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Citation Analysis as an Unobtrusive Method for Journal Collection Evaluation Using Psychology Student Research Bibliographies

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Sylvia, Margaret, "Citation Analysis as an Unobtrusive Method for Journal Collection Evaluation Using Psychology Student Research Bibliographies" (1998). *Faculty Publications*. 22.

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What Journals Do Psychology Graduate Students Need? A Citation Analysis of Thesis References

Margaret Sylvia and Marcella Lesher

The increasing price of journal subscriptions and the increasing number of journals available make it difficult for libraries to supply all needed material locally for scholarly research. Bibliographic citation analysis of student research papers is one method of evaluating the use of a journal collection. Journal selection and cancellation may be done on the basis of cost-per-use to maximize the usefulness of materials purchased with the library budget. Theses provide a convenient archival resource of student research. This study used the bibliographic citations found in theses and dissertations of graduate students in the psychology and counseling departments of the university, cost-per-use statistics, and shelving statistics to develop a basis for psychology journal selection in the Academic Library. The library should not rely on one single evaluation technique. It should take advantage of a combination of techniques, which as this study indicates, serve to complement each other.



Academic libraries face a serious budgetary problem in the development of library collections because of the rising cost of journal subscription prices and the increasing number of new journals. Journal prices have, in recent years, increased far in excess of inflation so that most academic libraries, even those with modest budget increases, are canceling subscriptions rather than adding to their collections.¹ In addition, since 1665, scientific journals have doubled in number every fifteen years.² This combination of circumstances makes it more difficult for academic libraries to supply the information needs of clients.

The Academic Library has been in the unusual position over the past five years of being able to add extensively to its

collection of journals in psychology and counseling due to the establishment of a new Ph.D program in counseling. Titles ordered for the counseling program alone increased from forty-six in 1989 to 144 in 1994. Librarians selected new titles using various methods with priority given to requests from faculty and secondarily to an evaluation of interlibrary loan requests. All titles must also be indexed in *Psychological Abstracts* before they are approved for purchase. Back files were ordered (usually in five-year increments) as part of this expansion. Because of this combination of new titles and back files, the budget amount committed to ongoing subscriptions has increased each year while the amount available to order new titles and their accompanying back files has decreased.

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Since the amount of money available for this collection is relatively stable, there is a point where current subscriptions can be maintained but new titles cannot be ordered without sacrificing older titles. In order to ensure that the utility of the collection is maintained, it is important to start evaluating the collection with some additional measures of utility other than those currently in use.

COLLECTION EVALUATION

There are several established methods for evaluating library collections, including checking specific lists and bibliographies against the collection, having experts in the literature examine the collection directly, compiling comparative statistics on collection size and expenditures, studying circulation and in-house use, surveying user opinions, doing shelf availability studies, analyzing interlibrary loan statistics, and analyzing bibliographic citations. There are advantages and disadvantages associated with each of these methods of collection evaluation. No one method used alone is sufficient to provide all information needed for a good collection evaluation.³

Ideally, this study will set some parameters for how other subject areas in the journals collection can be measured on an ongoing basis.

The Academic Library is involved currently in using most of the collection evaluation methods noted above, either formally or informally, in an ongoing collection evaluation. Title selections are made based on expert "faculty" evaluations. In addition, bibliographic lists are consulted, and usage statistics (based on shelving counts) are taken on an ongoing basis. Limitations exist in that periodical titles do not circulate. There are also vagaries inherent in shelving counts, i.e., patrons shelving their own material, use by students from other universities, etc.

One untapped resource is the collection of master's theses and dissertations

done by psychology and counseling students. Up until the time of this study, it was unknown what titles were actually appearing in the bibliographies of these manuscripts.

WHY CITATION ANALYSIS?

Empirically, one of the best ways to measure past use of an academic library is through citation analysis of student research papers. Citation analysis has been done through nationally collected citation statistics, and proposals have been made to use these analyses for library collection development and evaluation.⁴⁻⁶ The easiest approach is to simply look at previous studies and use the findings to govern one's own collection development strategies. There are, however, some very strong arguments for doing a local study. Maurice B. Line argued that every library has a differing clientele, and that these clients have different information requirements so that national surveys may have little relevance for individual libraries.⁷ Many libraries have, indeed, done local citation analyses to determine their own special needs.⁸⁻¹² A drawback of this procedure is that students tend to use what is found easily in local libraries.

One other area of investigation for the journals collection involved determining if it fit into the familiar bibliographic pattern known as the Law of Scattering. If our usage patterns fit this pattern, 80 percent of the citations from our database should come from about 20 percent of the cited journals.¹³ This top 20 percent of cited journals should represent at least part of a core list of psychology journals found in the Academic Library.

OTHER FACTORS

There were two additional factors used in refining the "core" list of psychology journals. These factors are cost-per-use and shelving statistics. Although subscription price is only one element of the cost factor associated with maintaining the periodicals collection, it is a major factor in making selection and de-selection decisions, especially for journals with relatively low usage. Reshelving

counts are also important because these data provide some indication of how titles are used for purposes other than thesis and dissertation research.

PURPOSE OF THE STUDY

Using the three measures discussed—citation analysis, cost-per-use, and reshelving counts—several questions can be answered that provide useful information about how the collection should be managed in the future. Ideally, this study will set some parameters for how other subject areas in the journals collection can be measured on an ongoing basis. Consider the following:

- Which journals have the highest usage?
- Does the Academic Library hold these titles?
- Do our journals fit into the Law of Scattering pattern?
- According to citations from the psychology and counseling theses, which are the most cost-effective journal titles for the Academic Library to own in terms of cost-per-use?
- Do we hold the most cost-effective journals?
- Is there a relationship between citation analysis and shelving counts?
- Does citation analysis give us a better understanding of the needs of our own clientele?

PROCEDURE

The bibliographic citations for journals from theses and dissertations written by psychology and counseling students at the university during the past six years were collected. The journal title and citation date were recorded for each journal citation, and library holdings were checked using this information. The current subscription price taken from the latest *Librarian's Handbook* was used to determine the cost-per-use of each journal by dividing the cost of the journal by the average number of citations per year over the six-year period that data were collected.¹⁴ Journals were ranked in two ways: (1) by the number of citations in the database, and (2) by cost-effectiveness. Shelving counts for the 1991-92 fiscal year were also examined.

RESULTS

Usage

Table 1 lists twenty-eight titles cited more than ten times in the theses and dissertations included in the study. Of these twenty-eight titles, seven are not owned by the library. Two of the titles, *Primates* and *Folia Primatologica*, are very specialized and do not really fit with the primary emphasis of the program at the university. These titles were not consid-

TABLE 1
CITATION COUNTS IN RANKED
ORDER OF FREQUENCY

No. of Citations	Title
33	* <i>Personnel Psychology</i>
30	* <i>Hispanic Journal of Behavior Sciences</i>
28	* <i>Journal of Counseling Psychology</i>
26	* <i>Journal of Applied Psychology</i>
24	* <i>Journal of Consulting and Clinical Psychology</i>
23	* <i>American Psychologist</i>
23	<i>International Journal of the Addictions</i>
21	* <i>Counselor Education and Supervision</i>
21	* <i>Nature</i> (ordered for another department)
20	<i>Primates</i>
19	* <i>New York Times</i> (ordered for another department)
16	* <i>American Journal of Psychiatry</i>
16	* <i>Journal of Abnormal Psychiatry</i>
16	* <i>Journal of Educational Psychology</i> (ordered for another department)
16	<i>Journal of Vocational Behavior</i>
15	* <i>Journal of Personality and Social Psychology</i>
15	* <i>Psychometrika</i>
14	<i>Journal of Human Evolution</i>
13	<i>Intelligence</i>
13	<i>Journal of Educational Measurement</i>
13	* <i>Journal of Marriage and the Family</i>
12	* <i>Psychological Reports</i>
11	* <i>American Journal of Family Therapy</i>
11	* <i>Archives of General Psychiatry</i>
11	<i>Folia Primatologica</i>
10	* <i>Journal of Clinical Psychology</i>
10	* <i>Journal of Counseling and Development</i>

* Indicates ownership by the Academic Library.

ered for purchase, particularly since all citations for them came from a single user with a very extensive bibliography. A third title, *International Journal of the Addictions* has a current subscription cost of \$1,045 and requires careful examination before purchase because of the high cost. The other four titles are possible replacements for lesser used journals. Several of the most heavily used journals included citations for older volumes not held by the library. For example, *Hispanic Journal of Behavioral Sciences* had twelve citations from older issues, indicating a need to consider more back issue purchasing.

Law of Scattering

There were 376 titles cited in the database. The top seventy-five titles (20 percent) constituted 62 percent of the citations (769 out of 1,732 total citations). This is not the 80 percent predicted by the Law of Scattering. However, the difference is not strong enough based on this statistic alone to warrant serious changes in our collection strategies. However, as more data are gathered in the future, and the collection changes, an increase may occur among the top 20 percent. The Academic Library holds fifty-eight of the most heavily cited seventy-five titles. Since seventeen of the titles from this group are not owned, this is another resource "pool" for making possible changes and/or additions to the collection.

Cost-Effectiveness

Table 2 ranks the top group of titles by cost-per-use over the study's six-year period. This shows a fairly effective cost-per-use ratio, especially taking into consideration the relatively short time period and the small pool of theses and dissertations included in the study.

Table 3 is a summary limited to the titles which are included in the budget for psychology or counseling, as well as the seven journals not owned by the Academic Library but which fall in the high usage group listed in table 1. As is indicated in table 2, seventeen of the most highly cited journals have a cost-per-use

TABLE 2
ANNUAL COST-PER-USE 1988-1993

Cost (\$)	Title
273.00	<i>International Journal of the Addictions</i>
204.00	<i>Folia Primatologica</i>
187.00	<i>Journal of Personality and Social Psychology</i>
158.00	<i>Journal of Human Evolution</i>
117.00	<i>Psychological Reports</i>
102.00	<i>American Journal of Psychiatry</i>
89.00	<i>Journal of Vocational Behavior</i>
84.00	<i>Journal of Clinical Psychology</i>
81.00	<i>Primates</i>
72.00	<i>Psychological Bulletin</i>
63.00	<i>Journal of Consulting and Clinical Psychology</i>
63.00	<i>American Psychologist</i>
53.00	<i>Journal of Educational Psychology</i>
51.00	<i>Journal of Applied Psychology</i>
51.00	<i>Intelligence</i>
50.00	<i>Journal of Abnormal Psychology</i>
46.00	<i>Archives of General Psychiatry</i>
41.00	<i>American Journal of Family Therapy</i>
39.00	<i>Journal of Counseling and Development</i>
28.00	<i>Psychometrika</i>
23.00	<i>Journal of Educational Measurement</i>
18.40	<i>Hispanic Journal of Behavioral Sciences</i>
10.00	<i>Personnel Psychology</i>
7.00	<i>Counselor Education and Supervision</i>

TABLE 3
SUMMARY OF COST-PER-USE
OF ALL COUNSELING AND
PSYCHOLOGY TITLES INCLUDED
IN CITATION COUNTS

No. of Titles	Cost-per-Use (\$)
14	1-49
16	50-99
8	100-149
8	150-199
7	200-249
5	250-299
4	300-349
2	350-399
3	400-449
2	450-499
1	500-549
1	550-599
1	600-649
2	650-699
4	Over 700
78 Total	

of less than \$100. Totals for the entire sample as summarized in table 3 indicate that thirty of the titles purchased by the library have a cost-per-use of less than \$100. This is 43 percent of all titles measured for cost-effectiveness.

Figures in tables 1 to 3 are based only on citation counts for the past six years of master's theses and dissertations, and do not include usage as measured by shelving counts. Since the increase in the budget was made to support the Ph.D program in counseling, it was more appropriate to limit cost-per-use measurements to citation analysis only. These figures provide a starting point. As data are collected, titles with high cost-per-use will be monitored.

SHELVING COUNTS

Bibliographic citation counts provide a simple form of measurement but are not definitive. It was somewhat surprising to see that shelving counts did not correspond to citation analysis. Although some titles in table 1 did have very high shelving counts—an average of sixty-one times in a one-year period (1991-92) for eighteen titles—there were many titles that had little or no usage in the citation analysis but had heavy use according to shelving counts. The top group of those titles is indicated in table 4, which compares titles that were shelved more than thirty times with the number of times that they were cited.

TABLE 4
HIGH-USAGE TITLES
WITH LOW CITATION COUNTS

Title	Shelving Count	Citation Count
<i>Family Relations</i>	115	1
<i>Family Therapy Networker</i>	72	0
<i>Journal of Family Therapy</i>	72	2
<i>Child Development</i>	34	7
<i>Counseling Psychologist</i>	31	4
<i>Journal of Drug Education</i>	35	0
<i>Journal of Homosexuality</i>	39	0
<i>Journal of Mental Health Counseling</i>	38	0
<i>Journal of Social Psychology</i>	30	3
<i>Mediation Quarterly</i>	32	0
<i>Psychotherapy</i>	54	3

None of the titles in table 4 figured into the citation count more than seven times. One obvious conclusion from this is that both measurement tools are important. Citation analysis can be used to confirm what shelving counts should be indicating, but citation analysis will not provide a complete picture of journal usage. Since many students are not required to present the master's thesis, their research is harder to measure but obviously many titles are used that do not show up in citation counts. Data collected in future years may indicate a much broader listing of titles. If broadening does not occur, some theorizing might be made about a possible narrower range in focus of theses and dissertations. This would not be unusual in that the independent research conducted by this group of students is undoubtedly more heavily influenced by the research interests of their faculty supervisors than students doing class assignments. Because of budgetary limitations, faculty research interests do not rate as highly in the St. Mary's collection development guidelines as do student research interests.

MEETING STUDENT NEEDS

Perhaps the most interesting outcome of this study is in seeing just what types of journals are used from a qualitative rather than quantitative viewpoint. In San Antonio the population of the university and of the community is primarily Hispanic. Thus, the heavy usage of the *Hispanic Journal of Behavioral Sciences* reflects this demographic trend. One other factor that was also surprising was the heavy usage of journals dealing primarily with science. This may indicate a need to think in a more "interdisciplinary" manner regarding future collection decisions.

CONCLUSION

There is no easy formula for determining what should constitute the collection for any program. However, citation analysis, shelving counts, and cost-per-use are all extremely helpful. Each technique complements the other. By

beginning a routine of careful analysis using all of these measurements, academic librarians can make future collection decisions with confidence.

Furthermore, the use of psychology and counseling journals provides us with a model that can be used in other areas of the collection.

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