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Bradford's zones and productivity of journals in psychology doctoral theses

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Bradford's law of scattering is based on the principle that every scientific field is related, however remotely, to every other field. One hundred and forty one Ph.D. theses accepted in the field of psychology for the award of doctoral degrees were analysed to identify the Bradford's zones and productivity of journals cited in the theses. The productivity of cited journals is measured after dividing the journals into four equal groups. The average rate of productivity of journals in the first group is 254 articles, whereas it has considerably gone down to 10.73 articles in the fourth group. The journal distribution as per the Bradford's law reveals the ratio as 17:46:358 in psychology, dispersion of journal titles in psychology does not satisfy the Bradford's Law of Scattering.

Keywords: Bradford's Law, Bradford's zones, Productivity of journals, Bradford's Law of Scattering, Doctoral theses, Psychology, Bradford distribution.

Introduction

The proliferation of journals and the consequent exponential growth of journal literature have laterally jeopardized their capacity to transmit information effectively and rapidly[1]. Bradford in 1934 was the first to provide a mathematical expression to the scattering of citations from the journals[2]. Bradford's law of scattering is based on the principle that every scientific field is related, however remotely, to every other field.

Bradford in 1948 published his first paper entitled 'Sources of information on specific subjects'[3]. He observed and examined two bibliographies prepared in the Science Library (Britain) on Applied Geophysics (1928-1931) and Lubrication (1932-1937). He prepared a list of journals arranged in decreasing order of source items contributed by the journals of bibliographies. He noticed that in each subject there were a few productive sources, large number of sources which were moderately productive and still a large number of sources of constantly diminishing productivity.

Bradford identified three groups of periodicals in the list of periodicals ranked by diminishing productivity that produced approximately the same number of articles on the subject, but the number of periodicals in these three equi-productive zones increased by a constant factor.

If scientific periodicals are arranged in the order of decreasing productivity of articles on a given subject, that may be divided into a nucleus of periodicals, more particularly devoted to the subject, and several groups or zones containing the same number of articles as the nucleus, where the number of periodicals in the nucleus and succeeding zones will be as $1:n:n^2$ ….

Bradford also plotted graph of the cumulative number of source items R(n) versus the logarithm of the cumulative number of journals (log n). This graphs came to be known as 'Bradford Bibliograph'.

There have been several studies based on different datasets to assess the Bradford's Law of Scattering.

Literature review

According to Drott et al.[4], Bradford's law is based upon an observation that journal articles on any specific topic show a particular pattern that fairly

larger numbers of articles are concentrated in a few journal titles while a large number of journals contribute only one or two articles each.

Publications on the Bradford's Law of Scattering are numerous. A few publications which deal with the Bradford's Law are reviewed here.

Some obscurities in Bradford's Law were clarified by Vickery[5] who also corrected and simplified Bradford's technique of deriving the ratio 'n'. Further, it has been known that the Bradford's Law is independent of the number of zones chosen although this affects the value of the ratio multiplier.

Stevens[6] found that in chemistry 2 journals were needed to cover 25%, 7 to cover 50% and 24 to cover 75% of the total 247 journals covering 3633 citations. LeimKuhler[7] suggested a model based on Bradford's Law of Scattering and it is called the Bradford's distribution. According to this the distribution of references in a collection of pertinent source documents can be described and predicted by the relation

$$F(X) = \log (1+\beta x)/\log (1+\beta)$$

where the parameter β is related to the subject held and the completeness of communication.

Groos[8] observed a droop when he plotted the data collected by Keenan and Atherton on the journal literature of physics. The droop refers to the shape of some Bradford's curves at their tail ends. The curve shows a downward deviation at the end of the log-linear portion. This phenomenon is known as the 'Groos droop'.

The most profound impact on the theoretical foundation of Bradford's law has come from the efforts of Brookes[9]. He further derived the following formula which does not depend on groupings of journal titles.

$$R (n) = k \log (n)$$

where n is the rank of each journal and R(n) the total number of articles contributed by the first 'n' journals. The value of R(1) is simply the number of articles contributed by top title. The value of R(2) is the cumulative number of articles contributed by the first journal and the second ranked title, 'k' is the constant which may be different for each search and is related to the document collection.

The above formula can be used to calculate the number of articles contributed by a journal at any rank. Brookes later modified the above formula as

$$R (n) = k \log (n/s)$$

where k and s are constants, as a possible explanation to the variations of the ranks of cited journals.

Goffman and Morris[10] showed that Bradford's law held good for literature, dispersion in the field of transplantation-immunology for the years 1965-1968, as well as periodical circulation in a medical library. Chakraborthy[11] studied the scatter of Indian geological literature in Indian and foreign periodicals and found that about 90% of the literature is covered in Indian sources.

Garvey[12] pointed out that authors would seek to publish their articles in certain journals and not in others. Eto[13] tested the applicability of the Bradford's law to the R and D expending of firms and successfully identified core firms, peripheral firms and minor firms.

Pontigo and Lancaster[14] worked on qualitative aspects of the Bradford distribution by using two measures of quality rate of citation and expert judgment. Locket[15] reviewed significant studies on Bradford's law published from 1934 through 1987 in 'The Bradford distribution a review of the literature1934-1987'. Egghe[16] has given 'a note on different Bradford multipliers' showing that the multiplier k that appears in the law of Bradford is not the production of articles per author nor the average number of μ of articles per journal. However, the Bradford multiplier may be close to μ in many cases.

Brookstein[17] studied the multi disciplinary Bradford's Law and its implications, Bradford's Law focuses on the multidisciplinary character of journals and defines a simple model that indicates the evaluation of journals as a competition among subjects for space. Raghavan and Shalini[18] studied the application of Bradford's distribution to the periodical holdings of Central Food Technological Research Institute (CFTRI), Mysore. Their findings were that the top 20 most productive periodicals accounted for 45% of the total periodical literature output in the field of CFTRI and the scatter of periodical literature obeys Bradford's Law. Gupta[19] in his study applied the Bradford's Law to the citations in *Ethiopian Medical Journal* and established that the law is applicable to

the literature. Mahendra and Deshmukh[20] in their study confirmed the applicability of Bradford's law to their data gathered from the journal *Annals of Library Science and Documentation*.

Wagner[21] discussed about two components of casual explanation of Bradford's law. Rao[22] has made an analysis of Bradford multipliers to identify a suitable model to explain the Law of Scattering. Bandopadhyay[23] studied the scatter of journal literature in different disciplines for the period 1981 to 1990.

The present investigation is to identify the Braford's zones and productivity of journals cited in the Ph.D. theses accepted in the field of Psychology for the award of doctoral degrees by Sri Venkateswara University, Tirupati, Osmania University, Hyderabad and Andhra University, Visakhapatanam. The discipline of psychology comprises two sub-fields namely basic psychology and applied psychology. A total of 14,374 references appended to 141 theses available in the libraries in Sri Venkateswara University, Osmania University and Andhra University were analysed.

Objectives of the study

- To examine the applicability of Bradford's Law of scattering to the pattern of journals used by the researchers in psychology;
- To know the journal productivity in psychology; and
- To identify the Bradford zones in the psychology literature used by researchers.

Methodology

The present study is confined to the analysis of citations cited in the Ph.D theses accepted in the field of Psychology for the award of doctoral degree by Sri Venkateswara University, Tirupati; Osmania University, Hyderabad and Andhra University, Visakhapattanam. A total of one hundred and forty one (141) Ph.D theses submitted to Departments of Psychology, Sri Venkateswara University (56 theses), Osmania University (54 theses) and Andhra University (31 theses) during the period 1963 – 2003 were used as source material for the present investigation. There are 22,565 citations appended to the 141 theses out of which 14,374 citations were from journals and these journal citations are the base for the present investigation.

The information relating to each citation i.e., number of authors, type of bibliographic form, publication year of source item, name of the journal, subject, country, language and publisher's name were recorded on the reference cards of standard size of 12.5 X 7.5 cm.

For journal citations, the information regarding the country of publication, language in which it is published and the subject of the journal was obtained from 'Ulrich's International Periodicals Directory' and recorded on the reference cards.

The data was fed into the computer using MS-Excel software package and processed using the statistical package for social sciences (SPSS).

Fields of specializations in psychology

Since the era of Wilhelm Wundt and William James, psychology has been categorized into two types, academic or basic and applied fields of specialization, in other words basic research and applied research[24].

Academic fields of specialization include:

Experimental Psychology

Physiological Psychology

Comparative Psychology

Personality Psychology

Social (community) Psychology

Developmental Psychology

Applied fields of specialization include:

Clinical Psychology (Psychopathology)

Counseling Psychology

Psychiatry

School Psychology

Educational Psychology

Industrial/organizational Psychology

Engineering Psychology

Programme Evaluation

Sport Psychology

Forensic Psychology

Environmental Psychology

Health Psychology or Abnormal Psychology

Consumer Psychology and

Cognitive Research

The psychology literature has been grouped into Basic and Applied depending on the research topic chosen by the researcher of the thesis

Subject-wise distribution of theses

Subject-wise distribution of theses is shown in Table 1.

Table 1 shows the subject-wise distribution of theses submitted, the number of references appended and the average number of references per thesis. Table 1 show that the average number of references cited applied psychology theses is more in number (177.20) as compared to basic psychology (133.18). The average number of references per thesis in psychology as a whole is 160. It also indicates that more number of theses was submitted in applied psychology compared to basic psychology. That means more research is carried out in applied psychology as compared to basic psychology.

List of highly cited journals in psychology

Annexure 1 gives the rank list of journals in psychology. It is obvious from the list that the journals cited by research scholars in psychology are scattered in 421 journals. Among them *Journal of Applied Psychology* occupies first rank for being cited more number of times with 3.97% of citations, followed by *Dissertation Abstracts International* (3.71%), *Journal of Personality and Social Psychology* (2.78%) and so on.

Dissertation Abstracts International is an abstracting periodical that gives abstracts of the theses/dissertations. It was found that many researchers have cited the abstracts of the thesis published in *Dissertation Abstracts International*.

Productivity of journals

The productivity of cited journals is measured after dividing all the journals into four equal groups. The number of journals covering the citations in each group is computed. The average rate of productivity (the ratio of the number of citations to the number of journals) in each group is computed. The relevant particulars in the field of psychology as a whole and also in the

Table 1—Subject-wise distribution of theses

Subject	No. of theses	No. of references appended	Average no. of references per thesis
Basic Psychology	55	7325	133.18
Applied Psychology	86	15240	177.20
Total	141	22565	160.04

Table 2—Productivity of journals in psychology

Sl. no.	Percentage of journals	No. of citations	No. of journals covered	Percentage of journals	Average productivity of journals
1	0 - 25%	2540	10	1.91	254
2	26 - 50%	4629	23	4.17	201.26
3	51 - 75%	3621	54	9.55	67.05
4	76 - 100%	3584	334	84.38	10.73
	Total	14374	421	100	34.14

Table 3—Productivity of journals in basic psychology

Sl. no.	Percentage of journals	No. of references	No. of journals covered	Percentage of journals	Average productivity of journals
1	0 – 25%	1127	10	3.01	112.7
2	26 - 50%	1138	20	6.02	56.9
3	51 - 75%	1113	46	13.85	24.19
4	76 - 100%	1114	256	77.10	4.35
	Total	4492	332	100	13.53

Table 4—Productivity of journals in applied psychology

Sl. no.	Percentage of journals	No. of citations	No. of journals covered	Percentage of journals	Average productivity of journals
1	0 - 25%	2542	10	2.51	254.2
2	26 - 50%	2428	22	5.54	110.36
3	51 - 75%	2442	52	13.09	46.96
4	76 - 100%	2470	313	78.84	7.89
	Total	9882	397	100	24.89

sub-fields i.e., basic and applied psychology are presented in Tables 2, 3 and 4 respectively.

It is obvious from Table 2 that in psychology the first 25% of citations are from the first 10 journals, thus signifying their high rate of productivity. The average rate of productivity of journals in the first group is 254 articles, whereas it has considerably gone down to 10.73 articles in the fourth group. This shows the concentration of more number of citations in a few journals.

It is evident from Table 3 that in basic psychology the first 25% of citations are covered by the first ten journals with an average productivity of 112.7 citations per journal. The average productivity has gone down significantly to 4.35 articles in the fourth group.

Table 4 shows that in applied psychology the first 25% citations are covered by the first 10 journals with an average productivity of 254.2 citations per journal. The average productivity has gone down considerably to 7.89 articles in the fourth group.

Application of Bradford's law of scattering

Bradford's law states that documents on a given subject is distributed (scattered) according to a certain mathematical function so that a growth in papers on a subject requires a growth in the number of journals/information sources. The numbers of the groups of journals to produce nearly equal numbers of articles is roughly in proportion to 1: n: n^2 …, where n is called the Bradford multiplier.

The data obtained in the study (as indicated in Tables 2, 3 and 4) has been put to test for the Bradford's Law of scattering. Bradford's Bibliographs for psychology, applied psychology and basic psychology have been plotted taking the cumulative number of citations R(n) on the Y-axis and the Log of the cumulative sum journals on the X-axis. They are presented in the Figures 1, 2and 3.

From these figures, it is found that the data in psychology and its sub-fields of applied and basic psychology have an initial raising curve and followed by linearity, except towards the end showing a 'droop' which is characteristic of incomplete data. Such droops have also been found from the bibliographs for other subjects viz., agriculture economics and rural sociology[25] and social sciences[26]. Groos droops have also been reported by Afloabi[27] for library science literature, Vimala[28] for biological sciences and Reddy[29] for chemistry.

The verbal formulation of the Bradford's Law of Scattering is also tested by dividing the total number of citations in each field into three zones. The basis for choosing the three zones is that the variation is found to be the minimum among number of citations in each zone. The number of zones having almost the equal number of citations in psychology is shown in Table 7.

Table 5 and Figure 1 show that there are 17 journals in the nucleus and they are the most productive journals devoted to Psychology sharing 4.03% of total journals. The second zone is represented by 46 journals which share 10.92% of total cited journals and the last zone is represented by 358 journals which share 85.04 % of total cited journals. Each zone has approximately one third (1/3) of the total citations. Hence the journal distribution as per the Bradford's Law reveals the ratio as 17: 46: 358.

It is evident from the above ratio that the number of journal titles in each zone is not increasing geometrically. Hence it is concluded that the dispersion of journal titles in psychology does not satisfy the verbal formulation of Bradford's Law of Scattering.

Table 5—Bradford's Zones for psychology

Zones	Citations	No. of journals	Journal percent :
1	4959	17	4.03
2	4704	46	10.92
3	4711	358	85.04
Total	14374	421	100

Table 6—Bradford's Zones for basic psychology

Zones	Citations	No. of journals	Journal percent :
1	1528	16	4.81
2	1492	40	12.04
3	1472	276	83.13
Total	4492	332	100

Table 7—Bradford's Zones for applied psychology

Zones	Citations	Journals	Journal percent :
1	3313	15	3.77
2	3306	46	11.58
3	3263	336	84.63
Total	9882	397	100

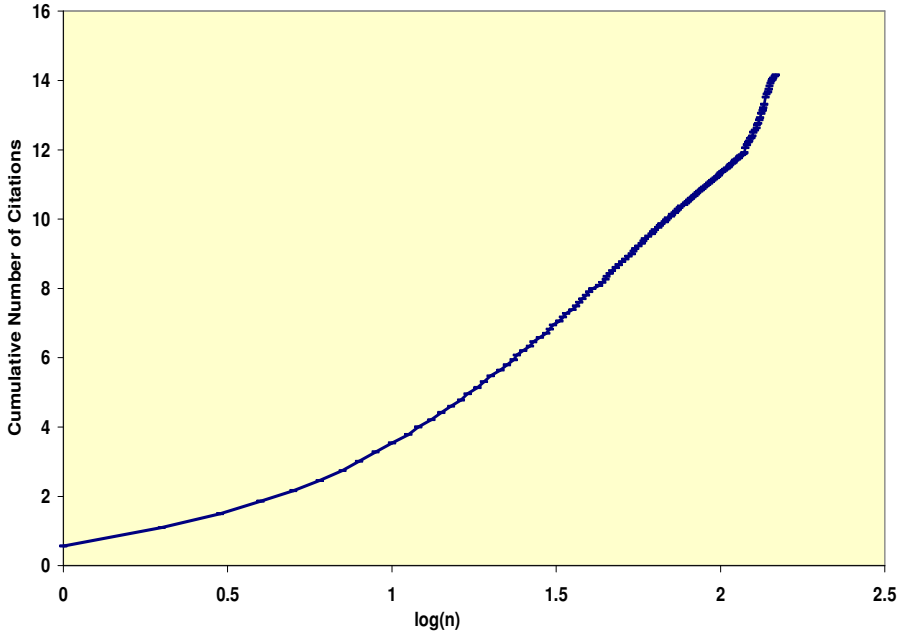

Fig. 1—Bradford's bibliograph for psychology

It is observed from Table 6 and Figure 2 that ratio of the number of journal titles in the three zones in the field of basic psychology is 16: 40: 276 and it is clear that the number of journal titles in the three zones is not increasing geometrically.

It is apparent from Table 7 and Figure 3 that the ratio of the number of journal titles in the three zones in the field of applied psychology is 15: 46: 336. It is clear that the numbers of journal titles in the three zones are not increasing geometrically. Hence it is concluded that the journal usage pattern in the subfields of psychology i.e., applied psychology and basic psychology also does not satisfy the verbal formulation of the Bradford's Law of scattering.

Conclusion

Bradford's law is not only about quantitative issues but also about qualitative issues. The most productive journals on a subject are also the best journals and thus the journals that should be selected by libraries and users. Bradford's law is not claiming that scattering is the same from one subject to another. Bradford's law has been regarded as identical with other bibliometric laws and also with laws in quite different domains.

The journal usage pattern as reflected through neither doctoral dissertations in psychology as a whole and

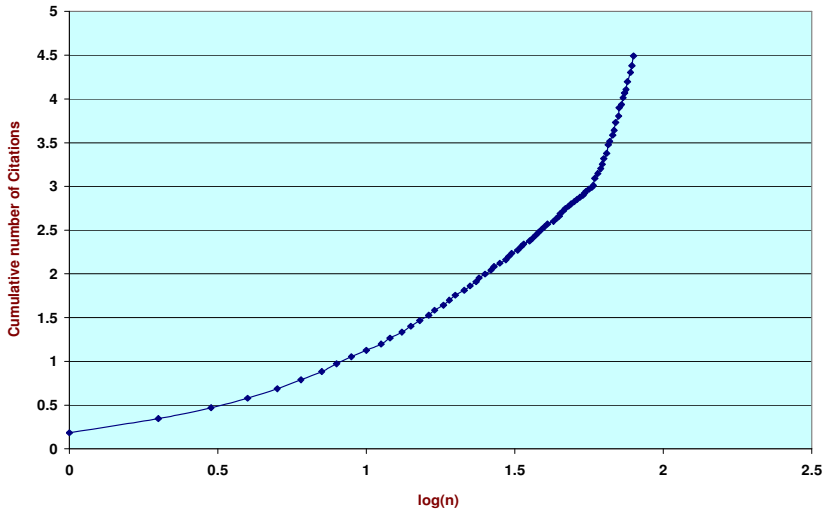

Fig. 2—Bradford's bibliograph for basic psychology

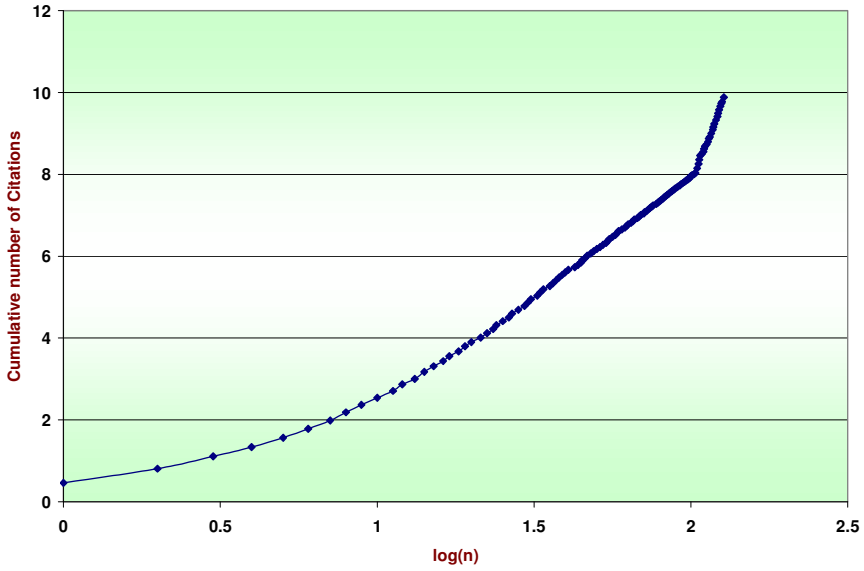

Fig. 3—Bradford's bibliograph for applied psychology

the sub-fields of psychology neither satisfies verbal nor the graphical formulation of the Bradford's Law of scattering. This may be due to the heavy concentration of citations in a few journals. The productivity of journals in psychology shows the concentration of more number of citations in a few journals.

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Annexure I

Rank list of journals in psychology

Sl. no.	Rank	Journal name	No. of citations	Percent	Cumulative percent	Cumulative citations
1	1	*Journal of Applied Psychology (UK)*	570	3.97	3.97	570
2	2	*Dissertation Abstracts International (USA)**	533	3.71	7.67	1103
3	3	*Journal of Personality and Social Psychology (USA)*	399	2.78	10.45	1502
4	4	*Child Development (USA)*	360	2.50	12.95	1862
5	5	*Journal of Psychology (USA)*	300	2.09	15.04	2162
6	6	*Journal of Experimental Psychology (USA)*	294	2.05	17.09	2456
7	7	*Psychological Reports (USA)*	285	1.98	19.07	2741
8	8	*Journal of Gerontology (USA)*	272	1.89	20.96	3013
9	9	*Journal of Educational Psychology (USA)*	269	1.87	22.83	3282
10	10	*Academy of Management Journal (USA)*	258	1.79	24.63	3540
11	11	*Journal of Social Psychology (USA)*	240	1.67	26.30	3780
12	12	*American Journal of Psychology (USA)*	220	1.53	27.83	4000
13	13	*Journal of Organizational Behavior and Human Performance (USA)*	208	1.45	29.28	4208
14	13	*Psychological Review (USA)*	208	1.45	30.72	4416
15	14	*Journal of Abnormal Psychology (USA)*	182	1.27	31.99	4598
16	15	*Developmental Psychology (USA)*	181	1.26	33.25	4779
17	16	*Psychological Bulletin (USA)*	180	1.25	34.50	4959
18	17	*Psychological Abstracts (USA)*	176	1.22	35.72	5135
19	18	*Journal Of Abnormal and Social Psychology (USA)*	170	1.18	36.91	5305
20	19	*Journal of Genetic Psychology (USA)*	170	1.18	38.09	5475
21	20	*Personnel Psychology (USA)*	168	1.17	39.26	5643
22	21	*Journal of Consulting and Counseling Psychology (USA)*	152	1.06	40.32	5795
23	22	*Learning Disabilities (USA)*	144	1.00	41.32	5939
24	23	*American Psychologist (USA)*	134	0.93	42.25	6073
25	24	*Journal of Vocational Education*	130	0.90	43.15	6203
26	25	*Psychosomatic Medicine (USA)*	128	0.89	44.04	6331
27	26	*American Journal of Mental Deficiency (USA)*	126	0.88	44.92	6457
28	27	*Archives of General Psychiatry (USA)*	124	0.86	45.78	6581
29	28	*Human Relations (USA)*	123	0.86	46.64	6704
30	29	*Journal of Psychological Researches(USA)*	121	0.84	47.48	6825
31	30	*Educational Research (UK)*	116	0.81	48.29	6941
32	31	*Journal of Personality (USA)*	115	0.80	49.09	7056
33	32	*Indian Journal of Psychiatry (INDIA)*	113	0.79	49.87	7169
34	33	*Journal of Pediatrics (USA)*	110	0.77	50.64	7279
35	34	*Indian Journal of Psychology (INDIA)*	108	0.75	51.39	7387
36	35	*Advances in Social Psychology (UK)*	107	0.74	52.14	7494

Contd—

37	36	*American Journal of Orthopsychiatry (USA)*	105	0.73	52.87	7599
38	37	*British Journal of Psychology (UK)*	103	0.72	53.58	7702
39	38	*American Journal of Clinical Nutrition (USA)*	99	0.69	54.27	7801
40	38	*Perceptual and Motor Skills (USA)*	99	0.69	54.96	7900
41	39	*American Journal of Sociology (USA)*	92	0.64	55.60	7992
42	40	*Journal of Personality Assessment (USA)*	89	0.62	56.22	8081
43	41	*Administrative Science Quarterly (USA)*	87	0.61	56.82	8168
44	42	*Psychological Monographs (USA)*	86	0.60	57.42	8254
45	43	*Educational & Psychological Measurement (USA)*	86	0.60	58.02	8340
46	44	*Psychology and Aging (USA)*	85	0.59	58.61	8425
47	45	*American Annals of The Deaf (USA)*	84	0.58	59.20	8509
48	46	*Consulting Psychology (USA)*	84	0.58	59.78	8593
49	47	*Health Psychology (USA)*	82	0.57	60.35	8675
50	48	*Acta Medica Scand Supplement (CZECH REPUBLIC)*	80	0.56	60.91	8755
51	49	*Journal of Marriage and The Family (USA)*	77	0.54	61.44	8832
52	50	*Journal of Social Issues (USA)*	76	0.53	61.97	8908
53	51	*India Academy of Applied Psychology (INDIA)*	75	0.52	62.49	8983
54	51	*Psychology in the Schools (USA)*	75	0.52	63.02	9058
55	52	*Journal of Speech and Hearing Disorders (USA)*	74	0.51	63.53	9132
56	53	*Journal of Clinical Psychology (USA)*	73	0.51	64.04	9205
57	53	*Journal of Occupational Psychology (USA)*	73	0.51	64.55	9278
58	54	*British Journal of Medical Psychology (UK)*	69	0.48	65.03	9347
59	55	*Science (USA)*	67	0.47	65.49	9414
60	56	*Journal of Adolescence (UK)*	65	0.45	65.95	9479
61	57	*Exceptional Children (USA)*	64	0.45	66.39	9543
62	58	*Indian Journal of Criminal Psychology (India)*	61	0.42	66.82	9604
63	59	*Journal of Child Psychology And Psychiatry (UK)*	59	0.41	67.23	9663
64	60	*Journal of Nervous and Mental Disorders (USA)*	57	0.40	67.62	9720
65	60	*Personal and Guidance Journal (UK)*	57	0.40	68.02	9777
66	61	*Genetic Psychology Monographs (USA)*	54	0.38	68.39	9831
67	61	*Journal Of Special Education (UK)*	54	0.38	68.77	9885
68	62	*Canadian Psychological Review (CANADA)*	53	0.37	69.14	9938
69	63	*Educational Psychological Review (USA)*	52	0.36	69.50	9990
70	64	*Indian Journal of Social Work (INDIA)*	51	0.35	69.86	10041
71	65	*American Journal of Physical Anthropology (USA)*	50	0.35	70.20	10091
72	66	*Journal of Psychosomatic Research (USA)*	49	0.34	70.54	10140
73	66	*Social Science and Medicine (UK)*	49	0.34	70.88	10189
74	66	*Journal of Counseling Psychologist (USA)*	49	0.34	71.23	10238
75	67	*Bulletin of The Psychological Society (UK)*	46	0.32	71.55	10284
76	68	*Human Development (USA)*	45	0.31	71.86	10329
77	68	*Psycho-Physiology (UK)*	45	0.31	72.17	10374
78	68	*Industrial Relations Journal (UK)*	45	0.31	72.49	10419

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79	68	*British Journal of Educational Psychology (UK)*	43	0.30	72.78	10462
80	69	*Journal of Marketing (USA)*	43	0.30	73.08	10505
81	69	*Criminal Justice and Behavior (USA)*	42	0.29	73.38	10547
82	70	*American Journal of Public Health (USA)*	41	0.29	73.66	10588
83	70	*Journal of College Student Development (USA)*	41	0.29	73.95	10629
84	70	*Psychometrica (UK)*	41	0.29	74.23	10670
85	71	*Behavioural Medicine (UK)*	40	0.28	74.51	10710
86	71	*Economic and Political Weekly (INDIA)*	40	0.28	74.79	10750
87	71	*Journal of Occupational Medicine (USA)*	40	0.28	75.07	10790
88	71	*Journal of Occupational and Organizational Psychology (UK)*	40	0.28	75.34	10830
89	71	*Mental Health Journal (USA)*	40	0.28	75.62	10870
90	71	*Indian Journal of Applied Psychology (INDIA)*	40	0.28	75.90	10910
91	72	*Elementary School Guidance & Counciling (USA)*	39	0.27	76.17	10949
92	73	*Merril Palmer Quarterly (USA)*	38	0.26	76.44	10987
93	73	*Sex Roles (USA)*	38	0.26	76.70	11025
94	74	*Behavior Research and Therapy (USA)*	37	0.26	76.96	11062
95	74	*Human Biology (USA)*	37	0.26	77.22	11099
96	74	*Journal of Personality and Clinical Studies (USA)*	37	0.26	77.47	11136
97	74	*Journal of Management Information Systems (USA)*	37	0.26	77.73	11173
98	75	*Social Science Journal (USA)*	36	0.25	77.98	11209
99	75	*Journal of Experimental Social Psychology (USA)*	36	0.25	78.23	11245
100	76	*American Heart Journal (USA)*	34	0.24	78.47	11279
101	76	*Journal of Organizational Dynamics (UK)*	34	0.24	78.70	11313
102	76	*Journal of Social Work (UK)*	34	0.24	78.94	11347
103	77	*Child Psychiatry Quarterly (UK)*	33	0.23	79.17	11380
104	77	*Consumers Research (UK)*	33	0.23	79.40	11413
105	77	*Indian Psychological Abstracts and Review (INDIA)*	33	0.23	79.63	11446
106	77	*Journal of Marketing Research (USA)*	33	0.23	79.86	11479
107	77	*Journal of Nervous and Mental Health (USA)*	33	0.23	80.09	11512
108	78	*Journal of Abnormal Psychology (USA)*	32	0.22	80.31	11544
109	78	*American Journal of Epidemiology (USA)*	32	0.22	80.53	11576
110	78	*Harvard Business Review (USA)*	32	0.22	80.76	11608
111	78	*Journal of Experimental Child Psychology (USA)*	32	0.22	80.98	11640
112	78	*Australian Journal of Psychology* (AUSTRALIA)	32	0.22	81.20	11672
113	79	*Asian Journal of Psychology & Education (INDIA)*	31	0.22	81.42	11703
114	80	*Human Performance (USA)*	30	0.21	81.63	11733
115	80	*International Journal of Offender Therapy and Comparative Psychology (USA)*	30	0.21	81.84	11763
116	80	*Personality & Social Psychology (USA)*	30	0.21	82.04	11793

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117	80	*Personality and Individual Differences (UK)*	30	0.21	82.25	11823
118	81	*Ergonomics (UK)*	29	0.20	82.45	11852
119	81	*Journal of Parapsychology (USA)*	29	0.20	82.66	11881
120	81	*Learning Disability Quarterly (USA)*	29	0.20	82.86	11910
121	81	*British Journal of Medical Psychology (UK)*	29	0.20	83.06	11939
122	81	*Psychiatric Rehabilitation Journal (USA)*	29	0.20	83.26	11968
123	81	*Psychological Research Bulletin (USA)*	28	0.19	83.46	11996
124	81	*Psychology of Women Quarterly (USA)*	28	0.19	83.65	12024
125	81	*Stress and Psychology (USA)*	28	0.19	83.85	12052
126	82	*Annual Review of Psychology (USA)*	27	0.19	84.03	12079
127	82	*Management and Labour Studies (USA)*	27	0.19	84.22	12106
128	82	*Indian Pediatrics (INDIA)*	27	0.19	84.41	12133
129	83	*Sociology and Social Research (USA)*	26	0.18	84.59	12159
130	84	*Journal of Applied Social Psychology (USA)*	25	0.17	84.76	12184
131	84	*Journal of Cross Cultural Psychology (USA)*	25	0.17	84.94	12209
132	84	*Social Problems (USA)*	25	0.17	85.11	12234
133	85	*Psychological Medicine (USA)*	24	0.17	85.28	12258
134	86	*Archives of Neural Psychiatry (USA)*	23	0.16	85.44	12281
135	86	*Journal of Tropical Medicine and Hygene (USA)*	23	0.16	85.60	12304
136	87	*International Journal of Eating Disorders (USA)*	22	0.15	85.75	12326
137	87	*Journal of Rural Development (USA)*	22	0.15	85.91	12348
138	87	*Indian Educational Review (INDIA)*	22	0.15	86.06	12370
139	87	*Scandinavian Journal of Work Environment and Health (SCANDINAVIA)*	22	0.15	86.21	12392
140	87	*Indian Journal of Mental Retardation (INDIA)*	22	0.15	86.36	12414
141	88	*International Review of Psychology (USA)*	21	0.15	86.51	12435
142	88	*Journal of Neuropathology and Experimental Neurology (USA)*	21	0.15	86.66	12456
143	88	*Social Change (USA)*	21	0.15	86.80	12477
144	89	*Acta Pediatrics (USA)*	20	0.14	86.94	12497
145	89	*Cognitive Therapy and Research (USA)*	20	0.14	87.08	12517
146	89	*British Journal of Nutrition (UK)*	20	0.14	87.22	12537
147	90	*Journal of Fluency Disorders (USA)*	19	0.13	87.35	12556
148	90	*Journal of Creative Behavior (USA)*	19	0.13	87.48	12575
149	90	*Journal of Social Behavior and Personality (USA)*	19	0.13	87.62	12594
150	90	*Journal of research in Personality (USA)*	19	0.13	87.75	12613
151	90	*Journal of Psychological Medicine (USA)*	19	0.13	87.88	12632
152	91	*American Scientist (USA)*	18	0.13	88.01	12650
153	91	*Journal of Applied Behavioural Analysis (USA)*	18	0.13	88.13	12668
154	92	*Anesthesia and Analgesia (USA)*	17	0.12	88.25	12685
155	92	*Journal of Communication Disorders (USA)*	17	0.12	88.37	12702
156	92	*Journal of Community and Applied Social Psychology (USA)*	17	0.12	88.49	12719
157	92	*Psychiatric Clinics For North America (USA)*	17	0.12	88.60	12736
158	92	*Behavior Therapy (USA)*	17	0.12	88.72	12753

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159	92	*Child Health Talk (USA)*	17	0.12	88.84	12770
160	92	*Journal of Paediatric Psychology (USA)*	17	0.12	88.96	12787
161	93	*Psychosomatics (USA)*	16	0.11	89.07	12803
162	93	*Contemporary Psychology (USA)*	16	0.11	89.18	12819
163	93	*Training and Development (INDIA)*	16	0.11	89.29	12835
164	93	*Journal of Health Management (USA)*	16	0.11	89.40	12851
165	94	*American Medical Womens Association (USA)*	15	0.10	89.51	12866
166	94	*Behavior Modification (USA)*	15	0.10	89.61	12881
167	94	*Educational Researcher (USA)*	15	0.10	89.72	12896
168	94	*Indian Journal of Psychometry and Education (INDIA)*	15	0.10	89.82	12911
169	94	*Journal of Humantic Psychology (USA)*	15	0.10	89.93	12926
170	94	*Perspectives in Biology and Medicine (USA)*	15	0.10	90.03	12941
171	94	*Psychologica (USA)*	15	0.10	90.13	12956
172	94	*Psychology Today (USA)*	15	0.10	90.24	12971
173	94	*Social Case Work (USA)*	15	0.10	90.34	12986
174	94	*Social Indicators Research (USA)*	15	0.10	90.45	13001
175	95	*Academic Medicine (UK)*	14	0.10	90.55	13015
176	95	*Journal of Mind and Behavior (USA)*	14	0.10	90.64	13029
177	95	*Manas (USA)*	14	0.10	90.74	13043
178	95	*Psychology and Developing Societies (UK)*	14	0.10	90.84	13057
179	95	*Cognition and Personality (USA)*	14	0.10	90.94	13071
180	95	*Indian Educational Review (INDIA)*	14	0.10	91.03	13085
181	96	*Children & Family (USA)*	13	0.09	91.12	13098
182	96	*Journal of Aging and Health (USA)*	13	0.09	91.21	13111
183	96	*Osmania Journal of Psychology (INDIA)*	13	0.09	91.30	13124
184	96	*Public Opinion Quarterly (USA)*	13	0.09	91.39	13137
185	96	*The Lancet (USA)*	13	0.09	91.48	13150
186	96	*Journal of Family Issues (USA)*	13	0.09	91.58	13163
187	97	*Archives of Internal Medicine (USA)*	12	0.08	91.66	13175
188	97	*Indian Journal of Behaviour (INDIA)*	12	0.08	91.74	13187
189	97	*Indian Journal of Medical Research (INDIA)*	12	0.08	91.83	13199
190	97	*Journal of Chronic Disease (USA)*	12	0.08	91.91	13211
191	97	*Journal of School Psychology (USA)*	12	0.08	91.99	13223
192	97	*Mental Hygene (USA)*	12	0.08	92.08	13235
193	97	*Theory and Psychology (USA)*	12	0.08	92.16	13247
194	97	*Family Relations (USA)*	12	0.08	92.24	13259
195	98	*Academy of Management Review (USA)*	11	0.08	92.32	13270
196	98	*Archives of Psychological Medicine & Rehabilitation (USA)*	11	0.08	92.40	13281
197	98	*Early Child Development and Care (USA)*	11	0.08	92.47	13292
198	98	*Indian Journal of Medical Sciences (INDIA)*	11	0.08	92.55	13303
199	98	*Individual Psychology (INDIA)*	11	0.08	92.63	13314
200	98	*Journal of Nergo Education (USA)*	11	0.08	92.70	13325
201	98	*Journal of Child Neurology (USA)*	11	0.08	92.78	13336
202	98	*Journal of Clinical Child Psychology (USA)*	11	0.08	92.86	13347
203	98	*Journal of Clinical Neuro Physiology (USA)*	11	0.08	92.93	13358

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204	98	*Personnel Administration (USA)*	11	0.08	93.01	13369
205	98	*Psychology of Addicti Behaviors (USA)*	11	0.08	93.08	13380
206	98	*Psycho-Therapy and Pshosomatics (USA)*	11	0.08	93.16	13391
207	98	*Quarterly Journal of Speech Education (USA)*	11	0.08	93.24	13402
208	98	*Violence and Victims (USA)*	11	0.08	93.31	13413
209	98	*Counseling Psychologist (USA)*	11	0.08	93.39	13424
210	98	*Research Quarterly (USA)*	11	0.08	93.47	13435
211	98	*Communications Quarterly (USA)*	11	0.08	93.54	13446
212	98	*Education and Psychological Researches (USA)*	11	0.08	93.62	13457
213	98	*Journal of Educational Measurement (USA)*	11	0.08	93.70	13468
214	98	*Journal of Community and Applied Social Psychology (USA)*	11	0.08	93.77	13479
215	99	*Behavioral Assessment (USA)*	10	0.07	93.84	13489
216	99	*Clinical Pediatrics (USA)*	10	0.07	93.91	13499
217	99	*Educational Psychologist (USA)*	10	0.07	93.98	13509
218	99	*Journal of Business Research (USA)*	10	0.07	94.05	13519
219	99	*Journal of Development and Learning (USA)*	10	0.07	94.12	13529
220	99	*Journal of Youth and Adolescence (UK)*	10	0.07	94.19	13539
221	99	*Marriage and Family Living (USA)*	10	0.07	94.26	13549
222	99	*Nursing Research (USA)*	10	0.07	94.33	13559
223	99	*School Councilor (USA)*	10	0.07	94.40	13569
224	99	*Indian Journal of Psychometry and Education (INDIA)*	10	0.07	94.47	13579
225	99	*Journal of Education and Psychology (USA)*	10	0.07	94.54	13589
226	99	*Psychology Quarterly (USA)*	10	0.07	94.61	13599
227	99	*Review of Educational Research (USA)*	10	0.07	94.68	13609
228	100	*Canadian Journal of Administration (CANADA)*	9	0.06	94.74	13618
229	100	*Journal of Early Adolescence (UK)*	9	0.06	94.80	13627
230	100	*Journal of Productivity (USA)*	9	0.06	94.87	13636
231	100	*Sign (USA)*	9	0.06	94.93	13645
232	100	*Zeischriff Fur Altersforschung (USA)*	9	0.06	94.99	13654
233	100	*British Journal of Sociology (UK)*	9	0.06	95.05	13663
234	100	*Journal of Education and Psychological Review (USA)*	9	0.06	95.12	13672
235	101	12 journals with 8 citations each	96	0.67	95.78	13768
236	102	17 journals with 7 citations each	119	0.83	96.61	13887
237	103	19 journals with 6 citations each	114	0.79	97.41	14001
238	104	22 journals with 5 citations each	110	0.77	98.17	14111
239	105	24 journals with 4 citations each	96	0.67	98.84	14207
240	106	20 journals with 3 citations each	60	0.42	99.26	14267
241	107	34 journals with 2 citations each	68	0.47	99.73	14335
242	108	39 journals with 1 citation each	39	0.27	100	14374
		Total	14374	100	100	14374

**Dissertation Abstracts International (USA) is a secondary source of information*