women’s studies to gender studies, as suggested by the inclusion of core journals in recent studies from the literature review. Moreover, those articles without the topics of women’s studies and its synonyms given in the present study in the search fields were also excluded in the present set of data.

A TS search in February 2017 with “gender studies” added as a synonym of “women’s studies” in addition to that based on the online version of LCSH results in 18,484 items¹, which, compared to 17,650 of the original TS search without gender studies in January 2017, is 4.72% more. Considering that not all gender studies concern about women studies, it may be reasonable to assume that about a half of this additional items are related to

¹ This search was provided by Ms. Renee Guan of Clarivate Analytics (formerly the IP and Science business of Thomson Reuters) Taiwan Office.

women’s studies without “women’s studies” or its synonyms given in LCSH in their title, abstract or keywords. This suggests that without “gender studies” as an additional keyword in the present TS search may miss about 2–3% of journal articles on women’s studies; consequently, its effects on the trend and analyses presented in the present study should be negligible.

Results and discussion

Growth of journal literature on women’s studies

The present study retrieved 16,852 items on women’s studies, dating from 1900 to 2013 from WoS. Table 3 lists the number of articles and their cumulative numbers for each year of women’s studies literature in the WoS. Before 1970, the number of articles published each year is no more than 15 and the cumulative total from before this year is about 100. After 1975, the women’s studies literature began to rise rapidly, particularly during the period from 1979 to 1988, when the number of articles published each year increased to

Table 3 Annual production of women’s studies literature, 1900–2013

Year	Articles	Cumu.	Year	Articles	Cumu.	Year	Articles	Cumu.
1908	1	1	1966	7	68	1991	359	2836
1916	2	3	1967	6	74	1992	467	3303
1920	1	4	1968	4	78	1993	486	3789
1926	1	5	1969	9	87	1994	556	4345
1928	4	9	1970	14	101	1995	559	4904
1929	2	11	1971	16	117	1996	548	5452
1931	1	12	1972	10	127	1997	597	6049
1934	1	13	1973	23	150	1998	559	6608
1936	1	14	1974	34	184	1999	602	7210
1937	3	17	1975	62	246	2000	589	7799
1941	2	19	1976	58	304	2001	542	8341
1945	2	21	1977	65	369	2002	456	8797
1946	1	22	1978	69	438	2003	557	9354
1948	1	23	1979	134	572	2004	545	9899
1949	2	25	1980	103	675	2005	547	10,446
1953	1	26	1981	110	785	2006	576	11,022
1956	1	27	1982	138	923	2007	615	11,637
1957	2	29	1983	176	1099	2008	821	12,458
1958	2	31	1984	170	1269	2009	796	13,254
1960	1	32	1985	129	1398	2010	895	14,149
1961	2	34	1986	138	1536	2011	940	15,089
1962	5	39	1987	193	1729	2012	942	16,031
1963	3	42	1988	240	1969	2013	821	16,852
1964	4	46	1989	252	2221			
1965	15	61	1990	256	2477			

over 100. The number of articles published each year was very close to or exceeded 400 and reached a high value of 602 in 1999.

The number of publications in women's studies seems to have declined slightly in the first half decade of 2000s. During this period, 2002 is a relatively low point, containing only 456 articles. After comprehensive comparison, the number of journal resources in 2002 was two dozen less than those two years before and after. This might explain the reason there were fewer articles in the first half decade of 2000's. The number of articles reached 942 in 2012, while in 2013 article production decreased slightly again. The drop in articles for 2013, however, might be due to incomplete collection of 2013 data, as the data of this study was downloaded on January 22th, 2014. Significantly, the cumulative literature count was over ten thousand in 2005. The publications in women's studies keeps increasing in 2008 and in the second half decade of 2000s, and the number reached over 800 articles.

It is of significant interest to explore the growth-pattern and rate of growth of literature in women's studies. Tague et al. (1981, p. 132) indicated that there are three possible growth models, namely, linear, exponential and logistic. The growth of women's studies literature based on WoS presents an exponential growth as revealed in Fig. 1. The best fit of the curve gives $R(t) = 0.355\exp[0.106(t - 1908)]$ with $R(t)$ being the cumulative number of articles at year t . This figure indicates a yearly growth rate of about 10.6%. For the same period, the research papers in all subjects collected in WoS can also be fitted approximately exponentially as $R_{\text{all}}(t) = 9991\exp[0.0487(t - 1908)]$ (Guan 2016), i.e., a yearly growth rate of 4.87%. The yearly growth rate for women's studies is about twice higher than that for the total growth in research collected in WoS. Consistent with the data listed in Table 3, the figure also demonstrates that the year 1970 is a key year, from which the journal literature on women's studies started to grow significantly. The figure suggests that the women's studies literature grew exponentially. The figure indicates that the growth drops down somewhat after 2002. But the growth is smaller than the fitted curve demonstrates for recent years, perhaps due to the shift of women studies to gender studies in recent years, as discussed earlier in the limitation of this study. The exponential growth suggests that the literature in women's studies has sustained a constant growth rate. In fact, a high yearly growth rate of 10.6%, as indicated above, suggests that research on women's studies is still very active.

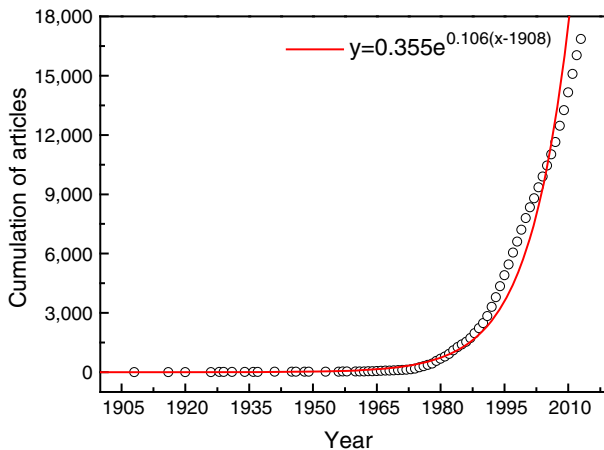


Fig. 1 Cumulative growth of the literature on women's studies, 1900–2013

Countries and languages of journal literature on women’s studies

There are 41 countries that publish journal literature on women’s studies, and Table 4 lists the top 20 countries. The USA is the predominant country publishing literature on women’s studies, with about 50.6% of the articles being published in the USA. The United Kingdom comes next, constituting 28.9%. The fact that USA and UK journals together constitute 80% of the total may be related to two factors: that the WoS is an English-based database, and that the original locus for women’s studies was in the UK and the USA. Moreover, English is the official language for most international conferences. Canada (2.8%) and Netherland (2.4%) contribute the third and fourth followed by Germany and France, which contribute 1.8 and 1.7%, respectively. Australia, Switzerland, Ireland, and Spain also contribute publications in the field of women’s studies. The involvement of researchers from so many countries in women’s studies research clearly suggests that issues of women’s studies have been able to draw the attention of researchers around the world.

Document types of women’s studies literature

As illustrated in Table 5, there are 22 document types of women’s studies literature from 1900 to 2013, indicating a great diversity of document types in this area of research. As expected, the most common document type for women’s studies literature are journal articles, including research articles and review articles, which together contribute about 65% of the total. Book reviews ranks number two, constituting 25% of the total, followed by proceedings papers (3.3%), editorial material (2.8%) and letters (1.4%). These five

Table 4 Women’s studies literature in various countries, 1900–2013

Rank	Country	Article	%	Cumu. %
1	USA	8526	50.59	50.59
2	England	4863	28.86	79.45
3	Canada	466	2.77	82.21
4	Netherlands	404	2.40	84.61
5	Germany	307	1.82	86.43
6	France	287	1.70	88.13
7	Australia	222	1.32	89.45
8	Switzerland	166	0.99	90.44
9	Ireland	144	0.85	91.29
10	Spain	142	0.84	92.13
11	Turkey	108	0.64	92.77
12	South Korea	104	0.62	93.39
13	India	96	0.57	93.96
14	Japan	94	0.56	94.52
15	Brazil	68	0.40	94.92
16	Croatia	67	0.40	95.32
17	Italy	63	0.37	95.69
18	New Zealand	56	0.33	96.03
19	Norway	52	0.31	96.34
20	South Africa	51	0.30	96.64
21	Others	567	3.36	100

Table 5 Document types of women's studies literature, 1900–2013

Rank	Document type	Article	%	Cumu. %
1	Article	10,594	62.86	62.86
2	Book Review	4187	24.85	87.71
3	Proceedings Paper	551	3.27	90.98
4	Editorial Material	478	2.84	93.81
5	Review	429	2.55	96.36
6	Letter	236	1.40	97.76
7	Meeting Abstract	201	1.19	98.95
8	Note	78	0.46	99.41
9	Biographical Item	17	0.10	99.51
10	News Item	16	0.09	99.61
11	Discussion	13	0.08	99.69
12	Art Exhibit Review	11	0.07	99.75
13	Correction	10	0.06	99.81
14	Article, Book Chapter	7	0.04	99.85
15	Reprint	7	0.04	99.89
16	Item about an individual	4	0.02	99.92
17	Review, Book Chapter	4	0.02	99.94
18	Correction, addition	3	0.02	99.96
19	Excerpt	2	0.01	99.97
20	Editorial material, book Chapter	1	0.01	99.98
21	Fiction, creative prose	1	0.01	99.98
22	Film Review	1	0.01	99.99
23	Poetry	1	0.01	100.00
	Total	16,852	100.00	

document types constitute 96% of the total literature of women's studies. The other 18 types of document, e.g. notes, biographical items, news, discussion, art exhibits, film reviews, and poetry make up the remaining 4.7%.

Bradford's law and core journals of women's studies literature

As discussed previously, the journal article is the most prevalent form of publication. In total, there are 3506 journals, which together published 16,303 articles on women's studies articles from 1900 to 2013. Among them, 481 journals published only one paper on women's studies. Following Bradford's law, Table 5 shows the nucleus (zone I) and its successive zones of journals. The three zones, each publishing approximately 5400 papers, constitute the most specific subdivision of these data for which the Bradford hypothesis is valid. Examination of this division, which is shown in Table 6, indicates that the nucleus of core journals (zone I) consists of 117 journals, followed by one with 554 titles (zones II) and one with 2835 titles (zone III). The ratios of journal number among these three zones are 117:554:2835, or 1:4.7:24, which is quite close to the original statement of Bradford law ($1:n:n^2$, where $n = 5$) 1:5:5². According to Bradford's law, journals of zone I are identified as the core journals of the studied field.

Table 6 Bradford zones of journal literature of women’s studies, 1900–2013

Zone	No. of literature (%)	Cumu. (%)	No. of journals (%)	Cumu. (%)
I	5435 (33.3)	5435 (33.3)	117 (3.3)	117 (3.3)
II	5455 (33.5)	10,890 (66.8)	554 (15.8)	671 (19.1)
III	5413 (33.2)		2835 (80.9)	
Total		16,303 (100.00)		3506 (100.00)

Bradford–Zipf plot of women’s studies journal literature

The second test of Bradford’s law is plotting the cumulative number of articles on an arithmetic scale against the journal rank on a logarithmic scale. This typically produces a graph such as that shown in Fig. 2, with an initial curve followed by a central linear portion, and culminating with a deviation from linearity known as the Gross droop (Gross 1967). Figure 2 illustrates the Bradford–Zipf plot—the cumulative number of papers for each journal against the logarithm of its ranks—for the journal publications of women’s studies (Brookes 1969). Clearly, the figure conforms very well to the typical Bradford–Zipf pattern. The approximate linear portion appears after the journal rank of about 120. The top 120 journals may be considered as the core journals in women’s studies literature. The final drooping portion cannot be found in Fig. 2, but begins roughly at a journal rank of about 500. Hawkins (1978) suggested that the droop might be due to a dispersion of the literature on the subject under study into an increasing number of journals, which is consistent with the large number of journals in zone III of Table 5. Table 5 also lists the cumulative number of articles and the percentage of each zone. It may be seen that only 671 journals in the first and second zones cover 67% of literature, and 117 journals in the first zone cover

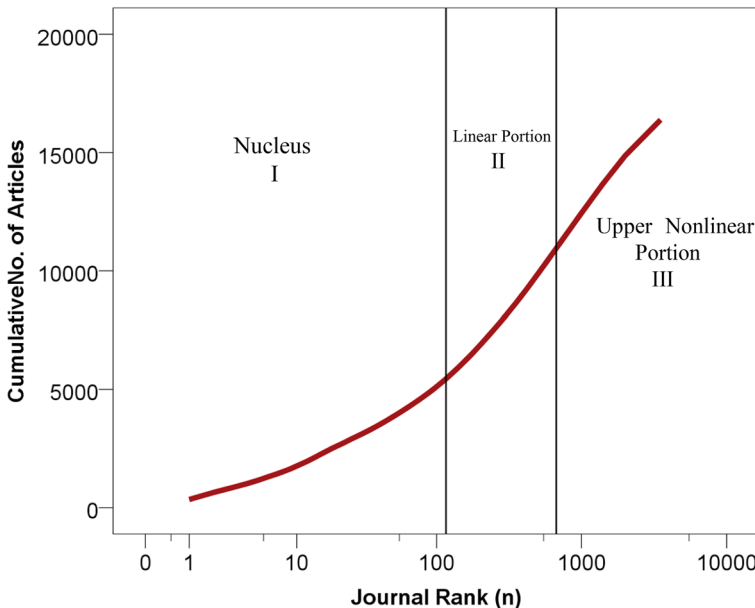


Fig. 2 Bradford–Zipf plot of women’s studies journal literature, 1900–2013

33% of the literature. While the 50% of literature is concentrated only in the first 147 journals, the remaining 50% is scattered within 3359 journals, indicating a tremendous scattering of women's studies literature. The presence of the final droop portion indicates that the women's studies literature has been widely spread to many different journals. This is consistent with the fact that 481 journals published only one article and 280 journals publish two women's studies articles. The scattering of information poses a great problem in the complete retrieval of relevant information.

Highly productive journals and their subject fields of women's studies

The 117 core journals identified in zone I of the women's studies for the present study are listed in "Appendix". Ranked by the number of papers published related to women's studies, "Appendix" presents the journal's name, publication frequency, publication year, country, language, subject and number of highly cited papers (cited more than 50 times).

More than half of the 117 core journals were first published in the period from 1970 to 1990, i.e., 34 journals in the 1970s, 17 journals in the 1980s and 14 journals in the 1990s. In general, the significant women's studies journals usually began publishing earlier. Significantly, there are seven journals in women's studies first published from 1823 to 1889. Notably, *Feminism and Psychology* and *European Journal of Women's Studies* were established in 1991 and 1994, respectively. However, their cumulative number of articles published rank fourth and seventh.

The 117 core journals are published in 15 countries. Among them, the USA and the UK, which contribute 51 (43.6%) and 48 (41%) journals, are the dominant countries publishing journals in women's studies. Canada, publishing four core journals comes next. Germany and Ireland contribute two journals, while Australia, China, Croatia, French, India, Korea, Netherland, New Zealand, Saudi Arabia and Turkey each publish one core journal in women's studies. This indicates that the subject of women's studies has been relatively widespread globally.

As illustrated in Table 7, the subjects contained in the 117 core journals may be categorized into six main subjects: humanities (including literature, history and philosophy) (27.4%), women's studies (23.9%), medical science (15.4%), psychology (8.6%), political science (7.7%), sociology (4.3%) and others (12.8%). Women's studies thus include a relatively wide distribution of diverse subjects, indicating that it is an interdisciplinary as well as a multidisciplinary research area.

Table 7 Subject field of highly productive journals of women's studies

Subject field	No. of journals	%	Cumu. %
Humanities (Literature, History, Philosophy)	32	27.35	27.35
Women's Studies	28	23.93	51.28
Medical Science	18	15.38	66.67
Psychology	10	8.55	75.21
Political Science	9	7.69	82.91
Sociology	5	4.27	87.18
Others (Nutrition, Public Health, etc.)	15	12.82	100.00
Total	117		

Table 8 presents the journal name, number of published papers, subject and the number of highly cited papers (cited more than 50 times) for the top 20 highly productive and highly cited journals (with at least two papers cited more than 50 times) in the area of women's studies. Among these 20 highly productive journals, 15 journals are related to women's studies. Six of them covered general issues of the women's studies, e.g. *Signs: Journal of Women in Culture and Society*, *Women's Studies International Forum*, *Feminist Review*, *European Journal of Women's Studies*, *Australian Feminist Studies*, and *Feminist Studies*. Subjects covered by the other nine journals comprise psychology, sociology, men's studies, history, political science, education and religions and theology. Some journals integrate the above subjects with women's studies, including *Feminism and Psychology*, *Gender and Society*, *Journal of Gender Studies*, *Women's History Review*, *Women and Politics*, *Gender and Education* and *Journal of Feminist Studies in Religion*.

Comparison of the core journals identified in the present study with those reported by Mack in 1991, Krikos in 1994 and GWSS in 2008, four journals appear to be in common, namely, *Signs: Journal of Women in Culture and Society*, *Women's Studies International Forum*, *Feminist Studies*, and *Frontiers-A Journal of Women Studies*. This clearly demonstrates the significance of these four journals. In addition, the most productive journals in the five main subject fields are Humanities: *American Historical Review*, Medical Science: *Medical Education*, Psychology: *Sex Roles*, Political Science: *American Political Science Review* and Sociology: *Contemporary Sociology-A Journal of Reviews*. Moreover, the journal that publishes the most highly-cited articles is *Journal of Personality and Social Psychology*. The following are the introduction of these significant journals from their respective website.

1. *Signs: Journal of Women in Culture and Society* (quarterly)

Signs: Journal of Women in Culture and Society was initially published in 1975 by the University of Chicago Press. The journal publishes original articles, review essays, comparative perspectives, and interdisciplinary retrospectives addressing gender, race, culture, class, nation, and sexuality. The topics cover a broad range of geopolitical processes, conditions, and effects; cultural and social configurations; and scholarly and theoretical developments (The University of Chicago Press 2016).

2. *Women's Studies International Forum* (bimonthly)

Women's Studies International Forum (formerly *Women's Studies International Quarterly*) was published in 1978 by Elsevier. The policy of this journal is to establish a platform for researchers of women's studies to discuss and debate. The goal of the journal is to aid the distribution and exchange of feminist research in the multidisciplinary, international area of women's studies and feminist research in other disciplines. The journal seeks to critique and re-conceptualize existing knowledge, to examine and re-evaluate the manner in which knowledge is produced and distributed, and to assess the implications this has for women's lives (Elsevier 2016).

3. *Feminist Studies* (3 issues per year)

Feminist Studies was first published in 1972 by the students of women's studies at Sarah Lawrence College and feminist supporting organization of New York. In addition to articles and reviews related to women's studies, the journal also collects articles on the arts, poetry, and fiction, with few pages in full color, about women's studies (Feminist Studies 2016).

4. *Frontiers-A Journal of Women's Studies* (3 issues per year)

Table 8 Top 20 highly productive and highly cited journals of women's studies

Rank ^a	Paper	Journal	Subject (the subject category of the journals is based on the Ulrich's international periodicals directory)	No. highly cited paper	Rank ^b
1	347	Signs: Journal of Women in Culture and Society	Women's Studies	8	3
2	322	Women's Studies International Forum	Women's Studies	2	9
3	198	Sex Roles	Psychology; Sociology	3	8
4	160	Feminism and Psychology	Women's Studies; Psychology	2	9
5	150	Feminist Review	Women's Studies	0	
6	140	Gender and Society	Men's Studies; Women's Studies; Sociology	3	8
7	118	European Journal of Women's Studies	Women's Studies	1	10
8	114	Contemporary Sociology-A Journal of Reviews	Sociology	0	
9	109	American Historical Review	History	1	10
10	105	Australian Feminist Studies	Women's Studies	0	
11	105	Journal of Gender Studies	Men's Studies; Women's Studies	0	
12	105	Women's History Review	Women's Studies; History	0	
13	101	Psychology of Women Quarterly	Women's Studies; Psychology	4	7
14	96	Feminist Studies	Women's Studies	5	6
15	94	Journal of Women's History	Women's Studies; History	0	
16	81	Women and Politics	Women's Studies; Political Science	0	
17	79	Gender and Education	Men's Studies; Women's Studies; Education	0	
18	75	Journal of American History	History—History of North and South America	0	
19	60	Journal of Feminist Studies in Religion	Women's Studies; Religions and Theology	0	
20	58	Sociology-The Journal of the British Sociological Association	Sociology	3	8
32	42	Medical Education	Medical Sciences; Education—Higher Education	2	9
39	37	Lancet	Medical Sciences	6	5
44	35	International Journal of Eating Disorders	Nutrition and Dietetics; Psychology	3	8
47	34	Stroke	Medical Sciences—Cardiovascular Diseases	7	4

Table 8 continued

Rank ^a	Paper	Journal	Subject (the subject category of the journals is based on the Ulrich’s international periodicals directory)	No. highly cited paper	Rank ^b
49	33	Academic Medicine	Medical Sciences; Education—Higher Education	3	8
57	29	American Journal of Obstetrics and Gynecology	Medical Sciences—Obstetrics and Gynecology	5	6
67	27	Journal of Personality and Social Psychology	Psychology	11	1
70	26	Journal of Adolescent Health	Children and Youth (About); Medical Sciences	9	2
81	23	British Medical Journal	Medical Science	4	7
93	22	Journal of Clinical Endocrinology and Metabolism	Medical Sciences—Endocrinology	6	5
104	21	Journal of Business Ethics	Business and Economics; Law	2	9
114	20	Fertility and Sterility	Medical Sciences—Obstetrics and Gynecology	4	7

^a Rank of Highly Productive Journal

^b Rank of Highly Cited Journal with at least two papers cited ≥ 50 times

Frontiers began publication in 1975 at the University of Colorado, Boulder. Currently, it is published by the University of Nebraska Press. *Frontiers* is a boundary-crossing journal with internal, global perspectives. The issues of this journal mainly focus on the study of women in the U.S. West, particularly in the multi-cultural West, the borderlands within and between nations, including Native Americans and countries and peoples of the Pacific Rim. The journal aims to examine relationships among place, region, and topics of longstanding concern to feminist scholars—gender, race, ethnicity, class, dis/ability, and sexuality (The Ohio State University 2016).

5. *American Historical Review* (quarterly)

American Historical Review was published by the American Historical Association, AHA, in 1895, and now is published by Oxford University Press UK. This journal is one of the foremost journals in the field of history, including research papers and reviews of history books. One hundred and nine articles identified by the present study that related to women’s studies in *American Historical Review* are mostly in historical aspect and the development of feminism. Most of the 109 articles review historical books and other related articles, including “Feminism in French Revolution,” “Feminism, social science, and the meanings of modernity: The debate on the origin of the family in Europe and the United States, 1860–1914” and others (American Historical Association 2016).

6. *Medical Education* (monthly)

Medical Education was established in 1966. It is edited by the Association for the Study of Medical Education, ASME, and is published by Wiley Online Library. *Medical Education* is a journal in the field of education for health care and covers all aspects of health

professional education, including undergraduate education, postgraduate training, continuing professional development and inter-professional education. In the present work, the topic related to women's studies in *Medical Education* is the learning differences between genders of medical students (Wiley Online Library 2016).

7. *Sex Roles* (monthly)

Sex Roles: A Journal of Research is first published by Springer in 1975. It is a global, multidisciplinary, scholarly, social and behavioral science journal with a feminist perspective. It publishes original research reports as well as original theoretical papers and conceptual review articles that explore how gender organizes people's lives and their surrounding worlds, including gender identities, belief systems, representations, interactions, relations, organizations, institutions, and statuses. The range of topics covered is broad and dynamic. The journal also publishes invited book reviews that address gender-relevant topics (Springer 2016).

8. *American Political Science Review* (quarterly)

American Political Science Review is established by the American Political Science Association, APSA, and has been published continuously since 1906 by Cambridge University Press. The journal is political science's premier scholarly research journal, providing peer-reviewed articles and review essays from subfields throughout the discipline. Areas covered include political theory, American politics, public policy, public administration, comparative politics, and international relations (Cambridge University Press 2016). Most of the literature identified by the present study that was published in this journal is associated with women's studies, book reviews, and the primary topics concerning woman suffrage, feminism and political, feminism and liberalism and equality and others.

9. *Contemporary Sociology-A Journal of Reviews* (bi-monthly)

This is a sociology review journal issued by American Sociological Association, ASA, in 1972 and published by SAGE Press. *Contemporary Sociology: A Journal of Reviews* (CS) publishes reviews and critical discussions of recent works in sociology and related disciplines that merit the attention of sociologists. It is a review periodical, containing book reviews in addition to a few articles and additions. Book topics involve feminism and anti-feminism, third wave feminism, global feminism, women's liberation, and others (American Sociological Association 2016).

Highly cited journals and highly cited articles

Of the articles in 117 core journals, there were 109 articles cited more than 50 times. These highly cited articles were published in 37 journals and, among them, 17 journals each published only one highly cited article. Table 7 lists the 20 highly productive journals as well as 20 highly cited journals with at least two highly cited papers. Table 7 demonstrates that ten of the 20 most productive journals are also highly cited journals. Among them, *Signs* published eight highly cited articles, *Feminist Studies* published five articles, and *Psychology of Women Quarterly* published four articles. The subject of these highly productive and journals with at least two highly cited articles are mostly focused on women's studies or sociology.

Table 9 further lists the author, article title, cited times associated with ten of the above mentioned highly cited journal names. Among them Haraway's "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," published by *Feminist Studies*, was cited the most, with 1047 citations. This is followed by Alcoff's

Table 9 Highly cited articles in women’s studies

Authors	Journal	Article title	Cited times
Abbey, A; Ross, LT; Mcduffie, D; Mcauslan, P	Psychology of Women Quarterly	Alcohol and Dating Risk Factors for Sexual Assault Among College Women	161
Agarwal, B	Feminist Studies	The Gender and Environment Debate—Lessons From India	119
Alcoff, L	Signs: Journal of Women in Culture and Society	Cultural Feminism Versus Post-Structuralism—The Identity Crisis In Feminist Theory	310
Berkovitch, N	Women’s Studies International Forum	Motherhood As A National Mission: The Construction of Womanhood in the Legal Discourse in Israel	72
Brooks, L; Perot, AR	Psychology of Women Quarterly	Reporting Sexual Harassment—Exploring A Predictive Model	90
Duits, L; Van Zoonen, L	European Journal of Women’s Studies	Headscarves and Porno-Chic—Disciplining Girls’ Bodies in the European Multicultural Society	53
Faulkner, W	Women’s Studies International Forum	The Technology Question in Feminism: A View From Feminist Technology Studies	51
Gill, Rosalind	Feminism and Psychology	Empowerment/Sexism: Figuring Female Sexual Agency in Contemporary Advertising	72
Haraway, D	Feminist Studies	Situated Knowledges—The Science Question in Feminism and the Privilege of Partial Perspective	1047
Jones, TS; Remland, MS	Sex Roles	Sources of Variability in Perceptions of and Responses to Sexual Harassment	57
Keller, EF	Signs: Journal of Women in Culture and Society	Feminism and Science	72
Kitzinger, C	Feminism and Psychology	Doing Feminist Conversation Analysis	89
Kobrynowicz, D; Branscombe, NR	Psychology of Women Quarterly	Who Considers Themselves Victims of Discrimination? Individual Difference Predictors of Perceived Gender Discrimination in Women and Men	52
Mackinnon, CA	Signs: Journal of Women in Culture and Society	Feminism, Marxism, Method, and the State—An Agenda for Theory	273
Mackinnon, CA	Signs: Journal of Women in Culture and Society	Feminism, Marxism, Method, and the State—Toward Feminist Jurisprudence	302
Mason, Karen Oppenheim; LU, Yu-Hsia	Gender and Society	Attitudes Toward Women’s Familial Roles: Changes in the United States, 1977–1985	150
Mauthner, NS; Doucet, A	Sociology-The Journal of the British Sociological Association	Reflexive Accounts and Accounts of Reflexivity in Qualitative Data Analysis	93
Molloy, BL; Herzberger, SD	Sex Roles	Body Image and Self-Esteem: A Comparison of African-American and Caucasian Women	80
Oakley, A	Sociology-The Journal of the British Sociological Association	Gender, Methodology and People’s Ways of Knowing: Some Problems With Feminism and The Paradigm Debate In Social Science	54

Table 9 continued

Authors	Journal	Article title	Cited times
Offen, K	American Historical Review	Depopulation, Nationalism, and Feminism In Fin-De-Siecle France	121
Offen, K	Signs: Journal of Women in Culture and Society	Defining Feminism—A Comparative Historical Approach	123
Poovey, M	Feminist Studies	Feminism and Deconstruction	59
Renzetti, CM	Sex Roles	New Wave or 2Nd Stage—Attitudes of College-Women Toward Feminism	62
Rosaldo, MZ	Signs: Journal of Women in Culture and Society	The Use and Abuse of Anthropology—Reflections On Feminism and Cross-Cultural Understanding	175
Scott, JW	Feminist Studies	Deconstructing Equality-Versus-Difference—Or, The Uses of Poststructuralist Theory For Feminism	234
Spence, JT; Buckner, CE	Psychology of Women Quarterly	Instrumental and Expressive Traits, Trait Stereotypes, and Sexist Attitudes—What Do They Signify?	150
Strathern, M	Signs: Journal of Women in Culture and Society	An Awkward Relationship—The Case of Feminism and Anthropology	124
Taylor, V	Gender and Society	Gender and Social Movements—Gender Processes In Women’s Self-Help Movements	50
Taylor, V; Rupp, LJ	Signs: Journal of Women in Culture and Society	Women’s Culture and Lesbian Feminist Activism—A Reconsideration of Cultural Feminism	58
Wall, G	Gender and Society	Moral Constructions of Motherhood In Breastfeeding Discourse	57
Watson, P	Sociology-The Journal of the British Sociological Association	Eastern-Europe Silent Revolution—Gender	53
Zinn, Mb; Dill, BT	Feminist Studies	Theorizing Difference From Multiracial Feminism	123

“Cultural Feminism Versus Post-Structuralism—The Identity Crisis in Feminist Theory” which was cited 310 times, as well as Mackinnon’s “Feminism, Marxism, Method, and the State—Toward Feminist Jurisprudence” and “Feminism, Marxism, Method, and the State—An Agenda for Theory,” which received 302 and 273 citations each, respectively. These three highly cited articles were all published in *Signs*. Scott’s “Deconstructing Equality-Versus-Difference—Or, The Uses of Poststructuralist Theory for Feminism,” published in *Feminist Studies*, is next with 234 citations.

Summary and applications

The present work explores the characteristics of women’s studies literature from 1900 to 2013 based on the database of Web of Science. Its implications are analyzed by well-established bibliographic techniques, and the results are summarized as follows.

1. The women’s studies literature has grown exponentially, with an annual growth rate of 10.6% in number of articles published for over one century. This suggests that the

- literature growth in women's studies sustains a constant growth rate for the period of the study, and the relatively high growth rate suggests that the research on women's studies is still very active. This also reflects the extensive worldwide concern with women's studies.
2. As with other subject areas, most of the document types, in women's studies, are in the form of research articles and review articles, which constitute 65% of the total. Book reviews rank number two with 25% of the total number of articles. The United States and the United Kingdom are the two largest contributing countries, together accounting for 79.5% of the women's studies literature.
 3. One hundred and seventeen core journals, containing 33% of the women's studies journal literature may be identified from Bradford zone analysis and a Bradford–Zipf plot. In addition, the journal literature for women's studies is found to be widely spread into many different journals. Fifty percent of the articles are concentrated in only the first 147 journals, and the remaining 50% is scattered over 3359 journals. This shows a tremendous diversity in the publication of women's studies literature.
 4. Analysis of the core journals indicates that (1) more than half of the 117 core journals were established from 1970 to 1990; (2) most of the core journals deal with humanities (including literature, history, and philosophy), women's studies, medical science, psychology, political science and sociology; (3) the most highly productive journals associated with large numbers of citations (≥ 50 times) are *Signs: Journal of Women in Culture and Society*, *Women's Studies International Forum*, *Sex Roles, Feminism and Psychology*, *Gender and Society*, *European Journal of Women's Studies*, *American Historical Review*, *Psychology of Women Quarterly* and *Feminist Studies*.

The perceptive information on growth rate of women's studies, subject area and journal characteristics provided by the present study could be of significant interest to understanding the evolution of women's studies and the design of modern information retrieval systems. For example, the study of journal characteristics helps to establish a basis for librarians making decisions about journal subscription and cancellations in that area. The nucleus journals (with high productivity) identified by Bradford's law, usually contain more relevant articles in the particular subject area, so subscription to such journals for the library would be worthwhile. The inclusion of these journals in indexing and abstracting services would be justified scientifically. Moreover, women's studies researchers may focus on these core journals since they cover 33% of the literature on women's studies from 1900 to 2013. Similarly, subscribing to journals with a low productivity would be less necessary, and these types of journals could be discontinued. Moreover, core journals can help direct readers to those journals that publish highly relevant articles. In addition, from the highly cited articles, the subject area and the document types of the women's studies literature, it is possible to better examine the intellectual structure and movements in the area of the women's studies research.

The citation analysis in this study is mainly a metric approach. On the other hand, citation context analysis determines the most frequent patterns of usage by examining the passages where documents are cited and providing a representation of the collective state of knowledge in a field. Future studies covering these two issues for a more comprehensive insight into women's studies and its literature are highly desirable and currently undergoing.

Appendix

See Table 10.

Table 10 Highly productive journals of women's studies, 1900–2013

Rank	Journal	No. of article	Publication frequency	First publication date	Country	Language	Subject	No. highly cited article ^a
1	Signs	347	Quarterly	1975	USA	English	Women's studies	8
2	Women's Studies International Forum (women's Studies International Quarterly)	322	Bi-monthly	1978	UK	English	Women's studies	2
3	Sex Roles	198	Monthly	1975	USA	English	Psychology; Sociology	3
4	Feminism and Psychology	160	Quarterly	1991	UK	English	Women's studies; Psychology	2
5	Feminist Review	150	3 issues/year	1979	UK	English	Women's studies	0
6	Gender and Society	140	Bi-monthly	1987	USA	English	Men's studies; Women's studies; Sociology	3
7	European Journal of women's Studies	118	Quarterly	1994	UK	English	Women's studies	1
8	Contemporary Sociology-A Journal of Reviews	114	Bi-monthly	1972	USA	English	Sociology	0
9	American Historical Review	109	Quarterly	1918	USA	English	American history	1
10	Australian Feminist Studies	105	Quarterly	1985	Australia	English	Women's studies	0
11	Journal of Gender Studies	105	Quarterly	1991	UK	English	Men's studies; Women's studies	0
12	Women's History Review	105	bi-monthly	1992	UK	English	Women's studies; History	0
13	Psychology of Women Quarterly	101	Quarterly	1976	USA	English	Women's studies; Psychology	4
14	Feminist Studies	96		1972	USA	English	Women's studies	5
15	Journal of women's History	94	Quarterly	1989	USA	English	Women's studies; History	0
16	Women and Politics (Journal of Women Politics and Policy)	81	Quarterly	1980	USA	English	Women's studies; Political science	0
17	Gender and Education	79	7 issues/year	1989	UK	English	Men's studies; Women's studies; Education	0
18	Journal of American History	75	Quarterly	1914	USA	English	American history	0

Table 10 continued

Rank	Journal	No. of article	Publication frequency	First publication date	Country	Language	Subject	No. highly cited article ^a
19	Journal of Feminist Studies In Religion	60	Semi-annually	1985	USA	English	Women's studies; Religion and theology	0
20	Sociology-The Journal of the British Sociological Association	58	Bi-monthly	1967	UK	English	Sociology	3
21	Tulsa Studies In women's Literature	57	Semi-annually	1982	USA	English	Women's studies; literature	0
22	Affilia-Journal of Women and Social Work	56	Quarterly	1986	USA	English	Women's studies; Social service and welfare	0
23	Asian Journal of women's Studies	55	Quarterly	1995	Korea	English	Women's studies	0
24	Psychological Reports	55	Bi-monthly	1955	USA	English	Psychology	0
25	American Political Science Review	48	Quarterly	1906	UK	English	Political science	0
26	Feministische Studien	46	Semi-annually	1982	Germany	Germanic	Women's studies	0
27	Women and Therapy	46	Quarterly	1982	USA	English	Women's studies; Women's health; Psychology	0
28	Personality and Individual Differences	44	16 issues/year	1980	UK	English	Psychology	1
29	Journal of College Student Development (Journal of College Student Personnel)	43	Bi-monthly	Unknown	USA	English	Education -higher education	0
30	Argument	42	Bi-monthly	1959	Germany	Germanic	Philosophy; Social sciences	0
31	Medical Education	42	Monthly	1966	UK	English	Medical education; Education - higher education	2
32	Feminist Theory	41	3 issues/yr	2000	UK	English	Women's studies	0
33	Medical Teacher	40	10 issues/year	1979	UK	English	Medical research; Education	0
34	Canadian Journal of Political Science-Revue Canadienne De Science Politique	39	Quarterly	1928	UK	English	Politics	0

Table 10 continued

Rank	Journal	No. of article	Publication frequency	First publication date	Country	Language	Subject	No. highly cited article ^a
35	Women's Studies-An Interdisciplinary Journal	39	8 issues/year	1972	USA	French	Women's studies	0
36	International Feminist Journal of Politics	38	Quarterly	1999	UK	English	Women's studies; Politics	0
37	Journal of Advanced Nursing	38	Monthly	1976	UK	English	Medical research—Nursing	0
38	Lancet	37	Weekly	1823	UK	English	Medical research	6
39	Modern Language Review	37	Quarterly	1905	UK	English	Linguistics; Literature	0
40	Perceptual and Motor Skills	37	Bi-monthly	1949	USA	English	Psychology	0
41	Hypatia-A Journal of Feminist Philosophy	36	Quarterly	1978	USA	English	Women's studies	0
42	Annals of the American Academy of Political and Social Science	35	Bi-monthly	1889	USA	English	Politics; Social science	0
43	International Journal of Eating Disorders	35	8 issues/year	1981	USA	English	Nutrition; Psychology	3
44	Socialist Review	35	(Ceased in 2005)	1959	UK	English	Politics	1
45	Gender Place and Culture	34	8 issues/year	1994	UK	English	Women's studies; Geography	0
46	Stroke	34	Monthly	1970	USA	English	Medical research—Cardiovascular disease	7
47	Radical Philosophy	33	Bi-monthly	1972	UK	English	Philosophy	0
48	Academic Medicine (Journal of Medical Education)	33	Monthly	1926	USA	English	Medical research; Education -Higher education	3
49	BMC Public Health	32	Irregular	2001	UK	English	Public health and safety	1
50	Journal of American College Health	32	8 issues/year	1952	USA	English	Health science and hygiene	1
51	Maturitas	32	monthly	1978	Ireland	English	Medical research—Obstetrics and Gynecology, Geriatric medicine	0

Table 10 continued

Rank	Journal	No. of article	Publication frequency	First publication date	Country	Language	Subject	No. highly cited article ^a
52	Advances In Nursing Science	31	Quarterly	1978	USA	English	Medical research- Nursing	1
53	Economic and Political Weekly	30	Weekly	1949	India	English	Business and economics; Politics	0
54	International Journal of Psychology	30	Bi-monthly	1966	UK	French; English	Psychology	0
55	Metaphilosophy	30	Quarterly	1970	UK	English	Philosophy	0
56	American Journal of Obstetrics and Gynecology	29	Monthly	1868	USA	English	Medical research -Obstetrics and Gynecology	5
57	American Journal of Sociology	29	Bi-monthly	1895	USA	English	Sociology	1
58	Canadian Literature	29	Quarterly	1959	Canada	French; English	Literature	0
59	Social Science and Medicine	29	Semi-monthly	1982	UK	English	Medical research; Social science	0
60	Cultural Studies	28	Bi-monthly	1983	UK	English	Literature and Political commentary; Sociology	1
61	Social Behavior and Personality	28	8 issues/year	1973	New Zealand	English	Psychology; Sociology	0
62	Computers and Education	27	10 issues/year	1977	UK	English	Education—Higher education; Education—Computer application	1
63	European Journal of Obstetrics Gynecology and Reproductive Biology	27	Monthly	1889	Ireland	English	Medical research -Obstetrics and Gynecology	0
64	Foreign Literature Studies	27	Bi-monthly	1978	China	Chinese	Literature	0
65	International Journal of Science Education	27	18 issues/year	1979	UK	English	Education	0
66	Journal of Personality and Social Psychology (Journal of Abnormal Psychology)	27	Monthly	1965	USA	English	Psychology	11
67	German Studies Review	26	3 issues/year	1978	USA	Germanic; English	Politics; Literature; History—European History	0

Table 10 continued

Rank	Journal	No. of article	Publication frequency	First publication date	Country	Language	Subject	No. highly cited article ^a
68	Historian	26	Quarterly	1938	USA	English	History	0
69	Journal of Adolescent Health	26	Monthly	1965	USA	English	Children and Youth; Medical research	9
70	Sociological Review	26	Quarterly	1904	UK	English	Sociology	0
71	French Review	25	Quarterly	1927	USA	French; English	Linguistics; Literature; Education—Teaching method and curriculum	0
72	Social Politics	25	Quarterly	1994	UK	English	Women's studies; Sociology	1
73	Temps Modernes	25	Bi-monthly	1945	France	French	Literature and Political commentary	0
74	Victorian Studies	25	Quarterly	1957	USA	English	Humanities; Social science: general works	0
75	Collegium Antropologicum	24	Semi-annually	1977	Croatia	English	Anthropology	0
76	History of European Ideas	24	Quarterly	1980	UK	English	Philosophy; History—European History	0
77	Horizons	24	Semi-annually	1974	USA	English	Religion and theology—Roman Catholic	0
78	Theatre Journal	24	Quarterly	1949	USA	English	Education; Dramatic	0
79	American Quarterly	23	Quarterly	1949	USA	English	Humanities; History—History of North and South America	0
80	British Medical Journal	23	Weekly	1840	UK	English	Medical research	4
81	History Workshop Journal	23	Semi-annually	1976	UK	English	Politics; History	0
82	Journal of American Studies	23	Quarterly	1956	UK	English	History—History of North and South America	0
83	Journal of Applied Social Psychology	23	Monthly	1971	USA	English	Psychology; Social science	1

Table 10 continued

Rank	Journal	No. of article	Publication frequency	First publication date	Country	Language	Subject	No. highly cited article ^a
84	Labour-Le Travail	23	Semi-annually	1976	Canada	English	Business and economics—Labor and labor relations; Labor federation; History- History of North and South America	0
85	Modern Fiction Studies	23	Quarterly	1955	USA	English	Literature	0
86	New Republic	23	20 issues/year	1914	USA	English	Literature and Political commentary	0
87	Political Studies	23	Quarterly	1953	UK	English	Politics	0
88	Theory and Psychology	23	Bi-monthly	1990	UK	English	Psychology	0
89	British Journal of Sociology of Education	22	Bi-monthly	1980	UK	English	Sociology; Education	1
90	Ethics	22	Quarterly	1888	USA	English	Philosophy	1
91	History	22	Quarterly	1912	UK	English	History	0
92	Journal of Clinical Endocrinology and Metabolism	22	Monthly	1941	USA	English	Medical research—Endocrinology	6
93	Journal of Homosexuality	22	Monthly	1974	USA	English	Homosexuality; Sociology	0
94	Journal of Modern History	22	Quarterly	1929	USA	English	History	0
95	Osteoporosis International	22	Monthly	1990	UK	English	Medical research	1
96	Theory Culture and Society	22	8 issues/year	1982	UK	English	Humanities: general works; Sociology	1
97	Contemporary Psychology	21	Weekly	1956	USA	English	Psychology	0
98	Culture Health and Sexuality	21	10 issues/year	1999	UK	English	Sociology	0
99	Economy and Society	21	Quarterly	1972	UK	English	Business and economics; Politics; Social science: general works	0
100	Feminist Economics	21	Quarterly	1995	UK	English	Business and economics; Female interest	0

Table 10 continued

Rank	Journal	No. of article	Publication frequency	First publication date	Country	Language	Subject	No. highly cited article ^a
101	Frontiers-A Journal of Women Studies	21	3 issues/year	1975	USA	English	Women's studies	0
102	Hispania-A Journal Devoted To The Teaching of Spanish and Portuguese	21	Quarterly	1918	USA	Portuguese; Spanish; English	Linguistics; Education—Teaching method	0
103	Journal of Business Ethics	21	28 issues/year	1982	Netherlands	English	Business and economics; Law	2
104	Journal of Popular Culture	21	Bi-monthly	1967	USA	English	Literature; FOLKLORE	0
105	Minnesota Review	21	Semi-annually	1960	USA	English	Literature	0
106	PLOS One	21	Irregular	2006	USA	English	Medical research; Science	1
107	Saudi Medical Journal	21	Monthly	1979	Saudi Arabia	English	Medical research	0
108	Screen	21	Quarterly	1969	UK	English	Communication—Cable Television	0
109	Sociological Research Online	21	Quarterly	1996	UK	English	Sociology	0
110	Canadian Journal of Sociology-Cahiers Canadiens De Sociologie	20	Quarterly (ceased in 2008)	1975	Canada	English	Sociology	0
111	Egitim Arastirmalari-Eurasian Journal of Educational Research	20	Quarterly	2000	Turkey	Turkish	Education	0
112	Ethnic and Racial Studies	20	10 issues/year	1978	UK	English	Racial study; Social science; general works	1
113	Fertility and Sterility	20	Monthly	1950	USA	English	Medical research -Obstetrics and Gynecology	4
114	French Studies	20	Quarterly	1947	UK	English	Literature; History—European History	0
115	International Journal of Women's Studies	20	5 issues/year (ceased in 1985)	1977	Canada	English	Women's studies	0

Table 10 continued

Rank	Journal	No. of article	Publication frequency	First publication date	Country	Language	Subject	No. highly cited article ^a
116	Millennium-Journal of International Studies	20	3 issues/year	1971	UK	English	Politics—International relations	0
117	Qualitative Inquiry	20	10 issues/year	1995	USA	English	Anthropology; Social science; general works	1

^a Cited times ≥ 50

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