

Characteristics of Materials Used by English-Speaking Linguists in Their Publications: A Citation Study of Literature Requirements, Citing Functions, and Citing Trends

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The study described in this paper used citation analysis as a research method to examine the significant characteristics of the literature cited by linguists and the changes in their patterns of bibliographic citations from 1969 to 1989. A total of 17,657 citations were analyzed. The investigated variables included form, time span, language distribution, subject dispersion, and motivations for citing. The findings revealed some interesting facts about citation use patterns of English-speaking linguists and how those patterns changed over the years.

Purpose of the Study

Academic and research libraries are facing many problems caused by the so-called "information explosion." Careful research and investigation is one way of beginning to address those problems. One area of research that can be of tremendous value in solving these difficulties is citation analysis. Through citation analysis, which gives us a profile of the use of a particular literature by its respective scholars, libraries can build retrospective bibliographies with more certainty and can better define subject boundaries. Thus collection development librarians will know more clearly what to buy and where to save money in the various disciplines.

Apart from these practical purposes, citation analysis reveals important features about the communication process among scholars. Walcott said: "For theoretical reasons, librarians, bibliometricians and sociologists of knowledge are interested in how particular literatures are structured, and how literatures relate to each other, in order to determine differences in the intellectual makeups of different subjects" (1987). Linguistics is the chosen subject for the citation study described in this paper.

Literature Review

Linguistics is one of the many understudied areas. Even the major researcher of citations, the Institute for Scientific Information, has not done much in this field.¹ The only major study of bibliographical citations in linguistics was conducted in 1967 by Miriam W. Rappaport (1971) under the auspices of the Center for Applied Linguistics and the National Science Foundation. Rappaport analyzed references in various issues of twelve journals identified by linguists as core journals in linguistics and language sciences. The 4770 references analyzed were taken from issues of the journals published in 1967. Among the variables Rappaport studied were the average number of citations per article, the form of materials, the age of cited items, and the subject of cited materials. The average number of citations per article was 16.2. Of the literature cited, 75.5% was fifteen years old or older. Contrary to the common impression about fields in the humanities, linguists seemed to use more journal articles (48%) than books (37%). The title distribution confirmed Bradford's law of scattering, and the subject distribution indicated that linguistics is an independent discipline with clear-cut boundaries.

In 1986, an Indian librarian, B. A. Sharada (1986), analyzed in *Indian Linguistics: Journal of the Linguistic Society of India* 3166 citations from 1971 to 1980. Sharada examined citations to books and to serials separately and found that there was a difference between these two forms. The variables that he studied included form, most cited authors, most cited titles, language dispersion, age, and place. Among the kinds of materials cited by Indian linguists, books (64.54%) ranked first, with serials second (24.70%) and theses and dissertations third (5%). The most cited work was Chomsky's *Aspects of the Theory of Syntax*. The time lapse between research done and research cited averaged approximately six years. Indian linguists cited mostly from their own field (82.78%). The second most cited sources were reference materials such as dictionaries, encyclopedias, and bibliographies²; and the social sciences were the third most cited category.

Undoubtedly, Sharada's study adds to our understanding of the citing behavior of linguists. But the study reveals more about the citing patterns of Indian linguists than those of the English-speaking linguists in the USA, Britain and some other countries. As Michael H.

MacRoberts and Barbara R. MacRoberts (1987) pointed out, the same subject in different countries often has different citation patterns. Sharada's study only covers part of linguists in the English speaking world.

As evidence seems to indicate that different forms of source materials produce somewhat different citing behaviors³, the need to include more than one type of source material is obvious. One limitation of Rappaport and Sharada's citation studies is that their samples only include journals as source materials and thus only present a partial picture of linguists' use of literature. With the addition of other forms of materials, the patterns of bibliographical citations might look different.

Over twenty years have passed since Rappaport's study. Since then, linguistics as a field has undergone many changes. In the past American linguistics strongly endorsed empiricism and "was regarded as that branch of the humanities that had come closest to achieving results comparable to those of the natural sciences" (Newmeyer 1986). In recent years, there has been a shift in emphasis from a predominantly empirical orientation to an increasing interest in theoretical pursuits. Though primarily a discipline within the humanities, linguistics does not seem to match entirely the descriptions presented in Snow's *The Two Cultures* (1969), Price's "Citation Measures of Hard Science, Soft Science, Technology, and Nonscience" (1970), or in John Budd's "Research in the Two Cultures: the Nature of Scholarship in Science and the Humanities" (1989). It has been claimed that "previous evidence had indicated that in terms of methods of study and subject matter, linguistics had transformed itself in recent years into the realm of the social sciences" (Nicholas 1987, 42).

As changes in research interests and methodology of linguistics take place, citation behavior is also expected to change. There is a need for current research to explore how much the literature used by contemporary linguists has changed and how libraries should adapt their collection development policies accordingly.

Investigative Procedures

The population of this study was composed of English language publications of scholarly interests in the area of general/theoretical

linguistics. The time span covered was 1969-1989 and was studied by taking samples from *Volume III: Linguistics of the MLA International Bibliography* for each of the years of 1969, 1979, and 1989. To avoid the controversy of defining linguistics, we simply followed the decisions of the *MLA Bibliography's* editorial board and used the materials that are listed in the area of general/theoretical linguistics. Foreign language materials and translations were not included. Also excluded from the study were dictionaries, literature reviews, and bibliographies, for those were considered to fall beyond the norms of citing behavior.

Since the average number of citations from monographs, journal articles, dissertations, and essays is different, the stratified sampling method was used to obtain a fair representation of all elements in the population. A pilot study was conducted to estimate the average number of citations from monographs, journal articles, dissertations, and essays for the 1969, 1979, and 1989 *MLA Bibliographies*.

Based on the statistics from the pilot study, the minimum sample size for each stratum was determined by a statistical formula found in Yamane (1973, 725-33)⁴. Instead of using the minimum sample size of 4672 citations, the study drew one tenth for the 1969 sample and one twentieth for the 1979 and 1989 samples from every stratum of each population. This resulted in a sample nearly four times larger than the sample size required by the Yamane formula. The larger than required sample size reduced the variance resulting from clustering effects.⁵ Based on a list of random numbers generated by the computer software *Random*, a total of 17,657 citations were gathered from 414 items for analysis.

Findings

The average number of citations for a publication in linguistics in the samples is 42. The average number of citations is 32.1 citations for 1969, 43.39 citations for 1979, and 49.38 citations for 1989. Obviously linguists are citing more and more sources in their publications, as the average number of citations has been increasing over the years. The average number of citations based on forms is as follows: 112 citations for monographs, 25 citations for journal arti-

cles, 25 citations for essays, and 88 citations for dissertations. Generally speaking, the average number of citations has been increasing across all the four forms for a period of twenty-one years. As expected, monograph and dissertation authors tend to cite more sources than journal article and essay authors.

Form Distribution

Form is defined as the types of materials cited such as monographs, journal articles, essays, dissertations or theses, conference proceedings, reports, government documents, published and unpublished materials, etc.

For linguists writing in 1969, the monograph was the major cited form of material (42.4%). Journal articles and essays (37.4% and 13.3%) were the next important forms. Conference proceedings were also somewhat important (2.8%). Most of the materials cited by linguists were published materials (97.2%). There was almost no use of microforms, government documents, and electronic resources in 1969. In the 1970s the most frequently cited form of materials for the 1979 sample was journal articles (50.9%). Next came monographs (23.7%) and essays (14%). Dissertations and other sources were the fourth most cited forms of materials in 1979 (3.3% each), followed by conference proceedings (2.3%) and technical reports (1.8%). Linguists began to use microforms, government documents, and electronic resources in the 1970s. There was an increase in the use of unpublished materials from 2.8% in 1969 to 7% in 1979.

For the 1989 sample, the most cited form of materials was still journal articles (45.2%), followed by monographs (27%) and essays (19.1%) in second place and third place. "Other Sources" (3.7%), conference proceedings (1.6%), and dissertations (1.5%) also played an important role. More government documents were cited (0.0% in 1969, 0.16% in 1979, and 0.4% in 1989).

The distribution of forms cited by linguists has undergone some changes from 1969 to 1989. The use of monographs has declined steadily over the years from 42.4% to 27%. The use of journal articles rose from 37.4% to 45.2%. There has been a steady increase from 13.3% to 19.1% in the use of essays in linguists' publications. The use of dissertations as a form remained almost the same except

for an increase in the 1970s when there were more doctoral graduates and more dissertations in the *Bibliography*. There has been a decline in the use of conference proceedings from 2.8% in 1969 to 2.3% in 1979 to 1.6% in 1989. Only in recent years have linguists begun to use microforms and electronic resources but to a limited degree only. As a matter of fact, electronic resources make up the form least cited by linguists. There has been an increase in the use of government publications.

Another trend seems to be that linguists used more and more unpublished materials (2.8% in 1969, 7% in 1979, and 7.2% in 1989), which in this case include manuscripts, dissertations, theses, personal letters, telephone interviews, etc.

For citations from monographs, it seems that the monograph (56.9%) has been the most cited form by the authors of monographs. The next most important forms include journal articles (21.1%), essays (16%) and other sources such as manuscripts, personal letters, speeches, etc. (2.6%). Dissertations account only for 1.4% of all the materials cited by authors of monographs.

Authors of journal articles cited more journal articles (52.5%) than monographs (22.4%). Essays (16.3%) and other material forms (3.7%) such as manuscripts, personal letters, telephone conversations, etc. are also cited quite often. The overall trend seems to indicate that journal articles cited proportionately fewer monographs going from 32.8% in 1969 to 17.7% in 1989, and they cited proportionately more journal articles going from 44.9% in 1969 to 54.2% in 1989. Generally speaking, the usage of essays, government documents, and materials in the category of "Other Sources" has been on the rise, too.

The essay writer in the linguistic field used more or less the same amount of monographs (35.1%) and journal articles (36.9%). The trend over the years seems to indicate that the usage of journal articles by essay writers is on the decline steadily from 41.9% in 1969 to 36.6% in 1979 to 30.1% in 1989. Also over the twenty-one year period there has been a steady rise in the use of essays, conference proceedings, dissertations and theses, government documents, and "Other Sources" such as manuscripts, personal letters, etc.

Authors of dissertations cited more journal articles (52.4%) than monographs (21.8%). The essay is the third most important form cited in dissertations (14.8%). It seems that the usage of journal articles is on the decline. The usage of essays and materials in the category of "Other Sources" has been on the rise.

Generally speaking, the monograph is the most important form cited by authors of monographs (56.9%), while the journal article is the most frequently cited form by authors of journal articles (52.5%). Dissertation writers also use more serials than books. Writers of essays cite more or less the same amount of journal articles and monographs. The essay is the third most important form cited by all the linguists.

Regardless of the differences caused by the formats from which citations are taken, on the whole the journal article as a form has been the most frequently cited source in linguistics (46.1%). This trend began to show itself in the 1970s. Findings from this study basically confirmed the results from previous studies that contrary to the common impression about fields in the humanities, linguists used more journal articles (48%) than monographs (37%).

Time Span

Time Span is defined as a measure of the researcher's reliance on materials from particular periods of time. It refers to the extent to which the scholars in a given field reach back into the literature of the past to find useful material.

There are differences in the patterns of time span for monographs, journal articles, essays, and dissertations for different periods. In 1969 the findings show that monographs cited older materials and journal articles cited more recent materials. Essays and dissertations fell somewhere in the middle. The statistical means of the time elapsed or average time span for citations from monographs is 27 years, for essays 20 years, for dissertations 15 years, and for journal articles 11 years. The average time span for 1969 is 18.25 years. For 1979, the statistical mean or the average year for each form is as follows: monographs 11 years, journal articles 13 years, essays 14 years, and disserta-

tions 12 years. The average time span for 1979 is 12.5 years. It seems that in the 1970s linguists used more current materials than in 1969. In addition, the difference in time elapsed among different forms is small in comparison to those of 1969.

The pattern of the time span for 1989 is very similar to that of 1969 except that authors in 1989 cited more current materials. The means for monographs, journal articles, essays, and dissertations are 15 years, 11 years, 12 years, and 12 years respectively. The average time span is 12.5 years. Monographs and dissertations cited older materials than did journal articles and essays. For instance, 43.2% of monograph citations and 48.8% of dissertation citations were made to sources published within the last ten years, while the percentages for journal articles and essays were 56.6% and 53.4%. The percentages for materials published within the last twenty years were 80.2% for monographs, but 89% for journal articles, 86.1% for essays, and 84.3% for dissertations.

The differences among monographs, journal articles, essays, and dissertations lie in the fact that monographs tend to cite older materials than do other forms. The materials cited by journal articles are more current. Essays and dissertations fall somewhere in the middle.

One important trend that should be noted here is that linguists are citing more current materials than before. This can be seen in the shortened time span (or statistical mean of the time span) from three periods, 18.25 for 1969, 12.5 for 1979 and 1989. Further evidence lies in the fact that the materials cited over 50 years old were 5.6% for 1969, 2.73% for 1979, and 1.6% for 1989. On the other hand, the trend seems to indicate that the usefulness or the life span of materials after their publication has been prolonged. The evidence lies in the fact that over the years since 1969 there has been a steady proportionate increase in the number of works cited 14 to 20 years after their publication. The time span or average age of cited materials from that time period seems to get longer and longer since 1969. The obsolete rate for publication tends to be slowing down. The useful life of a work is becoming longer. However, after 50 or 60 years, the chances are very small for a work to be cited.

Subject Distribution/Dispersion

Subject Distribution/Dispersion refers to the extent to which scholars make use of literature generated by other disciplines.

The subject distribution patterns are different for different time periods. But there is no significant difference in subjects cited based on forms. In 1969 linguists cited mostly from their own field. About 39.7% of the materials were borrowed from other disciplines. The three subjects most cited outside linguistics were psychology, science, and philosophy. In 1979 linguists cited more from other disciplines (71.5%) than from their own field (25.2%). The most cited subjects changed to psychology, medicine, and science. Social sciences were also frequently cited by linguists. In 1989 linguists returned to citing more from their own field (38.7%), although other subjects (55.1%) were still in the majority. The most cited top subjects were psychology, medicine, science, social sciences and education. Psychology ranked the first most cited subject across the three samples. The trend seems to indicate that linguists will cite about fifty percent of the time from their own field. There has been a gradual shift of emphasis in subject over the years. Medicine and natural sciences will be among the most cited subjects for a while. The subject distribution is more or less the same for monographs, journal articles, essays, and dissertations.

Language Distribution

Language Distribution/Dispersion refers to the extent to which scholars find useful information in languages other than their own.

Generally speaking, linguists cite English 94.9% of the time and foreign languages 5.1% of the time. French and German are two major foreign languages cited and make up about 3.4% of all the cited foreign language materials. The remaining 1.7% of foreign language materials are distributed among languages such as Russian, Spanish, Polish, etc.

There are some differences in the use of foreign language materials based on forms. Monographs seem to have cited more foreign language materials (12.1%) than journal articles (4.7%), essays (9.4%), and dissertations (1.5%). The distribution of foreign language materi-

als is more or less the same across all the forms. English has been the major language cited over twenty-one years from 1969 to 1989. In 1969 83.8% of the materials cited was in English. In 1979 and 1989 the percentage increased to 96.9% and 98% respectively. The percentage of foreign language materials decreased from 16.2% in 1969 to 3.1% in 1979 and to 2% in 1989. The trend seems to indicate that the use of foreign languages will be more and more limited in the future.

Citing Functions

Citing function is defined as the purpose or motivation that impels a scholar to cite materials. Terrence A. Brooks' model of seven motives is a synthesis of all the previous research on citing-motivation models. With some modifications, this study adopted the basic outline of Brooks' classification scheme as follows:

1. Currency
- 2a. Partial negative credit
- 2b. Total negative credit
3. Operational information
4. Persuasiveness
5. Positive credit
6. Reader alert
7. Social consensus
8. Other

Generally speaking, Function 3, operational information, is the major motivation in citing (38.1%). The next category is Function 5, positive credits (20.6%). Functions 6 and 4, alerting users to new information sources and persuasiveness, are also important. Another large category is Function 8, a category in which all the citing purposes that do not fit into the model are placed (17.4%). The percentage shows that the model we used in this study is perhaps not adequate in summarizing the citing purposes. This model needs to be improved and expanded.

There seem to be no significant differences as far as form is concerned. Whether the form is a monograph, journal article, essay, or dissertation, Function 3, operational information, is the most important motivation for citing. The patterns are more or less the

same in the citing behavior of books, journal articles, essays, and dissertations.

Over the twenty-one years from 1969 to 1989, the major reason for citing remained as Function 3 — to borrow concepts, theories, mathematical or physical techniques, results, conclusions from other papers. In 1969, 1979, and 1989 the percentage for Function 3 was 34.9%, 37.6%, and 40.1% respectively. The trend seems to be that linguists will continue and will increase citing for this purpose. Functions 5 and 6, positive credits and alerting readers to new information sources, were also important reasons for citing over the years. Linguists did not like to cite for negative credits or criticize other scholars openly. As Function 2 decreased from 1% in 1969 to 0.7% in 1979 and to 0.31% in 1989, it seems to indicate that linguists are more and more reluctant to cite for negative credits.

Table 1. Ranking of Citing Functions Among Different Forms Based on Frequency Across the Three Samples

Ranking	Monog.	Jnl. Art.	Essays	Diss.
1	F3 28.1%	F3 41.0%	F3 36.4%	F3 39.2%
2	F6 20.7%	F5 21.3%	F5 18.0%	F5 21.6%
3	F8 24.1%	F6 16.6%	F6 17.6%	F8 22.2%
4	F5 17.6%	F4 9.3%	F8 15.5%	F4 9.1%
5	F4 8.2%	F8 9.1%	F4 9.5%	F6 6.2%
6	F1 0.9%	F1 1.9%	F1 2.2%	F1 1.1%
7	F2a 0.3%	F2a 0.5%	F2b 0.42%	F2a 0.5%
8	F2b 0.2%	F2b 0.2%	F2a 0.4%	F2b 0.04%
9	F7 0.04%	F7 0.0%	F7 0.0%	F7 0.0%

No matter what form it is, either monograph, journal articles, essay, or dissertation, Function 3, operational information, is the major reason for citing (see Table 1). Function 7, social consensus, has only one occurrence. As shown in Table 1, the ranking of the remaining citing functions is different between different forms, but those differences are not adequate enough to reach any meaningful conclusions about the citing patterns. There is no clear trend as to what direction the citing behavior is going.

As shown in Table 1, Function 3 is the number one reason for citing. Regardless of form, about one third of the time linguists cite other sources for concepts, theories, research results, and conclusions. The purpose of citing is to use the cited sources to support their own views, conclusions, and research results. There are no drastic differences among authors of books, journal articles, essays and dissertations in this aspect.

In Table 1, with the exception of monographs, the next most common purpose for citing is F5, namely, positive credit. Quite frequently linguists cite for the purpose of paying homage, substantiating claims, authenticating data, and giving credit. This claim seems to be true with all the four forms.

Ranked third, fourth, and fifth based on the occurrence of the citing functions are F8, F6, and F4. As shown in the tables, those citing categories fall in the middle of the scale. In Table 1 we see that F8 is ranked the third across all dates and all citing functions. It ranges from 24.1% for monographs, 22.2% for dissertations, 15.5% for essays, to 9.1% for journal articles. As F8 is the category for those citing purposes that cannot fit into any other categories of the model, it seems that the model originated from Brook's scheme may not be adequate enough to cover all the citing phenomenon. (F6 and F4 represent the categories for Reader Alert and Persuasiveness).

When linguists cite other sources, they do not like to criticize as is the case with people in general who cite others. That is why F2a and F2b are ranked so low in the list. F2a, Partial negative credit, is ranked a little higher than F2b, total negative credit. It seems that linguists prefer to criticize selectively rather than criticize totally. F7, Social Consensus, is the last citing purpose on the list. That probably indicates that most linguists are serious scholars. They usually cite for good reasons. They do not cite for the purpose of citing to make their works look better.

There are no significant differences in regard to the citing behavior among authors of books, journal articles, essays, and dissertations. The patterns are more or less the same across the forms.

Table 2. Comparison of Citing Functions for Monographs for the Three Samples

Function	1969	1979	1989	Total
1	1.2%	0.3%	0.9%	0.9%
2a	0.6%	0.2%	0.0%	0.3%
2b	0.5%	0.0%	0.0%	0.2%
3	26.2%	33.1%	26.6%	28.1%
4	14.6%	5.8%	4.0%	8.2%
5	20.2%	15.8%	16.4%	17.6%
6	23.2%	10.9%	24.5%	20.7%
7	0.1%	0.0%	0.0%	0.0%
8	13.4%	34.0%	27.5%	24.1%
Total	35.6%	24.8%	39.6%	100.0%

A comparison of citing motivation in monographs indicates that linguists seemed to cite less and less for negative credit (see Table 2). The proportions for partial negative credit are 0.6% in 1969, in 1979 0.2%, and reduced to 0% in 1989. The proportions for total negative credit are 0.5% for 1969 and 0% for both 1979 and 1989. Function 4, Persuasiveness, and Function 5, Positive credit, also tend to decrease over the years. Generally speaking, Function 3 is the major reason for citing for monographs over the years. Function 8, Other reasons for citing that are not covered by the divisions in the citing motivation model, has increased over the years from 13.4% in 1969 to 34% in 1979 and to 27.5% in 1989. As time goes by, citing purposes in monographs have become more complicated, and more variety of citing motivations has appeared that cannot fit into the model used in this study.

Table 3. Comparison of Citing Functions for Journal Articles for the Three Samples

Function	1969	1979	1989	Total
1	2.2%	2.8%	1.3%	1.9%
2a	0.7%	0.3%	0.5%	0.5%
2b	0.5%	0.3%	0.0%	0.2%
3	40.0%	42.9%	40.4%	41.0%
4	7.7%	6.1%	11.9%	9.3%
5	11.2%	28.5%	21.9%	21.3%
6	23.8%	12.0%	15.9%	16.6%
7	0.0%	0.0%	0.0%	0.0%
8	13.8%	7.1%	8.0%	9.1%
Total	23.2%	28.6%	48.2%	100.0%

Like citing behavior in monographs, Function 3, Operational information, is the major reason for citing for journal articles (41%). Like monographs, the tendency is that linguists cite less and less for negative purposes. Generally speaking, Function 2a and Function 2b, Partial and Total negative credit, have decreased over the years. Function 5, Positive credit, has increased over the years from 11.2% in 1969 to 28.5% in 1979 and 21.9% in 1989. Unlike monographs, Function 8, Other citing motivations that do not fit into the model, has decreased for authors of journal articles since 1969.

Table 4. Comparison of Citing Functions for Essays for the Three Samples

Functions	1969	1979	1989	Total
1	3.2%	2.2%	1.0%	2.2%
2a	0.7%	0.3%	0.0%	0.4%
2b	0.5%	0.6%	0.0%	0.4%
3	33.4%	41.2%	30.9%	36.4%
4	5.8%	9.9%	13.0%	9.5%
5	11.1%	21.7%	19.4%	18.0%
6	22.2%	13.0%	21.0%	17.6%
7	0.0%	0.0%	0.0%	0.0%
8	23.2%	11.1%	14.8%	15.5%
Total	29.2%	46.4%	24.4%	100.0%

F3, Operational information, is the major reason for citing for essays (36.4%). As shown in Table 4, Function 2a, Partial negative credit, has decreased over the years, from 0.7% to 0.3% to 0%. Basically Function 2b, Total credit, has also decreased since 1969 from 0.5% to 0%. Function 5, Positive credit, has increased over the years. The tendency seems to indicate that linguists writing essays tend to cite more and more for positive purposes. As shown in Table 4, references made to the latest output of contemporaries to show how up-to-date authors are also decreased over the years from 3.2% to 2.2% to 1% (Function 1). The proportion of citing for persuasiveness has increased from 5.8% in 1969 to 9.9% 1979 and to 13% in 1989.

Table 5. Comparison of Citing Functions for Dissertations for the Three Samples

Functions	1969	1979	1989	Total
1	1.8%	1.3%	0.8%	1.1%
2a	0.0%	0.7%	0.3%	0.5%
2b	0.0%	0.1%	0.0%	0.0%
3	37.6%	35.4%	45.3%	39.2%
4	3.0%	7.9%	11.6%	9.1%
5	32.1%	22.7%	18.5%	21.6%
6	4.8%	3.6%	10.5%	6.2%
7	0.0%	0.0%	0.0%	0.0%
8	20.7%	28.3%	13.3%	22.2%
Total	4.5%	57.5%	38.0%	100.0%

For dissertations F3, Operational information, is the major reason for citing (39.2%). Unlike any of the other three forms, the proportion for Negative credit has increased since 1969. Authors of dissertations seem more willing to criticize. Since 1969 the proportion for Positive credit, Function 5, has decreased from 32.1% in 1969 to 22.7% in 1979 to 18.5% in 1989. The portion for Persuasiveness, Function 4, has increased from 3% to 7.9% to 11.6% in dissertations.

Conclusions

Present Citing Profile

Linguists cite more journal articles (46.1%) than other forms of materials such as monographs (28.6%), essays (15.9%), "Other Sources" (3.2%), dissertations (2.2%), Conference proceedings (2.1%), etc. The average time lapse before a publication is cited is 12.5 years. Linguists cite about 37.9% of the time within their own field and 57% of the time from outside of their field (5.1% are missing data). The most important subjects include medicine, natural sciences, and social sciences. English is the major language cited (95%). The major foreign languages cited are French and German (3.4% in combination). For the most part linguists

cite for the purpose of borrowing concepts, theories, research results, etc. Paying respect and informing readers of new information sources are also important reasons for citing. Ninety percent of the citations are concentrated in 73% of the journals cited.

Changes over the Twenty-One Years

The monograph was the major form (42.4%) cited by linguists around 1969. In 1979 and 1989 citations from monographs decreased to 27% and journal articles became the major form (45.2%). Accompanied by this change, the average time lapse before a publication is cited is shortened from 18.25 years in 1969 to 12.5 years in 1979 and 1989. The evidence shows that linguists are citing more current materials than before. The evidence also shows that linguists are citing more unpublished materials.

In 1969 linguists cited more than half of the time from their own field (52.4%). In the 1970s, linguists cited mostly from other disciplines (71.5%). In 1989 38.7% of the materials cited were within the linguistic field. The emphasis on the subjects outside the field changed, too, and more materials on medicine and natural sciences are cited. This shift can be noted in the changes in the list of more frequently cited journals, as well as in the data collected.

English-speaking linguists used to cite more foreign language materials than they do now. Around 1969 citation to foreign language materials was 16.2% and 20 foreign languages were cited. In the 1970s the percentage became 3.1% and the number of foreign languages was reduced to 15. In 1989 the percentage decreased to 2% and the number of foreign languages cited became 10. It seems that linguists will not cite much foreign language materials in the future.

Linguists do not like to criticize openly. Around 1969 citation for negative credits was 1%, 0.7% in 1979 and 0.31% in 1989. It seems that linguists are less and less willing to cite for criticism.

It used to be that ninety percent of the citations could be found in 50.4% of the journals cited. Over the years there was a proliferation of citations in journals. In 1979 ninety percent of the citations were concentrated in

55.8% of the journals cited. In 1989 ninety percent of the citations were concentrated in 72.6% of the journals cited.

Differences in Citing Patterns among Authors of Monographs, Journal Articles, Essays, and Dissertations

It is found that the different formats of materials do have different citing patterns. But there seems to be no difference in subject distribution and citing motivation when the formats of materials are concerned. In other words, there is no change in the subject distribution and citing functions among monographs, journal articles, essays, and dissertations.

Authors of monographs tend to cite monographs more than other forms. It also seems that authors of monographs like to cite older materials and more foreign languages than do authors of journal articles.

Authors of journal articles tend to cite more journal articles and more current materials than do authors of monographs and essays. Authors of journal articles also do not cite as many foreign language materials as do authors of monographs.

Authors of dissertations and essays fall somewhere in the middle. They cite monographs and journal articles more or less equally. However, they do not use as many foreign language materials as do monograph authors. Authors of dissertations and essays use relatively more current materials.

Discussion

This study has a dual purpose: practical and theoretical. For the practical purpose, this study can be used to aid librarians in collection development and budgetary allocation. It will provide a statistical basis for decision making. For a library that serves researchers and professors in linguistics, the librarians there should give special consideration to the present profile of literature use. When allocating the materials budget, the librarians should divide funds so that each format of materials can get a fair share. For instance, the library should make sure that linguistic collec-

tions contain more journals than monographs, perhaps 46% of journals, 28% of books, etc. The library should also collect a certain percentage (perhaps around 2%) of conference proceedings and dissertations/theses as they are also in demand.

When acquiring foreign language materials, librarians should limit the selection mostly to French and German language materials. Also librarians should keep in mind that the trend seems to be that linguists use fewer and fewer foreign language materials.

This study also provides insight into the rate of obsolescence of linguistic materials. About 53.8% of the cited materials are within ten years old. Basically after 60 or more years the possibility for use is very small. Only 1.05% of all the materials will be used 60 years after their publication. Thus it is recommended that a library should consider moving its linguistic collections to a storage facility once they reach 60 years of age.

Apart from practical purposes, an important goal this study has aimed to achieve is to contribute to the knowledge of how linguistic literature is structured and to update the profile of literature requirements to that of the 1980s.

In spite of the findings of this study, there are many questions that still need to be answered. One of those questions is why authors of monographs tend to cite more monographs, older materials, and more foreign languages and why authors of journal articles tend to cite more journal articles, more current materials, and less foreign languages. One possibility might be that authors of monographs are scholars who like the in-depth exploration of a subject that can often be found in books. Authors of monographs may read widely and often go to great pains to research any possible sources, including older and foreign materials. Authors of journal articles might tend to appreciate quick and short output of their research results. This could be reflected in their preference for journal articles that are short in length and more current in content. But these explanations are very subjective.

Other questions from this study that need to be answered include why there has been a shift from the use of monographs to serials

since 1969; why in 1969 linguists used more from within their own field and in 1979 used most of the materials from outside the field and in 1989 moved back toward the practice of 1969; why linguists used more foreign language materials in the past and now they are using fewer and fewer foreign language materials; why the citation concentration was dense in the past and now it spreads more widely among journals. Future research should attempt to answer these questions. This study is descriptive in that it yielded some facts about the citation use patterns of linguists and how those patterns have changed over the years. More studies of literature requirements in different subjects are needed to build a theoretical framework and to lead to the discovery of laws which should be the basis for our work and future research.

End Notes

1. In response to my request, the Research Section of Institute for Scientific Information did a search and replied that it has not done any important citation research in linguistics. Eric Thurschwell of ISI is the contact person.
2. B.A. Sharada used "References" as one of the categories in her subject dispersion. Other categories included "Linguistics", "Social Sciences", "Pure Sciences", and "Medical Sciences", (Sharada 1986, 43-44).
3. The study conducted by the research team at the University of Bath in Britain included both monographs and serials in the sample. They were analyzed separately. The results showed differences of the two forms in citation patterns (Bath University 1980).
4. In the formula, n = the size of the sample, N = the total population, e = the error of the estimation. A confidence interval, 95%, is built in the formula. A tabulation of this formula is available in Appendix A of this dissertation. It is compiled by the Bureau of Research, New York State Division of Housing (Yamane 1973, 1088-9).
5. To get a valid sample, I have consulted four Statisticians. The resulting sampling method has been approved as valid by Shaw Hwa Lo, Professor of Statistics and Biostatistics, the Department of Statistics and the School of Public Health, Columbia University.

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