
Mapping the literature of speech-language pathology

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The purpose of this study, part of the Medical Library Association (MLA) Nursing and Allied Health Resources Section's project to map the allied health literature, is to identify the core journals in the field of speech-language pathology and to identify indexing and abstracting services that provide access to these journals. Four representative speech-language pathology journals were selected and subjected to citation analysis to determine which journals were cited and how many times each was cited. Bradford's Law of Scattering was applied to the resulting list of journals to identify the core journals of this discipline. Six indexing and abstracting services were selected and scanned to determine coverage for the speech-language pathology core journals. The core journals received broad coverage in the health sciences and social sciences indexing and abstracting databases surveyed, although there was no one database that provided complete coverage of all core journals. The full Current Contents database provides the most extensive coverage of core journals. For individuals without access to the complete Current Contents database, a combined search of both MEDLINE and PsycINFO provides very comprehensive coverage of core journals

INTRODUCTION

Despite the fact that humans have experienced the effects of disordered speech and language for as long as our species has been able to speak, the discipline of speech-language pathology, as we currently know it, is relatively new. The discipline started taking shape in Europe, particularly in Germany and Austria, in the latter part of the nineteenth century [1]. As with the other rehabilitation fields, World Wars I and II gave great impetus to the development of the profession of speech-language pathology. The reality was that, although there had always been those who experienced disorders of speech or language, the injuries produced by war created the "critical mass" of patients requiring the services of rehabilitation professionals needed to hasten the development of these professions.

Journals in the area of speech-language pathology (variously known through the years, and in various regions, as "speech correction," "speech therapy," "phoniatrics," and "logopaedics") have been published since that time. One of the first major English-language speech-language pathology journals was *The*

Journal of Speech Disorders, which began publication in 1936 under the auspices of The American Speech Correction Association (the forerunner of The American Speech-Language-Hearing Association [ASHA]). Many articles in the early issues had no list of references. Those that did made reference to the few speech pathology journals that existed at the time, but in addition, writers from that period relied heavily on the literature of psychology and the medical sciences.

Since that time the number of speech-language pathology journals has grown, and it would seem reasonable to believe that among the current titles there would be a solid core of journals upon which speech-language pathology researchers and clinicians would rely. As reasonable as it may seem to believe this, however, such a supposition has until now only been conjecture. Although a number of bibliometric studies with the purpose of identifying core journals have been conducted in other rehabilitation fields, namely occupational therapy [2-4], physical therapy [5] and rehabilitation [6, 7], none in the area of speech-language pathology have been recorded.

This study will attempt to fill this gap in knowledge

by determining, through citation analysis, the core journals in the area of speech-language pathology, and, subsequently, to determine which indexing and abstracting services provide the best access to articles in these journals. It is hoped that this information will prove useful to those responsible for creating a collection in support of a speech-language pathology department or professional program, as well as to those providing reference service and information literacy programs to speech-language pathology practitioners, students, and scholars. It is also hoped that this information will be informative to speech-language pathology researchers and practitioners who are interested in knowing which of the journals they have at their disposal are most widely read and cited by their colleagues.

METHODOLOGY

Representative journals in the area of speech-language pathology were chosen, and citations were analyzed for publication type, year of publication, and title of journal cited. The methodology established for the MLA Nursing and Allied Health Resources Section Mapping the Literature of Allied Health project was followed. For citations of journals, titles were listed in descending order by number of times the journal was cited. Bradford's Law of Scattering was then applied to this list and three "zones" of journals identified. Finally, indexing and abstracting services were consulted to determine where all journals falling into Zones 1 and 2 were indexed.

Journal selection

The Brandon and Hill "Selected list of books and journals in allied health" [8] was consulted as the first step in identifying those journals most representative of the field of speech-language pathology. Of the four journals listed (*American Journal of Speech-Language Pathology*; *Clinics in Communication Disorders*; *American Journal of Audiology*; and *Journal of the American Academy of Audiology*), only the first was chosen for inclusion in this study. *American Journal of Audiology* and *Journal of the American Academy of Audiology* were rejected because their focus was solely audiology. While a basic knowledge of audiology is required of speech-language pathologists, and it is not unknown for a practitioner to be certified as both an audiologist and a speech-language pathologist, the norm is for a practitioner to be certified in one or the other of these fields. The course of studies for each field is different in many fundamental ways, and so too is the literature at the base of each discipline. An accurate picture of the literature of speech-language pathology would therefore be obtained only by analyzing that field separately from the literature of audiology.

Clinics in Communication Disorders was rejected for two main reasons: the journal was only published for only four years (1991 through 1994) before it was absorbed by *The Journal of Communications Disorders*, and in a search of SERLINE and the WorldCat on OCLC First Search, this journal was held in far fewer libraries than many other speech-language pathology journals, in particular the ones chosen for this study. The following four journals were included in the study:

- *American Journal of Speech-Language Pathology* (Rockville, MD: American Speech-Language-Hearing Association), v. 1-, 1991-. This title was included because it is one of several official publications of the American Speech-Language-Hearing Association (ASHA) of the United States. Its *raison d'être* is to provide to readers "a publication guided by the principle of direct clinical relevance" [9].

- *Journal of Speech and Hearing Research* (Rockville, MD: American Speech-Language-Hearing Association), v. 1-, 1958-. This ASHA journal has an academic and research orientation. In 1991, *Journal of Speech and Hearing Research* (JSHR) absorbed *Journal of Speech and Hearing Disorders* (JSHD), another leading ASHA journal. JSHD was published between 1948 and 1990. It had been known as *Journal of Speech Disorders* between 1936 and 1947, and was published by ASHA's forerunner, the American Speech Correction Association (Danville, Illinois).

- *British Journal of Disorders of Communication / European Journal of Disorders of Communication* (London: College of Speech Therapists), v. 1-, 1966-. This is the official journal of the British College of Speech Therapists. The journal changed its name in 1992 and became *The European Journal of Disorders of Communication*, and is still published by The College of Speech and Language Therapists. The journal was known as *Speech Pathology and Therapy* from 1958 to 1965, and was published by Pitman Medical Publishing Company on behalf of The College of Speech Therapists.

- *Journal of Communication Disorders* (New York: Elsevier Science), v. 1-, 1967-. *Journal of Communication Disorders* was chosen because of its general nature and the fact that it is a journal commonly held in health sciences libraries. As noted above, it absorbed *Clinics in Communications Disorders* in 1995.

Other titles that were considered but rejected were *Topics in Language Disorders*, *Journal of Fluency Disorders*, *Language Speech and Hearing Services in Schools* and *Journal of Speech-Language Pathology and Audiology*. The first three titles were rejected because they covered a specialist area within the field of speech-language pathology, rather than covering a general range of topics within the discipline. The last title was originally considered because it is the official journal of the Canadian Association of Speech-Language Pathologists and Audiologists and the country of origin of the author. However, one of the criteria for inclusion in this study

was that the journal reach a large audience of English-speaking speech-language pathologists or students and scholars in the field. Because the population of Canada—and, correspondingly, the population of Canadian speech-language pathologists—is markedly low in comparison to the United States or the United Kingdom, and because this journal has not established a reputation that would garner it much readership outside of Canada, *Journal of Speech-Language Pathology and Audiology* was not selected to be among the journals scanned. The same would hold true of other general speech-language pathology journals produced in other English-speaking countries (e.g., Australia, New Zealand, South Africa).

Citation analysis

All citations in the 1991 through 1993 issues of the journals selected were counted and the following identified:

- type of publication:
 - *journal
 - *monograph (books, dissertations, theses, proceedings)
 - *miscellaneous (tests, computer programs, equipment standards, personal communications, etc.)
- year of publication
- for journal citations: title of journal in which item was published

Citations from all publications containing references (including articles, letters to the editor, editorials, and commentaries) were counted. Publications other than journal articles were included because, even though they may not be full articles, the citations do reflect literature consulted by the readership of the journal. In the final counting of citations per journal title, numbers were cumulated for journals whose names had changed over the course of the years, and were listed under the most current title of that journal. This was done in order to reflect the true impact of that journal.

When the count was finished, the journals were listed in descending order by number of citations and Bradford's Law of Scattering [10] was applied to identify the core journals. Bradford's law states that journals ordered by number of citations received can be grouped into categories such that each category will contain those journals from which one-third of the total number of citations were identified. The top category will contain the smallest number of journal titles, but the number of citations to each title in this category should be higher than citations to journals in the other two categories. Each of the two succeeding categories will contain more journal titles, but each title will receive fewer citations than the preceding one. The journals in the top category are said to be the most "productive" journals for the subject area in question.

Table 1
Cited format types and frequency of citations

Cited format type	Total no. citations	Frequency of citations (%)
Journal articles	11,145	63.1
Monographs	5,269	29.8
Miscellaneous	1,258	7.1
Total	17,672	100.0

Identification of indexing and abstracting coverage of "productive" journals

Once the citation counting was finished and the core journals were identified, the major health and social sciences indexing and abstracting services were consulted to determine coverage of the core journals. A five-category ranking was used to indicate the level of coverage given to a journal by a particular indexing service during the year 1994. The exception was Current Contents; its coverage was based on its 1996 journal coverage list. Because of its policy of including the entire table of contents of each journal it covers, "complete coverage" of titles is a given. In order to compare coverage of journals between indexing services, a scoring system was devised whereby the numbers denoting coverage ranking for each journal were added up for each indexing service to arrive at an "indexing coverage score." (See the project overview for more detailed information on the levels of coverage ranking and the scoring system, as well as on the methodology used to arrive at them.)

The following services were included: MEDLINE, EMBASE, PsycINFO, Linguistics and Language Behavior Abstracts (LLBA), ERIC, and Current Contents (in its entirety, as well as the "Social and Behavioral Sciences," "Life Sciences," and "Clinical Medicine" sections). The print abstracting service *DSH Abstracts*, v.1-26, 1960-1985 published by Deafness, Speech and Hearing Publications (founded by ASHA and Gallaudet College) served as a comprehensive resource for the core journals in the speech-language pathology subject area. Unfortunately, this abstracting service no longer exists.

RESULTS

The citations from 655 articles from the four journals were counted. *American Journal of Speech-Language Pathology* yielded 78 publications with references (1,967 total citations); *British Journal of Disorders of Communication* 86 (1,902 citations); *Journal of Communication Disorders* 63 (1,608 citations); and *Journal of Speech and Hearing Research* 428 (12,195 citations). Table 1 presents the breakdown of citations by publication type.

The 11,145 journal citations counted originated from 881 different journal titles. The journals were listed in

Table 2
Cited format types by publication year periods

Publication year	Journal articles (%)	Monographs (%)	Miscellaneous (%)	Total citations (%)
1990-93*	13.4	9.9	12.5	12.3
1980-89	56.0	56.6	50.7	55.8
1970-79	21.1	23.4	21.8	21.8
1960-69	6.3	6.5	14.0	6.9
Pre-1960	3.2	3.6	1.0	3.2

* Includes materials in press.

descending order by the number of citations each title received. Bradford's Law of Scattering was applied, and the journals were divided into three "zones." Zone 1, representing the most productive third of the total citations, contained three titles or 0.3% of cited journals. Zone 2, representing the next most productive third of total citations, contained 38 titles or 4.3% of cited journals. Zone 3, representing the least productive third of total citations, contained 840 titles or 95.4% of cited journals. In other words, approximately two-thirds of all cited references were contained in only 4.7% of the cited journals. Table 3 lists Zone 1 and 2 journals and indicates the indexing and abstracting coverage for these journals. (A table of Zone 3 journals is not included here because of its size, but is available from the author.)

Publication date of citations

Citations appearing in the speech-language pathology literature tend not to be exceedingly current. Only 12.3% of material cited (independent of publication type) was four years old or younger. The journal literature was slightly more current than the monographic and miscellaneous literature. Table 2 presents the breakdown of citations by publication year.

DISCUSSION

Publication type

The majority of references cited in the speech-language pathology literature were to journal articles; almost two-thirds (63.1%) of items cited were from the journal literature. Of the remaining references cited, 29.8% were to monographs, and 7.1% to miscellaneous items. Among the miscellaneous items were numerous citations of psychological, developmental, and speech-language tests and scales.

Core journals

As the results indicate, there is a very small core of journals in the area of speech-language pathology. Three titles represent a third of the citations appearing in the four journals scanned; thirty-eight represent an-

other third; and 840 represent the final third. One of the three Zone 1 titles, *Journal of Speech and Hearing Disorders*, is no longer being published, having been absorbed by *Journal of Speech and Hearing Research* in 1991. Determining whether this will result in *Journal of Speech and Hearing Research* having even more of an impact on the discipline in the years to come or whether the impact will shift to ASHA's new clinical journal, *American Journal of Speech-Language Pathology*, will require further research.

It was not a surprise to find that the two most productive journals cited, *Journal of Speech and Hearing Research* and *Journal of Speech and Hearing Disorders*, deal specifically with speech-language pathology. The two journals are (or were, in the case of *Journal of Speech and Hearing Disorders*) published by ASHA, and the vast majority of those publishing in the journal are speech-language pathologists or academics in the speech-language pathology and communication disorders field. *Journal of the Acoustical Society of America* is the "odd one out," not being a speech-language pathology journal, but an acoustics journal published by the American Institute of Physics on behalf of the Acoustical Society of America. It is not surprising that an acoustics journal would find its place among the core journals of speech-language pathology, because the study of acoustics brings much to bear on the studies of speech production and hearing, but its ranking among the top three journals was not expected. One question that surfaces is whether this journal might be of greater importance to those writing on hearing topics than those writing on speech-language topics. All four journals scanned included articles that focused on hearing disorders and speech-language disorders of the hearing impaired, with *Journal of Speech and Hearing Research*, as reflected by its title, containing the highest number of articles on hearing disorders.

Database coverage

The discipline of speech-language pathology is covered well by existing indexing and abstracting databases, although among these databases none provides complete coverage of all journals from Zones 1 and 2. According to the scoring method developed for this project (see the project overview for more information about scoring), the databases surveyed scored as follows in descending order by strength of coverage: Current Contents (all sections together), 185; MEDLINE, 153; PsycINFO, 111; Current Contents/Social and Behavioral Sciences, 105; EMBASE, 101; Current Contents/Life Sciences, 90; LLBA, 64; Current Contents/Clinical Medicine, 55; and ERIC, 48.

The scores indicate that Current Contents provides the best coverage of Zone 1 and 2 journals. Only ASHA, *Journal of Phonetics*, and *Seminars in Speech and Language* are not covered. Access to certain Current Contents sec-

Table 3
Distribution and indexing coverage of cited journals in Zones 1 and 2

Cited journal	No. of citations	EM	ERIC	LLBA	MED	Psyc	CC*	SB*	LS*	CM*
Zone 1 (3 titles, 3,666 citations)										
1. J Speech Hear Res	1,607	4	2	5	5	3	5	5	0	0
2. J Speech Hear Disord	1,063	5	3	0	4	3	n.a.†	n.a.†	n.a.†	n.a.†
3. J Acoust Soc Am	996	5	0	0	2	1	5	0	5	0
Zone 2 (38 titles, 3,796 citations)										
4. J Fluency Disord	233	3	0	5	0	5	5	5	0	0
5. Lang Sp Hear Services Schools	220	0	5	4	0	4	5	5	0	0
6. Brain Lang	219	4	0	5	5	3	5	5	5	0
7. Br J Disord Commun (cont'd by Eur J Disord Commun)	184	5	0	5	5	4	5	5	0	0
8. Ear Hear	177	4	0	0	5	0	5	0	0	5
9. J Child Lang	173	0	3	5	5	5	5	5	0	0
10. Child Dev	164	0	4	1	4	5	5	5	0	0
11. J Commun Disord	156	3	4	5	5	5	5	5	0	0
12. ASHA	131	0	0	0	5	0	0	0	0	0
13. Folia Phoniatri (cont'd by Folia Phoniatri Logop)	121	0	0	0	5	0	5	5	0	0
14. J Phonetics	113	0	0	5	0	2	0	0	0	0
15. Arch Otolaryngol Head Neck Surg	95	4	0	0	5	0	5	0	5	5
16. Audiology	89	4	0	0	5	2	5	0	5	0
17. Ann Otol Rhinol Laryngol	85	5	0	0	4	0	5	0	5	5
18. Percept Psychophys	84	0	0	1	5	5	5	5	0	0
19. Top Lang Disord	82	0	4	4	0	5	5	5	0	0
20. Appl Psycholinguistics	78	0	5	5	0	5	5	5	0	0
21. Neuropsychologia	75	4	0	0	4	5	5	5	5	0
22. Acta Otolaryngol	70	4	0	0	5	0	5	0	5	5
23. J Learn Disabil	70	0	5	2	5	5	5	5	0	0
24. Brain	68	5	0	1	5	2	5	0	5	5
25. Cleft Palate Craniofac J	68	4	0	0	5	0	5	0	5	5
26. Pediatrics	68	4	1	0	5	0	5	0	5	5
27. Sem Speech Lang	68	0	0	0	5‡	0	0	0	0	0
28. Dev Med Child Neurol	66	4	0	0	5	2	5	0	5	5
29. Cognition	66	0	2	3	4	5	5	5	0	0
30. Cortex	63	5	0	0	5	5	5	0	5	0
31. J Exp Child Psychol	63	0	5	0	3	5	5	5	0	0
32. Hear Res	62	4	0	0	5	0	5	0	5	0
33. Dev Psychol	61	0	5	0	0	5	5	5	0	0
34. Psychol Bull	59	0	0	0	3	5	5	5	5	0
35. J Exp Psychol	59	0	0	0	1	5	5	5	5	0
36. Neurology	58	4	0	1	5	1	5	0	5	5
37. Laryngoscope	56	4	0	0	5	0	5	0	0	5
38. Scand Audiol	55	5	0	1	5	2	5	0	5	0
39. Clin Linguistics Phonet	54	4	0	5	0	0	5	5	0	0
40. J Neurol Neurosurg Psychiatr	54	4	0	0	5	2	5	0	5	5
41. Percept Mot Skills	53	0	0	1	4	5	5	5	0	0
Total indexing coverage score	101	101	48	64	153	111	185	105	90	55

Indexing coverage scale: 5 (95%–100%); 4 (75%–94%); 3 (50%–74%); 2 (25%–49%); 1 (1%–24%); 0 (<1%).

* CC = Current Contents, complete database; SB = CC/Social and Behavioral Sciences; LS = CC/Life Sciences; CM = CC/Clinical Sciences.

† JSHD was absorbed by JSHR in 1991.

‡ MEDLINE began cover-to-cover indexing of Sem Speech Lang with issue 16(1), 1995.

tions, rather than the entire database, will require three different searches. Other limitations of Current Contents include a requirement to augment its searches through other databases to provide more retrospective coverage, and a lack of controlled vocabulary that makes it more difficult to ensure complete retrieval when performing subject searches. For its intended purpose of providing access to very *current* material not yet available through other indexing services, though, Current Contents does an excellent job of covering the core journals of speech-language pathology if the

searcher has access to either the full database or the Social and Behavioral Sciences, Life Sciences, and Clinical Medicine sections. For the benefit of individuals without access to the full database, a comparison of the strengths of the other databases follows.

The database scoring system indicates the strength of coverage only in terms of number of journals indexed and proportion of articles indexed, and does not indicate the specific gaps in the coverage of an index by identifying the journals that did not receive coverage, or received only incomplete coverage. To analyze

gaps in coverage, it is necessary to consult the indexing table (Table 3) to determine which journals are not covered, or are inadequately covered, by the indexing service receiving the highest score, and then determine whether the gaps are filled by other indexing services. If Current Contents is left out of the discussion because of the reasons mentioned above, a scan of the coverage of the journals listed in Zones 1 and 2 indicates that access to MEDLINE and PsycINFO would provide fairly complete coverage of the core speech-language pathology journals. The only three journals listed in Zones 1 and 2 *not* covered completely by one of these indexes (other than the full Current Contents database) are *Journal of the Acoustical Society of America* (covered by EMBASE); *Language, Speech and Hearing Services in Schools* (covered by LLBA and ERIC); and *Clinical Linguistics and Phonetics* (covered by EMBASE and LLBA).

EMBASE provides good coverage of Zone 1 and 2 journals. In fact, when Current Contents is excluded, only EMBASE provides complete coverage of *Journal of the Acoustical Society of America*, the third most frequently cited journal. One thing that should be noted is that when the lists of journals indexed by EMBASE and MEDLINE were consulted, an indication was given that "cover-to-cover" indexing for certain journals was provided. However, when searches were run by journal title and limited to the publication year 1994, a discrepancy in the number of items retrieved for each title was noted very frequently between EMBASE and MEDLINE. In most cases—but certainly not all—MEDLINE would retrieve a greater number of items than EMBASE. In Table 3, any journal listed under MEDLINE and EMBASE which was given either a 5 or a 4 ranking was claimed by the database producers to have "cover-to-cover" indexing.

LLBA and ERIC do not provide nearly as good coverage of the journals that address speech-language pathology specifically or are oriented toward the health sciences as the other databases. However, they did provide complete coverage for 1994 of two journals not covered completely by MEDLINE, EMBASE, or PsycINFO, namely *Language, Speech and Hearing Services in Schools* (covered completely by ERIC) and *Journal of Phonetics* (covered completely by LLBA).

CONCLUSION

The results of this study indicate that there is a fairly small core of speech-language pathology journals, and that speech-language pathology authors draw very heavily from the literature of their own field. However,

while they do rely heavily on publications from their own field, they do not confine themselves to these publications. A review of the journals listed in Zones 1 and 2 indicates that literature cited originated in several other fields, most notably acoustics, psychology, audiology, linguistics, otolaryngology, and neurology. Another result of this study was the discovery that journals used heavily by speech-language pathologists are provided fairly good coverage by the major indexing and abstracting services available in most health sciences libraries.

An unexpected finding of this study was the discrepancy of retrieval noted between indexing services that claim "cover-to-cover" indexing of certain journals. It was not one of the objectives of this study to determine an explanation for this occurrence, but initial investigation revealed different practices in handling errata between MEDLINE and EMBASE (e.g., MEDLINE includes errata with the original records; EMBASE provides a separate citation for each erratum). There could well be other explanations for the discrepancy in retrieval that have less to do with completeness of coverage than with differences in indexing practices, but further systematic analysis will have to be done to determine this.

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Received September 1996; accepted February 1997