Research Collaboration between Clinical Psychology Vis-À-Vis Speech, Language and Hearing in India

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**ABSTRACT**

This study explores the nature or extent of research collaboration between clinical psychology vis-à-vis speech, language and hearing in India. It covers a purposive sample of 90 from 710 published research articles on identified topics of psychosocial issues that appeared in all previous volumes for equal number of years of an indexed national journal. A collaboration index based on frequency, trend or pattern of authorships for research contributions within the identified timelines and qualitative perusal of common research concerns between the two disciplines was also undertaken. Results show that two-thirds of surveyed research papers are published by single authors (67.77%) leaving <1% of the publications by 3-4 authors. While the frequency of 1 paper by 1 author is high with low collaborative indices (CI: 0.322), a perusal of mutual research concerns show that the most frequently studied topics are stuttering, prevalence data for communication disorders, test development, revalidation and norm revision. The merits, demerits and common barriers in inter-disciplinary collaboration is discussed before concluding on the need for evolving a problem focused multi-authorship agenda for research in the near future.

**KeyTerms:** JAIISH; Clinical Psychology; Speech, Language & Hearing; Collaboration Index

**INTRODUCTION**

Historically, clinical psychology vis-à-vis speech, language and hearing have shared journey in trying to understand human communication behavior (Myklebust). In recent years, clinical psychology has been relegated as allied subject. Skeptics have asked if it is apt to use the term ‘psychology of deaf’ as though such affected people were intrinsically inferior or made of different stuff (Maller & Lane). Until now, no appraisal has taken place on just how much or how effective the alliance has been between the two fields.

Empirical research is increasingly recognizing the virtue of inter-disciplinary collaboration. It is expressed by names like ‘Scientometric’, ‘Bibliometrics’, ‘Librametrics’, ‘Informatics’ or ‘Multidisciplinary’. Objective measures are used to determine the nature, degree, extent, or strength of such collaboration. Authorship counts in books, projects, articles in professional journals and in laboratories are taken as visible measures of research contribution for any given discipline. Single authorship is viewed as stand alone. Multiple authorships in the same profession indicate team work and those with other professions are deemed true collaboration (Clarke). Comparison between single and multiple-authorship in research publications has been attempted (Stefaniak) in bibliometric studies as ‘coefficient’ or single measure to express the degree of collaboration between disciplines (Ajiferuke et al.). Luukkonen, Persson & Sivertsen drew attention to cognitive, social, historical, geopolitical, and economic factors in international scientific collaboration. Collaboration Index (CI) is reported for disciplines like medical sciences (Kundra), anthropology (Lassiter), business management (Rakhi), educational technology (Guo, Zhang & Guo) and others.

A scientometric study on collaborative research in subfields of psychology in India, as reflected in Psyclit CD-ROM Database between 1974-1998 covering more than 8000 publications, found more multi-authored (69%) than single-authored (31%) papers with increasing trend over years (Sangam). The highest collaboration was found in the subfield of psychometrics and least in general psychology. In the themes on communication system, the share of multi-authored papers...
(64%) was high for within department or intra-organization collaboration (80%) than with outer international agencies (<5%). Kolle & Gaddimani analyzed the annual distribution, types of articles, most contributing authors, organizations and country for 300 articles published in ‘The Indian Journal of Social Work’ between 2004 and 2013\(^1\). Another recent study found local rather than inter-institutional domestic and international collaboration in the field of speech, language and hearing science(Ramkumar, Narayanamany & Rao)\(^2\).

Given the sparse literature on this theme, there is need to measure research collaboration between psychology vis-à-vis the field of speech, language and hearing. This is more so since the two disciplines have co-existed for more than four decades at least in the investigating institution and few other similar institutions across the country. Has there been any meaningful research contribution made by clinical psychologists to the field of speech, language and hearing? If so, what is the nature, content, frequency, or depth of such mutual explorations? Has there been single or joint-author contribution across discipline boundaries? If so, has such collaboration been meaningfully or objectively measured and expressed? It is anticipated that this kind of enquiry may provide a needed bench mark, allow self-audit or stock taking for benefit of both the disciplines. Further, the derived collaboration indices, if any, can help in giving direction to research in the future. Therefore, it was the generic aim of this enquiry to attempt an objective observable and measurable estimate of the research contribution and collaboration between the disciplines of clinical psychology vis-à-vis speech, language and hearing in India as reflected through publication of scientific articles in an indexed national journal dedicated for that purpose.

**OBJECTIVES**

- To enlist research papers on topics of inter-disciplinary study between clinical psychology vis-à-vis speech language and hearing published in JAIISH.
- To attempt frequency count, chronology and topic based classification of authorships for the enlisted research papers.
- To calculate the objective measure ‘Collaboration Index’ between the disciplines of clinical psychology vis-à-vis speech language and hearing.

**METHODOLOGY**

This study uses a longitudinal design for enlisting a purposive sample of research articles published in all back volumes of an indexed national journal. A key term used in this study is ‘Collaboration Index’ (CI), which refers to the tangible objective numerical measure of partnership or mutual involvement between two or more academic fields of study based on frequency counts of co-authorship (Ausberg)\(^3\).

**Sample**

The investigating agency for this study is an autonomous body under the Ministry of Health and Family Welfare, Government of India and is located in Myso, Karnataka. Established in 1966, the institute is a unique platform for confluence of inter-disciplinary professionals, such as, audiology, speech languages sciences and pathology, ENT, clinical psychology, linguistics, special education and others. The typical areas for research especially related to psychology are early identification, diagnosis, prevention and intervention, developmental assessment, speech-speaker recognition, development of normative speech data across various Indian languages, family studies, and others. The target clinical populations addressed include childhood developmental delays or disorders, fluency disorders, hearing loss, vertigo, tinnitus, sequel of stroke and aphasia, cognitive and neurodegenerative disorders, etc.

Data units for this study were drawn from archives of JAIISH (Journals of All India Institute of Speech and Hearing), the official peer-reviewed and indexed journal publication from the institute. The annual journal publishes original and review articles on assessment, diagnosis and management of speech, language and hearing disorders. Other Indian Journals in the field of Speech and Hearing, though excluded from the purview of this study are: The Journal of Indian Speech and Hearing Association, Journal of Hearing Aids, Journal of Rehabilitation Council of India, and Language in India. Enlisted research articles published in JAIISH cover topics on psycho-social aspects of target clinical populations like fluency disorders, developmental and intellectual disabilities, stroke, trauma and neurodegenerative disorders, oral-facial anomalies, hearing impairments, functional disorders, and others. Information on dissertation abstracts, news or notes, presentation in seminars, conferences and symposium, completed research projects, book reviews and letters to editors although present as text in the journal were excluded. Doctoral dissertations, research papers and/or books authored by institute staff published in other Indian or International journals were excluded. Contributions falling outside the theme or topic range of psychosocial aspects were excluded.

**Tools**

In this study, ‘Collaboration Index’ (CI) is calculated as single measure for ascertaining the degree or extent of research collaboration between two disciplines. It is simply the mean number of authors per paper. If \(j\) is number of co-authored papers appearing in a discipline, \(N\) is total number of papers in the discipline over the same interval, \(k\) is the greatest number of authors per paper in a discipline. Single author papers are given zero weight. The degree of collaboration among authors is the ratio of the number of collaborative publications in the total number of publications published in a discipline during a certain period of time. It is calculated by the acknowledged mathematical formula (Subramanyam)\(^4\):

\[
CI = \frac{N_m}{N_n}, N_s
\]

Where,

- \(N_m\) = Number of multiple authors during a specific period in a discipline
- \(N_n\) = Number of single authored works in a discipline during a given period of time
- \(N_s\) = Number of single authored works in a discipline during a given period of time
- \(CI\) = Collaboration Index

Apart from this measurement, frequency counts and percentage calculations of authorship as well as topics of research based on timelines were also used during data compilation.

**Procedure**

\(N\)-index is defined as a researcher’s total number of publications. The scientific impact of publications by an individual is measured
by using bibliometrics like H-index which takes into account the number of citations received by it. However, both are insufficient measures when it comes to appraisal of collaborative research (Bornmann & Daniel)\textsuperscript{16}. An axiomatic approach to derive measure of collaboration involves assigning relative credits to co-authors of a given paper. The weighted sums of such measurements are denoted as A-index. If \( n \) denotes the total number of co-authors and if every co-author is assumed as having made an equal contribution, then A-index may be taken as sum of 1/\( n \) for every co-author. This credit system is fine when there are few co-authors. However, if there are more than six co-authors, credits cannot be simply transferred from higher ranked co-authors and distributed to lower ranked authors. Ideally, the first and second author must secure at least twice as much credit than say the seventh or later authors (Stallings et al.)\textsuperscript{17}.

In this study, all the published research articles appearing in all back volumes of the chosen indexed national journal covering the period of 34 years and equal number of volumes between 1970-1994 and 2007-2015 were enlisted. Computer entries were carried out to identify and to sort out research papers related to topics on psychosocial themes between the disciplines of clinical psychology vis-à-vis speech, language and hearing. Following this, bibliometrics were applied to calculate author-wise, topic based as well as year related contributions of scientific articles in the journal.

**Data Analysis**

- **Frequency Distribution on Authorship across Time**

This section is presented sequentially beginning with flow diagram (Fig. 1) on calculation of CI. This is followed by report on frequency distribution on authorship by years (Table 1) and topics of research concern over time (Table 2).

![Flow Diagram on Degree of Research Collaboration between Clinical Psychology & Speech Language and Hearing](image)

Fig. 1: Flow Diagram on Degree of Research Collaboration between Clinical Psychology & Speech Language and Hearing

On the whole, there are 90 research articles related to topics or themes on psychosocial issues between clinical psychology vis-à-vis speech, language and hearing out of 710 articles appearing across 34 volumes in equal number of years of the journal. This implies that only 12.68% of research articles per issue covered topics or themes related to psychology. With respect to number of authors, almost two-thirds of the publications are made by single authors (N: 61 out of 90; 67.77%). Among the remaining, 15 research articles are published by 2 author combinations (N: 15 out of 90; 16.67%) and 7 research articles each by 3 and 4 author groups (N: 7 out of 90; 0.08%). Evidently, single author research is overwhelmingly higher than joint, multiple or collaborative research. Thereby, the calculated CI of 0.322 disproves first hypothesis that there exists teamwork between the field of clinical psychology vis-à-vis speech, language and hearing going by the publication of research papers in all back volumes of JAIISH. Analysis of frequency count on authorship by years or across time (Table 1) shows preponderance of single author publication in the indexed national journal, both, during early decades and after turn of the millennium.
Frequencies Distribution on Themes of Research Concern and Authorships Across Time

These findings are affirmed by analysis of frequency counts on authorship by years based on identified topics or themes of research (Table 2). Most publications in the journal reflect interest or concerns on psychosocial problems of persons with fluency disorders (N: 21 out of 90; 23.33%). This is followed by reports on prevalence for various speech and hearing disorders (N: 11 out of 90; 12.22%), research papers on standardisation of tests, revalidation and development of norms (N: 10 out of 90; 11.11%). Research topics linked to laboratory controlled experimental studies and highlighting unusual case reports are minimum (<1%). It is seen that concern on personality and psychological characteristics of persons with communication disorders is on the wane (N: 9 out of 90; 10%). All these observations disprove the second hypothesis that there is collaboration for topics related to psycho-social aspects between clinical psychology vis-à-vis speech, language and hearing in the published research papers in all back volumes of the indexed national journal.

Table 2: Frequency Distribution on Themes of Research Concern and Authorships Across Time

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<td>Total</td>
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Table: 1: Frequency Distribution on Authorship across Time

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X²: 16.1; DF: 3; p < 0.001

A content wise perusal of research topics reflected by the titles of publications show that psychosocial aspects of fluency disorders are addressed along with studies on its prevalence, public awareness, personality, age or gender correlates, case reports, mental test results, and individual or group based treatments. The reports on prevalence cover data on infant screening, occurrence of speech and hearing problems in rural, urban or school population. Others have covered socio-economic problems in persons with communication disorders, survey of voice related problems in teachers, reading abilities in primary school children, as well as information on etiological and therapeutic searches by netizen parents/caregivers of children on the autism spectrum. Development, revalidation and revision of norm have been attempted ontotypical or clinical populations for psychological tests, such as, Seguin Form Board, Raven’s Progressive Matrices, Linguistic Profile Test, and Reading or Speech Intelligibility Tests. Treatment focussed research has targeted use of behaviour based techniques for combating generalized anxiety, nocturnal enuresis and the IQ+ program for stimulation of children with intellectual disabilities. A few offbeat publications based on evaluation research in recent years have paid attention towards issues like consumer satisfaction index, appraisal of vocal hygiene awareness program in professional voice users, finding out the relative merits and demerits of conducting Diploma Level Long Term Training Programs through face-to-face vis-à-vis virtual modes, as well as undertaking access audit of public service facilities.

DISCUSSION

Collaboration between professional disciplines is shown to improve scientific productivity (Katsouyanni, Lee & Bozeman). Others have contested this observation (Abramo, D’Angelo & Di Costa, Duque et al.). Collaboration takes place in various forms. It maybe between industry-university (Lee), at individual level (Melin), or by involving disciplines engaged in clinical work (Abreu et al.). Many collaborative tools are available, such as, text, voice or video which depending on one or many stakeholders are addressed. It can happen through sharing emails, documents, discussion forums, wikis, blogs, social networking, social videos, streaming videos, conferencing, voicemails, personal or group telepresence.

In seeking to determine the nature and extent of research collaboration between clinical psychology vis-à-vis speech, language and hearing in India, this paper has found that the calculated CI is dismally low. There are more individual academic authorships in the journal reviewed. One-paper-one-author model may work well for distributing credit. All branches of modern science, except humanities, social and behaviour sciences, have abdicated the sole authorship approach in favour of multiple authorships (Greene). Traditionally, scientists were judged by the number of papers they published. Later, it was by the impact of those papers. The former is an estimate of quantity and the latter of quality. With multiple authors, when each author claims each paper and each citation as own, papers and citations get magically multiplied by the number of authors. Irrespective of whether one makes a major or minor contribution, everyone gets equal credit as multiple authors (Eom).

Notwithstanding this, multi-authorships indicate a healthy research collaboration if they occur across disciplines. The number of authorships per article is reportedly raising from mean of 3.5 to 4 authors (Pinter). Collaborative research has many benefits. It reduces the amount of time and effort needed for a publication. It increases operational efficiency, reduces risk of criticism or rejection and provides knowledge of what others are doing (Haque & Snyder). Among the demerits and barriers, collaborative research cannot exist when there is lack of understanding or trust between the partners, or when each of them is operating at different speed, or in varying time horizons, when they have their own conflict of interests, or share diverse views on copyrights, patency and/or intellectual property rights (Mc Cartney, Jones, Myers, Biordi & Shepherd).

An archaic report mentions high degree of collaboration between psychology and physiology of hearing (Stevens & Davis). However, no numerical indices are given. Descriptions of collaborative research areas at that time included attempts to
design, develop or standardize tests for common clinical populations (Vernon, Sullivan, Schulte, Anderson, Sisco), studies on sociological and psychological factors associated with hearing loss (Vernon) or conditions like tinnitus (Andersson, Hiller & Goebel, Andersson & Mc Kenna) or on their implications for treatment (Andersson & Lyttkens) were highlighted. Other themes have focused on aphasia (Jones & Weisman) and psychological predictors of audiological outcomes of multichannel cochlear implants (Knutsen). There are anecdotal reports on psychosomatic aspects of functional speech, language and hearing disorders (Mason, Knapp), psychological impacts or interventions for persons with cleft lip and palate or their families (Baker, Owens, Stern & Wilmot; Hunt, Burden, Hepper & Johnston; Turner et al.; Kapp-Simon; Pruzinsky)\(^{24,36,60,61}\). Collaboration is also happening between speech-language-hearing and neuropsychological assessment and rehabilitation (Constantinidou et al.; Wertheimer et al.; Sander et al.).

A few thematic joint authorships between psychology vis-à-vis speech, language and hearing professionals are also seen in the Indian scene. Examples include psychological aspects of persons affected by oral-facial deformities in native context (Venkatesan; Juneja & Juneja; Naram et al.; De Souza, Devare & Ganshani; Nagarajan, Savitha & Subramaniyan; Weatherly-White et al.).\(^{26,27,35,57}\) Other areas or clinical populations that have been typically addressed include prevalence (Batra, Motwani & Sagar), life events and adjustment patterns or treatments for voice related conditions (Venkatesan, Pushpavati & Purusotham; Vaidya & Vyas), case vignettes on psychogenic dysphonia (Sudhir, Chandra & Shivashankar). Still others have evinced interest in application of yoga in voice therapy (Moore), evaluation of occupational stress (Ravi, Gunjawate & Ayas), or quality of life (Ravi et al.) in audiologists practicing in India. A related paper proposes the scope of practice for clinical social work for speech, language and hearing (Venkatesan). Despite all this, unexplored research areas are: neuropsychology, cognition, language, and brain, voice and speech science.

In sum, all this brings to attention, the need for a purposive, planned and pre-mediated problem specific or focussed agenda for collaborative research encompassing multi-author involvement, transgressing disciplines, geographical boundaries and institutions. This is also an occasion and an opportunity to bridge the growing hiatus for developing that needed overarching framework, direction and momentum between both the involved disciplines.

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**References**


