Annotated Bibliography of Published and Unpublished work on Aphasia in India.

Editors -

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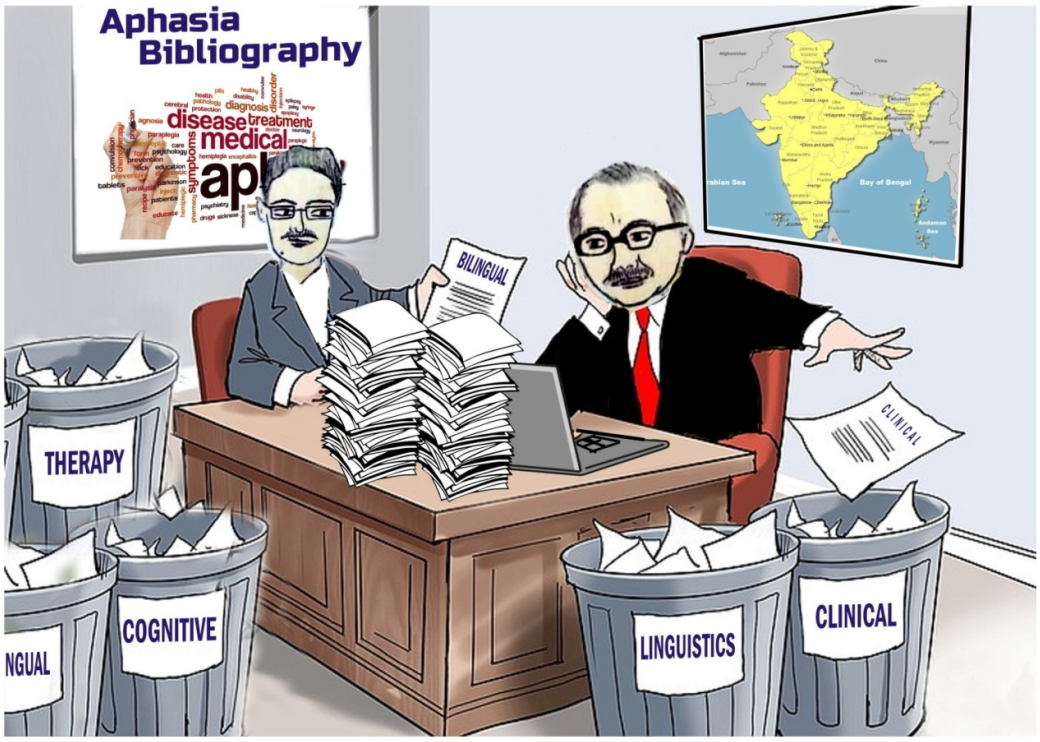

A DISCLAIMER, an APOLOGY, and an APPEAL

This is a preliminary version of ANNOTATED BIBLIOGRPHY OF APHASIOLOGY LITERATURE FROM INDIA. It is being uploaded in an interim, incomplete form with possibly many errors, a bit prematurely to coincide with online publication of the special supplement on Aphasia of Annals of Indian Academy of Neurology.

It is a work in progress. Frequent revisions at regular intervals will replace older versions

Our apologies for errors, inconsistencies, and omissions.

Please help us by:

a. Providing your full, corrected designation, postal address, and email
b. Providing citations for your publications in 'Aphasiology in India' in case theory have not been included in this compilation
c. Making correction in your citations to comply with Vancouver style.
d. Sharing and forwarding the news about this resource to scholars and authors about whom you know or think that they have published papers in the field of 'Aphasiology in India', or else they might be interested in it.
e. Sharing with us relevant citations whenever you happen to come across any publication, old or new, related to the theme of 'Aphasiology in India'
f. Any other suggestion(s) to improve the comprehensiveness and utility of Annotated Bibliography.

Dr Apoorva Pauranik **Dr Gopeekrishnan**

PREAMBLE

Aphasia continues to be a mindboggling entity to the researchers and clinicians worldwide. It has been and continues to be investigated by researchers from various scientific disciplines for last several decades. As a result, volumes of work have been published on aphasia every year in peer-reviewed, indexed journals. Yet, the curious minds are often bewildered by the seemingly small number of investigations appearing in such scientific periodicals from India, a country that homes one in every sixth of the world's population. In this context, we attempted to compile all possible research work (inclusive of both published and unpublished) carried out on aphasia in India that, in turn, would serve as a quick reference for the interested students, clinicians, and researchers.

This has been a labor of love for us since 2012, when we started compiling, tagging, classifying, and annotating all good and sundry aphasiology literature from India or pertaining to Indian Languages. The emphasis has been on publications in good journals, but we deliberately kept our bar low, to include as much work as possible. We knew that we would end up having many entries of dubious quality. We also included many unpublished works in the form of dissertations for Master of (Audiology &) Speech Language Pathology, PhD, MD., and abstracts of presentations at conferences, etc.. Brief editorial annotatinos have been appended with many, but not all entries.

Internet searches were run on Pubmed, Google Scholar and homepages of relevant Indian Journals. The keywords combinations for searches were 'Aphasia and India', 'Disorders of speech, communication', 'Neurolinguistics', 'Psycholinguistics', 'Dysarthria'. Hand search was also done on whatever resources were available in institutional and personal libraries of editors. We also contacted the eminent people who are associated with (research on) aphasia in the country and abroad to gather information on investigations into aphasia. Further, wherever the time and distance permitted, we made attempts to personally visit authors or institutions to garner the information and we thankfully acknowledge the cooperation and support extended by them to fulfill our aim.

This compilation has been, for easy reference, grouped into various categories. Each category has been denoted by an English alphabet. The readers may note that a given study may belong to more than one category (eg. A study on 'bilingual agrammatism' fits into 'Syntax' [G] & 'Bilingualism' [J]. An 'author index' has been created, wherein names of authors in alphabetical order are appended along with their contact information and the list of citations, authored by them. The 'author index' will be useful for future researchers and authors to request full text articles in which they are interested. Keywords are provided for many abstracts or citations. These keywords will be later accumulated in a 'subject index' to provide quick thematic references to the citations.

We are acutely aware of many short-comings and possible errors in this compilation. It would have been better if we got access to full texts or abstracts of as many citations as possible. Our desire to write annotations for all the important contributions has also not materialized fully. There may be typographical and factual errors too.

This collection of abstracts and annotations is fairly comprehensive, but we do not claim on its completeness as several authors remained either unreachable or unresponsive to our queries and requests. Despite all these shortcomings, we hope that with the awareness and appreciation about this work, more authors would come forward to contribute their work to enrich this collection and make it more complete for aphasia research in the future.

The Bibliography will be updated at regular intervals. Readers are requested to share citations about old and new publications with the editors, so that those may be added into it. Authors are requested to update and correct their contact information.

The very fact that a need was felt for such a compilation and also the fact that it resulted in this rather slim volume, is a sad commentary on quantity of aphasiological work in India. Quality records many more matrices. Yet it can be viewed from a different angle : *whether the glass is half empty or half full?* For many of us this publication would serve as a reminder, that the slate is not blank, it is to be written, and rewritten and to be improvised again and again. So much has been done of which we were not aware ! We have learned a lot in bargain.

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Overviews, Review articles, Status reports, theoretical essays,

A1. Bai, B.L. & Vasanta, D. (Eds). (1994). Language Development and Language disorders : Perspective from Indian Languages. New Delhi : Bahri Publications

Annotation ; This volume includes seventeen selected papers presented in the interdisciplinary National Seminar on Language Processes and Language disorders, organized by the Centre of Advanced Study in Linguistics, Osmania University, in February 1989. In addition, it includes an inaugural address by a Neurosurgeon and three Keynote papers by experts representing the fields of Applied linguistics. Speech-Language Pathology and Psychometry. These four invited papers deal with a range of theoretical issues in Applied Linguistics in general and Psycholinguistics and Neurolinguistics in particular. The papers in the first section discuss, with the help of empirical data, issues of language input, development of Language Structures, Language processing, reading comprehension and meta-linguistic skill in children speaking Hindi, Marathi. Kannada, Tamil, Telugu and Oriya languages. The papers in the second section deal with assessment of early communication skills in normal hearing children and development of morphosyntactic structures in the language of hard of hearing children, Cerebral palsied children and adult aphasics. One paper describes certain methodological issues in the study of sign language of deaf children. The wide range of topics covered and the rich empirical data discussed in various papers should make this volume useful for researchers and professionals in the concerned fields.

Keywords : Language Processing, Meta-linguistics, Morphosyntax.

A2 Devy GN. Introduction: Aphasia: the fate of the indigenous languages. InThe Language Loss of the Indigenous 2016 Feb 26 (pp. 19-24). Routledge India.

A3. Mohanty AK. Multilingualism and multiculturalism: The context of psycholinguistic research in India. Psychology in India: intersecting crossroads. 2003:35-53.

A4. Devy G. Between Diversity and Aphasia The Future of Languages in India. ALTERNATIVE FUTURES INDIA UNSHACKLED. 2017:411.

A5. Gante M., Evaluation of language breakdown in Aphasia : A psycholinguistic perspective, Language development and language disorders : Perspective from Indian Languages

Annotation : Mayadevi Gante describes the Psycho Linguistic Test for Aphasia (PLTA), originally designed for English speaking Aphasics. This test, based on the Information Structure model of language, assesses denotational, relational, sentential, and contextual aspects of

language within a functional framework. PLTA permits scoring of both verbal and nonverbal responses. This paper contains a rich description of some of the psychometric procedures of validating a language test. Referring to this paper, Tharu states that the scheme for scoring response in PLTA is laudable and that the discussion of the results illustrates very well the concern in clinical work to link test results to appropriate intervention programmes.

Keywords : Aphasia, Psycholinguistics, Assessment, Psychometry.

A6. Karanth P., Ahuja G.K., Nagaraj D., Pandit R & Shivashankar N., Cross cultural studies of Aphasia; Modern Trends in Neurology, 1991, Churchill Livingstone, New Delhi

Annotation : In this study, Dr. Pratibha Karanth and her colleagues use the rich clinical-empirical data obtained from a large group of people with stroke to question some of the intriguing issues related to language processing in the relatively unexplored languages and orthographies. With the evidence the authors garnered, the argument that crossed aphasia is more prevalent in bilinguals has been refuted. Further, a smaller multilingual group (n=15) of their corpus (n=123) showed parallel impairments in their L1 and L2, except one person, a medical doctor, who exhibited Wernicke's aphasia in illiterates subsequent to left hemispheric lesion, whereas no such trend was observed following right hemispheric lesion in illiterates, Finally, the authors emphasize on the need for investigations taking into account of the socio-cultural conditions of the population under consideration.

Keywords : Stroke, Aphasia, Orthography, Crossed Aphasia, Literacy, Socio-Cultural.

A7. Karanth, P (1988). Rehabilitation of Aphasics in India. New York; World Rehabilitation Fund ; New York

Annotation ; In the monograph 'Aphasia rehabilitation in the Asia and pacific region: Japan, China, India, Australia, and New Zealand' edited by Martha Taylor Sarno and Diane E Woods, Dr. Pratibha Karanth has given a comprehensive picture of the status and challenges of aphasia rehabilitation in India. She sets off the review by tracing the Indian studies on stroke and aphasia in the ancient phenomenal and classic writings on medicine such as 'Caraka Samhita', 'Susruta Samhita', and 'Astanga Hrydanani'. This section is immediately followed by the facilities available in the country for the rehabilitation of people with aphasia and she observes that most of the therapy centers were located in the urban areas. Dr. Karanth also gives a brief account of the personal available for rehabilitation and identifies the apparent lack of trained professionals to cater the need of people with communication disorders. Further, she provides a brief account of the status on funding for the medical expenses, the role of family in the rehabilitation, as well as certain socio-cultural factors in aphasia rehabilitation. Finally, she described the status of research on aphasia in the country and concludes by emphasizing on more in-depth investigations into aphasia in the Indian context.

Keywords : Aphasia, Rehabilitation, India, Communication.

A8 Karanth P., (2000) Multilingual/Multiliterate/Multicultural Studies of Aphasia - The Rosetta Stone of Neurolinguistics in the New Millennium; Brain and language, 71(1), 113-115

Annotation : Dr. Pratibha Karanth draws readers' attention to the lacunae in the contemporary research on aphasia and its kindred disorders (eg. alexias & agraphias) in speakers of non-alphabetic orthographies. The prevailing (cognitive) models of language processing have largely been derived from investigations on alphabetic (majorly, English) orthography. She considers it as a research bias and argues that the structure and nature of the orthography shall be taken into consideration. Similarly, she criticizes under the 'Differential cerebral representation frame work' or to 'forcefully fit' those into models derived majorly from English. Finally, she emphasizes on the possible potentials of investigation language processing in illiterate people with aphasia to advance our understanding on brain-language relationship.

Keywords : Aphasia, Alexia, Agraphia, Orthography.

A9. Karanth P. (2010), Linguistic profiling of language disorders. Indian journal of Applied Linguistics, 36 (1-2), 73-84

Abstract : The history of the evolution of language assessment for children and adults with language disorders in described briefly. This is followed by a discussion on language assessment of the clinical population with an emphasis on linguistic profiling, illustrated through the Linguistic Profile Test. Discourse analysis, in particular, in highlighted since this is an area that has not received adequate attention.

Keywords : Language assessment, linguistic profile discourse analysis

A10. Pauranik A. (1997) Review of Neurolinguistics. Papers presented at the South Asian Langauge Analysis XVIII Roundtable, New Delhi

Abstract : The purpose of this paper is two-fold. The first is to present a brief review of neurolinguistics with two types of emphasis : (i) How linguistic (through its applied role of neurolinguistics) has helped and can help neurologists, psychologists, cognitive neuroscientists and speech therapists. (ii) How aphasiolog000000000y and neurolinguistics can be of interest and use to pure linguists. The second purpose of the paper is to survey the current scene in India.

Keywords : aphasia, Neurolinguistics.

A11. Pauranik, A. (2007). Speech and Communication Disorders in Stroke : Beyond Routine. In V. Rajshekhar & K. B. Bhattacharya (Eds.), Progress in clinical neurosciences (Vol 22, pp 35-53). New Delhi Neurological Society of India.

Keywords : aphasia, Communication disorder, stroke, assessment,

A12. Pauranik, A. (2012), Aphasia : so much can be done by a physician. In S.Kamath (Ed.,) Medicine update (Vol.12, pp.543 -553).

Annotation : In a country with paucity of neurologists and speech language pathologist, internist are nodal in the care of persons with aphasia. The chapter is addressed to internists emphasizing epidemiological and humanitarian importance of aphasia. It cover bed side clinical examination and differential diagnosis in the context clinical examination and differential diagnosis in the context of systemic physical and psychosocial status. A role of investigations and pharmacotherapy is briefly referred to physicians are urged to play interactive role with speech therapists while having upto date knowledge about efficacy of speech language therapy in rehabilitation of persons with aphasia. Finally they are advised to become a bit of speech therapists themselves while counseling the patients and caregivers.

Keywords : Physician, Aphasia, Rehabilitation.

A13. Pauranik A. Aphasia assessment and therapy based on cognitive neuropsychology. In neuropsychology. In D. Banerji & A. Pauranik (Eds.), Progress in clinical neurosciences (Vol 26. Pp 248-273).

Volumes of work in clinical neurosciences are brought out by Neurological Society of India as a companion publication to annual Continuing Medical Education program. To target audience are neurologists, neurosurgeons and other neuroscientists in training and practice. The purposes of this chapter is to familiarize neurologists with terminology and concepts in cognitive neuropsychology. Various components of the language model in brain are described along with some clinical examples of effects of their disruption. A very selected and brief review is provided about speech therapy studies based on the model and directed at specific impairments. Advantages and limitations of new approaches and factors affecting outcome of therapy are discussed. A case is made for efficacy of speech therapy within the framework of evidence-based medicine. The chapter concludes by stressing that the therapeutic nihilism should be overcome despite limited resources and that the neurologists have to play a greater role in this humanistic and moral enterprise.

Keywords : Cognitive Neuropsychology, Therapy outcome.

A14. Pauranik A. Disorders of speech. In Y.P. Munjal (Ed.) Textbook of Medicine (Vol 12. Pp. 1383-1389).

Text book of medicine by Association of physicians of India is targeted to undergraduate (MBBS) and to some extent postgraduate (MD Medicine) students. This chapter provides a succinct overview of aphasia while defining its seminal place amongst heterogenous disorders of speech. It covers epidemiology, etiology, developmental disorders, anatomical substrate, clinical approach, classification into syndromes, differential diagnosis, neuroimaging, prognosis and pharmacotherapy. The chapter concludes by emphasizing role of speech therapy in rehabilitation while briefly alluding to neurolinguistics and cognitive neuropsychology in Indian context.

Keywords : Speech, Aphasia (SALA) XVIII Roundtable 1997, New Delhi.

A15. South Asian Language Analysis (SALA) XVIII Roundtable 1997, New Delhi

Annotation : It was in the summer of 1978 that the University of Illinosis at Urbana Champaign launched the first South Asian Language Analysis Roundtable. Since then the Roundtable has become a regular meeting place for all linguistics – Indian and non Indian –working on South Asian Languages. The eighteenth convention of SALA January 1997 was distinctive as this was the largest SALA that we have ever had. The linguistic issues discussed in SALA have generally been specific to the South Asian languages following the contemporary theoretical and applied research in the parent field. This is the first SALA Roundtable where two independent but related sessions, one on 'Language Disorders' and the other one on 'Neurolinguistics' have been organized. The session on 'Linguistics and language disorder's, organized by Pratibha Karanth had five papers –

i. P.A. Suresh et al. Hetrogenous vs unifying hypothesis for language, cognition and behavior development : Observations from developmental language disorders. Department of Neurology, SCTIMST.

ii. Pratibha Karanth. Developmental language disorders : Perspectives from South Asian languages. Institute of Speech and Hearing, Bangalore.

iii. R. Vaidyanathan. The disturbances of Linguistic representations and processes. TN Medical College & BYL Nair Hospital

iv. T.A. Subbarao. Language analysis of Kannada-speaking children with mental retardation. National Institute for the mentally Handicapped.

v. Basanthi Devi. The markedness principle : Its implications for speech-language pathology. Institute of speech and Hearing, Bangalore

Another Panel organizer Dr. Apoorva Pauranik, invited 7 speakers to contribute in the session 'Neurolinguistics ; Brain and Language. –

i. Maharaj Singh. Observed Hand preference and language disorders, Meerut

ii. Jyotsana Vaid. Brain Bases of bilingual language functioning: what's right ? what's left ?

iii. D. Vasanta. Rethinking neurolinguistics : Insights from sign language studies, Osmania University.

iv. Sudheer Bhan. Comprehension and naming of objects among adult Aphasics. M.S. University Baroda

v. Pauranik A. Review of Neurolinguistics. Indore

vi. Ravi Nehru et al. Lexical semantic organization and the representation of meaning : Evidence from a case with category specific perseveration. G.B. Pant Hospital & NIMHANS.

Keywords : Langauge disorders, Neurolinguistics, Developmental Language Disorders, Langauge analysis, Mental Retardation, Hand preference, Bilingualism, Sigh Language, Lexical semantics.

A16. Suvarna, A. (2010). Neurobiological Correlates of bilingual aphasia. Paper presented at the International Symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : Bilingual aphasia is a clinical and theoretical issue that needs to be addressed in our context on a priority. Advances in neurolinguistics, cognitive neurology, and imaging have opened up new avenues for understanding neural basis for bilingualism and bilingual aphasia that are likely to result in the development of improved methods of managing patients.

Keywords : Bilingual Aphasia, Neurobiology, Neurolinguistics.

A17. Tiwari S, & Krishnan G, (2009). Issues in the Management of Subjects with Aphasia in India : A survey; Paper presented at the 47th Annual Meet of the Academy of Aphasia, Boston MA (2009).

Annotation : Shivani Tiwari and Gopee Krishnan Performed a survey of speech – Language pathologist in India with a specific intention to gather issues associates with the management of people with aphasia in the country. The authors gathered both client-related and clinician related issues. The most prevailing among the two was client-related issue. Within this, financial problems, acuteness of the disorder, associated disturbances such as hemiplegia were the major hindrance to the rehabilitation of aphasia. The major clinician-related issues were lack of appropriate treatment techniques and sufficient time for extensive training. The respondents of their survey indicated that the authorities concerned shall set up rehabilitation centers for people with aphasia and the authorities could be government, NGOs, or hospitals. These authors have thus attempted to provide a glimpse of the actual status of aphasiological rehabilitation in the country.

Keywords : Aphasia in India, Rehabilitation.

A18. Vaidhyanathan, R. (1997). The Disturbance of linguistic representations and processes. South Asian Langauge Analysis XVIII Roundtable, New Delhi

Abstracts : In the last two decades linguists and psychologists have made systematic attempts in describing the language disorders in children and adults so as to validate one or the other model of language processing. Their contributions have been diagnostic by way of language assessment and rehabilitative. Extensive studies of normal language acquisition and the normative data accumulated there in have enabled the speech-language pathologists to make early identification of language delay and take appropriate preventive measures. The paper reports on the theoretical and applied aspects of this work in the Indian setting.

Keywords : Early identification, Language assessment, Language processing model.

A19. A19. Vasanta D. (editor). Special Volume on Applied Psycholinguistics. Osmania Papers in Linguistics. Pg22-23. (1996-97)

Annotation : The primary aim of this volume is consolidation of the research efforts of those who are involved in examining the pedagogic implications of language learning/ language teaching programs in a bi/multilingual context. The editor was also interested in putting together works that dealt with applications of theories and methods of linguistics and psychology on normal and clinical populations speaking language very different from English, so that, it becomes possible to develop an informed critique of anglocentric theories and models, identify their inadequacies in dealing with 'data' from our languages and envision new theories/models that are particularly relevant to our context. The editor searched through the debates that framed the developments in the subfields of linguistics, to try and understand the scope, objectives and goals of Applied psycholinguistics in the wester context with a hope to articulate its relevance in our context. Taken together, the papers in this volume have covered two major areas of APL, language learning in bi/multilingual populations and aspects of reading acquisition and reading disorders. The two books reviews in the reviews section and the report on the Major research project underway at our centre also present current views on applications of linguistics theories and pose many questions that a await further research.

Keywords : Language Learning, Multilingualism.

A20. Vasanta D. 2000. Rethinking Neurolinguistics: Insights from sign language studies. Intn. J. of Communication Disorders 10:1-2. 129-140

Abstract : The sign languages spoke in India and Pakistan are said to be different from those spoken in European countries so much so that a proposal has been made for setting up an Indo-Asian or South-Asian sign language subgroup. How much of this difference can be attributed to the degree of iconicity embedded in the signs of these various languages is an issue that has not received much attention. The present paper hopes to throw some light on this issue.

Keywords : Sign language; neurolinguistics.

A21. Vasanta D (Ed.) (2010). Special issues on clinical linguistics; Indian Journal of Applied Linguistics, 36.

This volume has six papers dealing with multilingual aphasic patients and aspects of assessment of their language breakdown.

Analysis of spoken narratives in Marathi-Hindi-English multilingual aphasic patient by Medha Karbhari-Adhyaru.

- Language assessment in Hindi-English bilingual patients with dementia by Apoorva Pauranik3
- Progressive non-fluent aphasia in Malayalam by Annama George and P.S. Mathuranath.

- Fluent aphasia in Telugu : A case comparison study of semantic dementia and stroke aphasia by Alladi Suvarna, R. Mridula, s. Mekala, V. Rupela and S. Kaul.3
- Selective impairment of verb retrieval in subcortical aphasia by Gopee Krishnan and Shivani Tiwari
- Sonority effects in Telugu aphasics by Vasanta D, Suvarna A. and Sireesha J.

The centre of Advanced Study in Linguistics, Osmania University took the initiative to facilitate focused deliberations on what the term 'clinical linguistics' entails in the Indian context. Towards fulfilling this goal, a group of practicing speech language pathologists and a couple of neurologists interested in issues of communication were asked to prepare descriptive case studies in communication disorders affecting both children and adults speaking Indian languages. The Indian language covered by the case studies were Hindi, Marathi, Kannada, Malayalam and Telugu and the disorders dealt with were: stroke aphasias, dementias, mental retardation, specific language impairment, LK syndrome and hearing impairment. Each case study was referred to a trained linguist who served as a discussant. A two-day symposium held at Osmania University in January 2007 provided an opportunity for extensive discussions on different ways of conceptualizing and assessing language and communication disorders.

One of the major concerns expressed by linguists who were discussants to various papers at this workshop was inappropriate adaptation of English-based language assessment tools. We felt that instead of deciding salient features of Hindi and Telugu from existing grammar books, it was appropriate to look at naturally produced narratives. Therefore, some of us at the department of linguistics took up a research project aimed at analyzing spoken and written narratives produced by 100 normal young adults. Using a sequence picture with eight scenes depicting a woman's purse being stolen. A small group of neurologists and speech-language pathologist came forward to collect oral narratives from neurologically impaired patients using the same sequence picture. The results based on these narratives were discussed in a second workshop organized at Osmania University by our center during March 28-29, 2008. This volume contains select papers from these two workshops dealing only with the oral narratives.

Keywords : Discourse Analysis, Language Assessment, PNFA, Semantic Dementia, Subcortical Aphasia, Snonority.

A22. Chazhikat E. Awareness of aphasia and aphasia services in south India: Public health implications. Online Manuscript). https://digital. library. unt. edu/ark:/67531/metadc86166/m2/1/high_res_d/Chazhikat 20Emlynn.pdf. 2014

Abstract : Aphasia is a language disorder resulting from brain damage. People who acquire aphasia need rehabilitation to maximize functional recovery. Assessing public awareness of aphasia is critical for development of and access to aphasia-related services. The current study addresses levels of public awareness of aphasia and access to aphasia-related services in an urban area of the State of Kerala, India, a region with potentially high incidence and prevalence of aphasia. Results of an aphasia-awareness survey of 114 urban Kerala residents suggest poor public awareness of aphasia in the population. Less than 10% of those surveyed met criteria for having basic knowledge of aphasia. Semi-structured interviews of two Kerala-based neurologists support the findings of the survey and further suggest that aphasia-related services in the region may be limited. Findings hold implications for development of aphasia services and improvement of the psychosocial life of people who have aphasia

A23. Sandhu P. Legislation and the current provisions for specific learning disability in India-Some observations. Journal of Disability Studies. 2015;1(2):85-8.

Abstract : Research and advocacy in Learning Disability is still at its nascent stage in India. The census 2011 also does not enlist learning disability as a separately category of disability. So, the authentic data on the population with a learning disability is not available. As per the newspaper Tribune report[1] about fifteen percent of the school-going population is having dyslexia in India. However, there are no uniform provisions for the whole country to address this issue. This paper looks at some of the difficulties in assessment and grading of Specific Learning Disability. It then focuses on the varying provisions for certification and subsequent concessions available to those who are certified. The paper is also highlighting the disparity in practices among the states and education boards. Finally, the paper emphasizes the need to strengthen the legislation to address the invisible condition of learning disability in the country.

Keywords : Specific Learning Disability; assessment; legislation, certification; concession

A24. Savithri SR. Speech pathology in ancient India—A review of Sanskrit literature. Journal of communication disorders. 1987 Dec 1;20(6):437-45.

Abstract : This paper aims at highlighting the knowledge of the Sanskrit scholars of ancient times in the field of speech and language pathology. The information collected here is mainly from the Sanskrit texts written between 2000 B.C. and 1633 A.D. Some aspects of speech and language that have been dealt with in this review have been elaborately described in the original Sanskrit texts. The present paper, however, being limited in its scope, reviews only the essential facts, but not the details. The purpose is only to give a glimpse of the knowledge that the Sanskrit scholars of those times possessed. In brief, this paper is a review of Sanskrit literature for information on the origin and development of speech and language, speech production, normality of speech and language, and disorders of speech and language and their treatment

A25. Dey R, Kumar S, Kumar T, Davessar JL. Variety of speech and language disorders reporting at a tertiary care hospital in Malwa belt of Punjab, India. Clinical Epidemiology and Global Health. 2017 Jun 1;5(2):48-51.

Abstract : **Background**: A wide variety of speech and language disorders has been known to exist. These disorders impair the ability to communicate to different extent so as to adversely affect social, emotional and functional well-being of a person. In literature, little has been documented about types of various such disorders and their frequency of occurrence. Less is known about pattern of such patients seeking speech language assessment and therapeutic services. Hence need of the present study. **Method**: Data was collected from a total 6707 patients reporting with communication difficulty to Audiology and Speech Language Pathology wing of ENT department, GGS Medical College Hospital, Faridkot, a tertiary care hospital of Punjab, India. Patients' data were classified depending on (a) age, (b) gender, and (c) diagnosis **Results:** Maximum number of patients was aged below 10 years of age which accounted to approximately 43% of the total patients with speech and language difficulties. The number of patients was observed to reduce as age increased. Mis-articulation was most common among

all disorders in the first two decades of life where as stuttering was maximally evident in the young age group (21–30 years). Voice related difficulties were most affecting in the middle age groups (31–50 years). **Conclusions :** Results of the present study would be useful in guiding administrative authorities to establish adequate and suitable infrastructure, employment of disability specific professionals and manpower, proper planning and execution in order to accommodate variety of case load. Awareness program or meetings can be arranged to make the co-professionals (doctors, nurses, and other para-medical staffs) well versed with a Speech Language Pathologist's scope of practice.

Keywords : Communication disorders , Tertiary care hospital, Rehabilitation, Misarticulation, Voice disorder

Annotation : The data are from on Audiology and speech pathology wing of an ENT department. They pertain mainly to pediatric population and are not related to aphasia.

A26. Pauranik A, George A, Sahu A, Nehra A, Paplikar A, Bhat C, Krishnan G, Kaur H. Expert group meeting on aphasia: A report. Annals of Indian Academy of Neurology. 2019 Apr;22(2):137.

Abstract : A multidisciplinary team of experts took stock of the current state of affairs about many aspects of aphasia in India, including community burden, diagnostic assessment, therapy, rehabilitation, research, education, and advocacy. The broad spectrum of aphasiology was matched by the types of participants ranging from neurologists, speech-language pathologists, clinical psychologists, linguists, to experts in neuroimaging and computer sciences. Threadbare discussion in 16 sessions over 3 days leads to the identification of pressing problems and possible solutions. Many action plans have been envisaged and recommendations made. A few examples with high priority are community-based and hospital-based study incidence and prevalence of aphasia, development of test batteries for the assessment of many components of speech and communication in Indian languages which are validated on rigorous psychometric, and linguistic criteria, national registry for aphasia, educational modules about aphasia for different target groups, resources for advocacy and its training, a bank of research questions and outlines of research protocols for young professionals to pursue. The expert group will continue to oversee execution of some of the actionable plans in short and long term.

Keywords: Action plans, aphasia in India, recommendations

A27. Pauranik A, Pauranik N. Singh P., Lahiri D, Krishnan G. Aphasia in Neurology Practice: A Survey about Perceptions and Practices. Annals of Indian Academy of Neurology, 2020 Aug;23(2):190

Abstract : **Background:** Aphasia is one of those clinical conditions, where the role of affiliated professionals, mainly speech language pathologists (SLPs) is substantial in diagnostic assessments, therapy, and rehabilitation. There is no study to focus on neurologists, with respect to their perceptions and practices about aphasia, the disease, as well as the profession of SLP. **Objective:** To reach out to the neurologist community in India and learn about their perceptions and practices about the nature of the ailment and role of speech language therapy (SLT). Our premise was that observations and inferences from a questionnaire-based survey will be subsequently helpful in planning educational activities targeted to neurologists with more focus on specific gaps in perceptions and practices. **Material and Methods:** Three neurologists and two SLPs collaboratively developed the questionnaire. The aim was to probe the issues which were likely to have a bearing upon optimum service delivery to persons with

aphasia by a dyad of neurologist and SLP. The survey was set in “Google Forms” and sent by “WhatsApp” and email to approximately 500 practicing neurologists in India. We employed a nonprobability sampling design for ease of administration with a combination of “chunk sampling” and “snowball sampling.” Telephonic reminders were made to almost all. **Results and Discussion:** We received 100 responses. The mean age of respondents was 50.64 (SD +/− 12.60) with a range of 28–78 years. The mean number of years of experience as a neurophysician was 19.88 (SD. +/− 12.72) with range of 1–47 years. Females were only 8%. Apparently, the proportion of neurologists working in large corporate and large public sector institutions from tier one and tier two cities was higher, who are more likely to have SLP and related rehabilitation facilities in their institutions and hence harbor more conducive attitudes to SLT in aphasia. The ground reality from tier three cities and small private and public sector hospital and solo practitioners may be somewhat worse than this. Many responses were in conformity with facts and in tune with desirable attitudes as per guidelines like aphasia being a detrimental factor in stroke recovery, doing assessment of handedness, paying attention to neuroimaging correlations and associated cognitive functions, not resorting to unnecessary pharmacotherapy, being aware about efficacy of SLT, and fairly good chances of recovery. However, many more answers highlighted a need for emphasis in Continuing Medical Education like not being aware about community burden of aphasia in comparison to a few better known neurological diseases, not paying attention to psychosocial aspects apart from biological ones in assessment and rehabilitation, not using a standardized and validated battery, not confidant about role of SLT in chronic stable aphasia and need for longer and intensive therapy, and being unconcerned for the value of advocacy for aphasia, like the role of Self-Help Groups. **Conclusion:** The thrust areas, pertaining to gaps in perception and practices identified through this study, can be viewed as “an in-time input.” We hope that changes in some of the perceptions and practices can be attained through an emphasis on education and training at multiple levels right from the undergraduate to the practicing physicians. A few more themes and domains will need advocacy actions targeted to different stakeholders.

Keywords: Aphasia, neurophysicians, perceptions, practices, speech-language pathology, speech-language therapy

A28. Sarno MT, Woods DE. Aphasia Rehabilitation in Asia and the Pacific Region: Japan, China, India, Australia and New Zealand. Monograph# 45. IEEIR, World Rehabilitation Fund, 400 East 34th St., New York, NY 10016; 1989.

Abstract :This monograph presents a "state of the art" overview of contemporary aphasia rehabilitation policies and resources in Asia and the Pacific region. Following Martha Taylor Sarno's introduction, Sumiko Sasanuma discusses the history and development of Japan's aphasia rehabilitation services, focusing on demography and data sources, assessment and treatment procedures, issues, and recommendations. The current status of aphasiology in China is described by Wang Xinde, who outlines the clinical manifestation of aphasia, alexia, and agraphia in Chinese and the rehabilitation process. India's aphasia rehabilitation is reviewed by PrathibhaKaranth, focusing on history, facilities, staff, funding, family supports and home training, advocacy, research, and sociocultural factors. The situation in Australia is presented in two papers--Alison Ferguson focuses on the aphasic population, providers of rehabilitation services, service delivery models, and research trends; and Jennifer Lambier describes service delivery models, treatment goals, assessment, and remediation. For New Zealand, Ellie Glazer reports on epidemiological data, speech language therapy, and a stroke support network. Reference lists accompany each chapter. (JDD)

A29. Savithri SR. Speech and hearing science in ancient India--a review of Sanskrit literature. Journal of communication disorders. 1988;21(4):271-317.

Abstract : The study reviewed Sanskrit books written between 1500 BC and 1904 AD concerning diseases, speech pathology, and audiology. Details are provided of the ancient Indian system of disease classification, the classification of speech sounds, causes of speech disorders, and treatment of speech and language disorders. (DB) Descriptors: Ancient History, Audiology, Classification, Diseases, Etiology, Foreign Countries, History, Speech Handicaps, Speech Pathology, Speech Therapy

A30. Venkatesan S. Research Collaboration between Clinical Psychology Vis-À-Vis Speech, Language and Hearing in India. International Journal of Information Dissemination and Technology. 2017 Jul 15;7(2):135-41.

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 out of 710 published research articles on identified topics of psychosocial issues that appeared in all back 38 volumes for equal number of years of an indexed national journal. A Collaboration Index (CI) based on frequency, trend or pattern of authorships for research contributions within the identified timelines and a 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-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

A31. Konadath S. Prevalence of communication disorders in a rural population of India. Journal of Hearing Science. 2013 Jun 1;3(2).

Abstract : Background: Information about the prevalence of communication disorders is essential for planning prevention and rehabilitation services. The aim of this study was to estimate the prevalence of communication disorders between gender and across age groups among a rural population of India. This work reports a study conducted as part of field work by staff and students of the All India Institute of Speech and Hearing (AIISH), Manasagangothri, Mysore, India. Material and method: A door-to-door survey of 15,441 individuals from 15 villages, irrespective of their age and gender, was conducted as phase I of the study. The villages were selected on a random basis. A modified high-risk questionnaire was administered to identify individuals at risk of communication disorders. Those found at risk were referred for detailed audio-logical and/or speech and language evaluation in phase II of the study. Results: The survey found that the prevalence of individuals at risk of communication disorders was 6.07%. Among those at risk, and who attended phase II of the study, the prevalence of audiological and/or otological disorder was found to be 90.58% and that of speech and language disorder was 9.42%. Among those at risk of speech and language disorder, 22.9% were found to be at risk of mental retardation. Conclusions: Audiological and/or otological disorders were found to be more prevalent among communication disorders

in the selected population. In general, males showed a higher prevalence of communication disorders compared to females. The prevalence of severe and moderately severe hearing loss was found to be higher than other degrees of hearing loss. Child language disorders and reading/writing difficulties were the most prevalent problems among speech and language disorders.

A32. Sinha SK, Shivaswamy J, Barman A, Seth D, Seshadri D, Savithri SR. Prevalence of communication disorders in a rural population at taluq level of Gujarat, India. Clinical epidemiology and global health. 2017 Jun 1;5(2):73-8.

Abstract : Objectives - The main objective of the study was to estimate the prevalence of communication disorders between genders and across age groups. Methods - The All India Institute of Speech and Hearing, Mysore conducted a Speech and Hearing camp as a part of the annual activity of National Service Scheme (NSS) in Sinor Taluq, Vadodara district, Gujarat State of India. Speech and Hearing camp was conducted in 15 villages of Sinor Taluq. These villages were selected randomly and the population of these villages was 28,954 (twenty eight thousand nine hundred fifty-four). Results - Among the 28,954 individuals surveyed, 1187 (4.09%) individuals were found to have communication disorder. The overall prevalence of ear-related disorders was 3.30% (male – 1.66%, female – 1.63%) and prevalence of speech- and language-related disorder was 0.79% (male – 0.60%, female – 0.24%). Conclusion - The results of the present study could be used to plan and execute policies for the identification, management, and rehabilitation of individuals with communication disorders.

Keywords :Survey, Prevalence, Communication disorders

A33. KARANTH P. Aphasiological studies in India—Theoretical and humanitarian importance of aphasia. Progress in Clinical Neurosciences. 2011:235.

Abstract : This chapter reviews the current state of the art of aphasiology in India from the epidemiological, theoretical and humanitarian perspective, and emphasizes the potential for multifaceted research on various brain-language- related issues. It also highlights the total inadequacy of rehabilitative and related services for persons with aphasia, and stresses the need for urgent action in this much neglected area.

A34. Bhatnagar, S. (1999). *Facts About Stroke and Aphasia: A Family Guide*. Ratnakar Publishers (Aphasia & Stroke Society of India*)*, Delhi, India.

A35. Bhatnagar, S 1997, January: Aphasia type and Language assessment in Indian context. South Asian Language Round Table Conference, JN University, India

A36. Bhatnagar, SC, March 1995 : Scope of neurolinguistics. Department of Linguistics and Languages, J. Nehru. University, New Delhi, India

A37. Vasanta, D. 2005. Language cannot be reduced to biology: Perspectives from neurodevelopmental disorders affecting language learning. J. of Biosciences 30:1, 129-137.

[B]

Assessment methods, Testing Batteries

B1. Ahmed W. (2012). A standardized set of 260 pictures. Unpublished Dissertation (Krishnan, G.). Manipal University, Manipal.

Abstract : This study standardized the set of 260 pictures by Snodgrass and Vanderwart (1980) to the Kannada-speaking atults on four variables (name agreement, familiarity, visual complexity, & image agreement). A group of 180 young, normal participants were recruited for the standardization of this study. The median and quartile values are given for each of the picture on each variable rated in this study.

Keywords : Naming, Name Agreement, visual complexity, image agreement, familiarity.

B2. Bijoyaa Mahopatra, Liveem M. Tharakan, Shyamala K. Chengappa. Conversation and Grapheme Analysis- Application in Aphasia assessment. All India Institute of Speech and Hearing, Mysore, India

Annotation : Conversation and grapheme output analysis have been considered as two other determinants to the detailed assessment of a person with aphasia. In the Indian context where majority of the population is bi/multi-lingual, the challenge of effectively assessing such a person's communication skills in all his languages is deemed important. The present study has assessed the use of strategies in a talk-in-interaction, and the patterns of written expression, in a subcortical bilingual aphasic person.

Keywords : Graphemic Analysis, Conversational Analysis, Multilingualism.

B3. Chandra, R. (1998). Analysis of Linguistic abilities in anterior and posterior aphasics using Malayalam version of linguistic profile test. Unpublished Dissercation (Guide :Karanth, P.), MVST College of Speech and Hearing, Mangalore

Abstract : Performance of two groups of Malayalam-speaking people with aphasia grouped based on anterior-posterior dichotomy was compared using the linguistic profile test. Six persons with aphasia (1 Broca's; 2 anomic, & 3 Wernicke's age range: 35-65 years) and a group of age, gender, and literacy-matched normal participants were selected for this study. The comparison of scores between anterior aphasic group and normal participants showed significantly poor performance in the former group, in terms of the phonologic syntactic and semantic aspects. Similarly, the posterior aphasics also showed poor performance on the three section of LPT compared to the normal participants. Finally, when the two aphasic groups were compared, the anterior group showed better performance than the posterior group.

Keywords : Aphasia, Anterior, Posterior, Literacy, Linguistic Profile Test.

B4. Dutta, H. (1996). Linguistic Assessment Protocol for traumatic brain injury in Adults. Unpublished Dissertation (Guide : Karanth, P.) AIISH, Mysore

Abstract : The author designed a linguistic assessment protocol in English specifically for the evaluation of people with traumatic brain injury. This test included four major language functions such as : a) auditory comprehension, b) Oral expression c) Verbal Memory & d) verbal integration and reasoning with language. Under each of these major functions, several subtests were included. This test was administered on a group of 10 normal participants and five head injured. The results revealed that the head injury group showed a wide variation in performance with some showing performance near to normal, whereas, some other participants performing as poorly as those with aphasia.

Keywords: Traumatic Brain Injury, Linguistic Assessment, Verbal Integration, Reasoning.

B5. George A. (1996). An English-Malayalam Bilingual Aphasia Test. Unpublished Dissertation (Guide : Karanth, P.), AIISH, Mysore

Abstract : The aim of the study was to develop the English-Malayalam version of Bilingual Aphasia Test (BAT). The study consisted of three stages: English version of BAT was translated into Malayalam in stage one. Both English and Malayalam versions were administered to 10 normal (non-brain damaged) subjects and four bilingual (Malayalam-English) persons with aphasia (1 global, 1 Broca's, 1 Wernicke's & 1 anomic) in second and third stages, respectively. There was significant difference in performance between normal participants, who showed similar performance in both versions and aphasics, who did not show difference in a group but between the types.

Keywords : Bilingual Aphasia Test, Malayalam, Standardization.

B6. George, A., (2010). Assessment of bilingual aphasia - recent advances. Paper presented at the International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Annotation : In her keynote address at the International Symposium on Bilingual Aphasia, Annamma George discussed several factors that need to be taken into consideration while assessing bi-/multi lingual persons with aphasia. Specifically, she emphasized on the need from the perspective of rehabilitation, to assess each language in this population. A systematic account of the assessment procedure starting from detailed history-taking with emphasis on the bilingual history to the administration of standardized bilingual aphasia test is provided. She drew the attention of the readers to the assessment of reading and writing disturbance as well as the lexico-semantic deficits in bilinguals has been raised by her. She concludes her talks with the need to employ advanced neuroimaging techniques in the investigations of bilingual persons with aphasia in India.

Keywords : Bilingual Aphasia Test, Malayalam, Bilingualism.

B7 George, A. & Mathuranath, P.S. (2007). Community-based naming agreement, familiarity, image agreement and visual complexity ratings among adult Indians. Annals of Indian Academy of Neurology, 10 (2). Pp. 92-99.

Abstract: The validity of Snodgrass and Vanderwart pictures and their norms derived on a western population on naming, familiarity, imageability and visual-complexity, is not established on a population with cultural background different from the west. We developed, therefore, a set of culturally appropriate pictures for and derived norms on Indians. Line-drawings of 103 concepts (67 from Snodgrass and Vanderwart, 36 new) from 10 semantic-categories were normed on 200 community-based older subjects. Only 31% of the Snodgrass and Vanderwart items showed a concept-agreement on the Indians comparable to western norms. Naming, familiarity and image-agreement mutually correlated but not with visual-complexity. Low-education and rural-residence tended to reduced concept-agreement. The output of this study will be of use in national and cross-national studies.

Keywords : Naming, Visual Complexity, Imageability, Image Agreement.

B8. James, P. (2002). Functional & Clinical evaluation of aphasics; Unpublished Dissercation (Guide : Karanth, P.) MVST College of Speech and Hearing, Mangalore.

Abstract : A group of 10 persons with aphasia was administered with Western Aphasia Battery (WAB) and functional communication profile (FCP) to explore their functional and clinical communication skills. The author of this study anticipated better scores in FCP than WAB as the former test measures the functional communication. The result supported this hypothesis. That is, 70% participants obtained better score in FCP than in WAB. The opposite pattern seen in the remaining 30% participants (2 anomic & 1 transcortical motor) was attributed to their relatively intact performance on 'repetition' subtest of WAB. FCP, emphasized on the importance of assessing functional communication skills in people with aphasia as well as the inadequacies in using WAB scores as an index of communication skills.

Keywords : Functional Communication, Aphasia, Western Aphasia Battery.

B9. Jenny E.P. (1992). Test of Aphasia in Malayalam. Unpubilshed Dissertation (Guide : Karanth, P.), AIISH, Mysore

Abstract : This study constructed a test based on Western Aphasia Battery (Kertesz & Poole, 1974) in Malayalam. It consisted of eight sections : (1) spontaneous speech, (2) auditory verbal comprehension, (3) repetition, (4) naming and performance tests, (5) reading, (6) writing (7) praxis and (8) constructional visuo-spatial tasks. The test was administered on a group of 100 normal right-handed Malayalam speakers in the age range of 21-70 years, subdivided into five groups of 10 males and 10 females each, and eight aphasic subjects (5 nonfluent and 3 fluent), in the age range of 42-70 years (5 males & 3 females). The developed test in Malayalam and WAB (English) were administered on three bilingual people (Malayalam-English) with aphasia to see if the test can identify the type of aphasia in bilinguals. The results showed that the performance of normal participants and the difference in performance between these groups was significant. The nonfluent and fluent aphasics also differed on several subtests : content (nonfluent-1.7; fluent-6), fluency (nonfluent-1.2; fluent-7.33) and writing (nonfluent-0.02;

Fluent-6). Finally no significant difference in the performance of bilingual persons with aphasia on the Malayalam test and English WAB was observed.

Keywords : Aphasia, Malayalam, Assessment, Bilingual.

B10. Juby, A.B. (2007). Development and validation of English Quality of Life (QOL) scale for aphasic. Unpublished Dissertation (Guide : Bhat, S.) MVST College of Speech & Hearing, Mangalore.

Abstract : The aims of this study were to develop a quality of life questionnaire, validate it in the Indian context, examine the overall and domain-specific QOL in persons with aphasia, identify variables that are more affected, and compare self and family appraisal of QOL. Two groups of participants (10 with aphasia & 10 matched control) were selected for this study. The questionnaire included 10 items each under four domains (psychological, social, communication, & physical). It used a 4 point scale (1 often, 2 sometimes, 3 rarely & 4 never). The direction of the questions in the instruments was such that higher score indicates better QOL. The authors reported of good sensitivity of the instrument in measuring the quality of people with aphasia.

Keyword : Quality of Life, Aphasia, India, Communication.

B11. Jyothi (2005). Construction and piloting Western Aphasia Battery in Nepali. Unpublished Dissertation (Guide : Karanth, P.). MVST College of speech and Hearing, Mangalore.

Abstract : The process of aging generally slows down the performance and increases the reaction time on any given tasks. The performance of people with aphasia, thus, may be a combined outcome of linguistic deficits and the aging process. To differentiate the effect of aging in this group, the performance of people with aphasia on was compared to a matched set of normal participants on the speed of performance. The participants included a group of nine people with aphasia and an equal number of normal subjects. The aphasic group had varying etiologies (egs, CVA, TBI). All were administered with the Westen Aphasia Battery and the comparison of time to perform the task differed significantly between the aphasic and control group. Further, it was noted that people with anomic aphasia and conduction aphasia as well as those with right hemisphere damage required more time to complete the Western Aphasia Battery, where as those with Broac's and Wernicke's required lesser time. It was noted that he young people with aphasia completed the test faster than the old participants with aphasia. Finally, there existed a negative correlation between the aphasia quotient (AQ) and the speedh of language processing.

Keywords : Western Aphasia Battery, Response time, Young Aphasia, Speed of Language Processing.

B12. Kacker, S. K., Pandit, R., Dua, D. (1991). Reliability and validity studies of examination for aphasia test in Hindi. Indian Journal of Disability & Rehabilitation, 5(1), 13-19.

Abstract : 50 adult aphasics with 2 mo post onset to 2 yrs post onset of cerebro-vascular accidents were administered the Hindi Aphasia test based on the Boston Diagnostic Aphasia

Examination. The Hindi Aphasia test was found to be a fairly valid and comprehensive test with high inter rater and intrajudge reliability and may serve as a useful clinical diagnostic tool to describe the language disturbances in adult aphasics

B13. Kamath A, (2003). Cognitive Linguistic Assessment Protocol. Unpublished Dissertation (Prema, K.S.) AIISH, Mysore

Abstract : The aim of this study was to construct a protocol for assessment cognitive linguistic abilities in Kannada-speaking population. The cognitive linguistic assessment protocol was subgrouped into four major domains :1) attention, perception and discrimination 2) memory, 3) reasoning and problem solving and 4) organization. These domains were further categorized into various subtests. The test protocol was administered on 36 normal adults (18 M & 18 F) in the age range of 40-70 years. The results revealed that differences in performance on each subtest across age groups and with respect to gender were not statistically significant. The results also revealed to gender were not statistically significant. The result also revealed a statistically significant variation in timed tasks on auditory and semantic memory subtests for group versus gender both the attention subtests and these showed a negative correlation with working memory. Thus, this study unraveled the myriad of interaction among cognitive domains that affect language processing efficiency. These interactions among language and cognition are more evident in time constrained tasks.

Keywords : Language, Cognition, Attention, Perception, Memory, Reasoning.

B14. Karanth, P., Assessment of disordered language : The clinician's Dilemmas; Language development and language disorders : Perspective from Indian Languages AIISH, Mysore

Annotation : The point about lack of sensitivity of formal language tests (within the orthodox psychometric tradition) to the status of the individual being tested is elaborated in the keynote paper of Prathibha Karanth. After tracing the major trends in the historical development of the discipline of speech language pathology in India with respect to assessment of individuals with language disorders, Karanth cautions speech-language pathologists to be wary of the objectives of normative testing. Since the purpose of assessment of disordered language is to gather information about language skills an individual has in his/her repertoire, clinicians should rely more and more on domain-referenced testing which calls for obtaining a variety of language samples at different linguistic levels to assess not only the adequacy of forms but also their function and use.

Keywords : Assessment, Speech –language pathology, India, Langauge Disorder.

B15. Kumar P, . Standardization of the revised token test in Bangla. Unpublished Dissertation (Guide : Kumar, S.).

Abstract : The developed test, RTT in Bangla has been standardized and is not a valid test for the use in clinics to assess the level of comprehension ability of the Bangla speaking normal and clinical population. The test can identify the level of difficulty in comprehension due to

brain damage as well as the performance in different age groups. It can also be useful in differentiating receptive aphasics from expressive aphasics and brain damaged aphasics from brain damaged non-aphasics. It can be used as an assessment and intervention tool.

Keywords : Revised toke test, Bangla, Receptive Aphasia, Expressive Aphasia.

B16. Nidhi, M. (1996). Differential Diagnosis of dementia from aphasia using a language test in Kannada : A pilot study. Unpublished Dissertation. AIISH, Mysore

Abstract : This study investigated that potential of a language test to differentiate Alzheimer's disease (AD) from aphasia. Three groups of male participants (5 in each) with AD, patients with Aphasia and normal elderly individuals were studied. All participants were above 50 years of age. A language tests containing six subtests were administered on them. Among these, picture naming, word association test, delayed story recall, and picture description tasks were found to be sensitive in differentiating AD from aphasics. Further, generative naming, word association test, delayed story recall and picture description were sensitive in differentiating AD from the normal participants. The nature of deficits in AD is different from that observed in aphasia and also from deficits due to normal aging process.

Keywords : Dementia, aphasia, Differential Diagnosis, Generative Naming, Word Association Test, Story Recall.

B17. Keshree, N.K. Development of Bangla version of Western Aphasia Battery (B-WAB). Unpublished Dissertation (Guide : Kumar, S.).

Abstract : IN order to evaluate the language dysfunction of aphasic patients, the use of a standardized evaluation tool is mandatory as language abilities even among normal individual, vary with gender age, literacy level, and so forth. The present study aimed to adapt the Western Aphasia Battery(WAB) in Bangla (B-WAB) and simultaneously present the normative data for the same.

Keywords: Western Aphasia, Battery, Bangla.

B18**.** Paradis, M., Rangamani, G. N., Bilingual Aphasia Test (Kannada Version). In Hillsdale, NJ : Lawrence Erlbaum.

B19. Shyamala, K.C. & Vijayashree, S. (2008). Development and standardization of WAB in Kannada : AIISH, Mysore.

Annotation : In this retrospective study, Dr. Shyamala Chengappa and Ms. Vijayashree made an attempt to standardize a test in Kannada based on Western Aphasia Battery in English. This test considered six parameters (i.e., description of spontaneous or conversational speech, a measure of information value, a measure of fluency, auditory comprehension, repetition and naming) as important. However, this test had four subtests (similar to English version of WAB) with some items principles of Kannada. The data from 150 previous cases with aphasia (belong

to 7 subtypes of aphasias: Broca's, Wernicke's, Global, anomic, transcortical sensory, transcortical motor & conduction) and 30 normal participants were compiled and statistically analyzed. Several analyzes on various potential variables (egs. Age, Gender and literacy) were carried out to examine their influence on the test performance. The results of this investigation showed that the gender did not have an influence on the test performance. Among the normal participants, the literates performed better than illiterates. The same trend was noted in the aphasic group as well. Interestingly, the multilingual aphasic participants performed better than their monolingual aphasic participants performed better than their monolingual counterparts on most of the subtests, whereas, the normal participants did not show any difference as a function of their mono/multilingual status. Further, the aphasic participants, in general showed significant variation in paraphasias. Finally, the younger participants (21 to 40 years) with aphasia performed better than the older aphasic participants.

Keywords : Western Aphasia Battery, Kannada, Gender, Literacy.

B20. Simmons, N.R., (1998). The Bilingual Aphasia Test in Tulu; Unpublished Dissertation (Guide : Karanth, P.). MVST College of Speech and Hearing,, Mangalore.

Abstract : Owing to the lack of adequate test instruments to assess the linguistics skills in Tulu-English bilingual people with aphasia, this study translated the English version of Bilingual Aphasia Test (BAT) to Tulu. Further, this test administered on 10 normal bilingual speakers of these languages as well as on three bilingual people with aphasia. The results showed parallel performance in both languages of normal participants. In the aphasic group, two participants (anomic & global) showed better performance in the premorbidly weaker language. Further, individual variations were apparent in the performance of the aphasic group.

Keywords : Bilingual Aphasia Test, Tulu.

B21 Sona, A.N. Development of Indian and Malayalam Version of Boston Diagnostic Aphasia Examination-3. Unpublished Dissertation (Guide : Shyamala, K.C.), AIISH, Mysore.

Abstract : The present study aimed at adapting English verison of Boston Diagnostic Aphasia Examination into Indian context and translating it into Malayalam to assess the linguistic efficiency of Indian English and Malayalam-speaking people with aphasia. Both test were administered on 20 normal participants from each language. Further, these were administered on eight Indian-English speaking people aphasia (3 Broca's, 2 Wernicke's, & 3 Anomic) as well as five Malayalam-speaking people with aphasia (2 Broac's, 1 Wernicke's & 2 Anomic). The results revealed that the normal participants showed similar performance in both version. The aphasic group performed poorly compared to the normal group. Further, the aphasic groups did not show much variation in performance across the languages.

Keywords : Cultural Adaptation, BDAE, Malayalam, Bilingual, Aphasia.

B22. Sundaravel. M (2005). Bedside evaluation test for Aphasia; Unpublished Dissercation (Guide : Karanth, P.), MVST College of Speech and Hearing, Mangalore.

Abstract : This study developed a bedside test for aphasia based on the initial four sections (spontaneous speech, auditory comprehension, Repetiton & naming) of Western Aphasia Battery. A group of 30 normal adults and 15 brain-damaged adults (CVA & TBI) in the age range of 32 to 70 years were included in this study. Based on the novel test developed, all normal participants and five participants from the brain-damaged group were confirmed to have no aphasia.

Keywords : Bedside Test, Aphasia.

B23. Vidya R. (2002). A language based rating scale for the severity of dementia of Alzheimer's type; Unpublished Dissertation (Guide : Karanth, P.) Dr. MVST College of Speech and Hearing, Mangalore.

Abstract : In this study, the author aimed to construct a rating scale for assessing severity of dementia of Alzheimer's type (DAT) in Tamil by measuring the receptive vocabulary and descriptive ability. For this purpose, 15 participants with DAT (5 each in the early, middle, & late stages) were selected. The test material consisted of two sets of flash cards (10 cards for receptive vocabulary and 5 for descriptive ability) depicting common objects. The results showed significant difference among the three groups of participants. As the disease progressed. The scores decreased. The study showed that the receptive vocabulary was more affected than the descriptive ability, as the disease progressed.

Keywords ; Alzheimer's disease, Vocabulary, Descriptive. Skills.

B24. Prabhakar AT, Mathew V, Sivadasan A, Aaron S, George A, Alexander M. Clinical profile of primary progressive aphasias in a tertiary care centre from India. International Journal of Speech-Language Pathology. 2019 Nov 2;21(6):547-52.

Abstract : *Purpose:* Progressive language dysfunction due to a selective neurodegeneration of the language networks is called primary progressive aphasia (PPA). However, demographic data on PPA is limited. In this study from India, we determined the prevalence and clinical profile of patients presenting with PPA and its subtypes.*Method:* Patients who were admitted to the neurosciences department during the period between January 2012 and December 2016 were screened, and patients who presented with slowly progressive aphasia for at least 2 years without other significant cognitive or behavioral symptoms and preservation of daily living activities were included. Patients had to fulfill the international consensus group criteria for PPA. All patients were evaluated with the mini-mental status examination (MMSE) and Strub and Black battery for neuropsychological testing. The language was tested using the progressive aphasia language scale (PALS). *Result:* During the study period from January 2012 to December 2016, 23 patients fulfilled the international consensus criteria for PPA. Of these, 16 (69.6%) patients were diagnosed with PPA-G, 6 (26%) patients had PPA-S and 1 (4.4%) patient had PPA-L. *Conclusion*: PPA is not an uncommon entity in India and the most common subtype in this study was PPA-G.

Keywords: Aphasia, progressive, bilingual, epidemiology

B25. Arora A, Sawhney IM, Verma SK, Lal V, Prabhakar S. Primary progressive aphasia: a case report. Neurology India. 1999 Apr 1;47(2):139.

Abstract : Primary progressive aphasia is due to focal left perisylvian degeneration and manifests with progressive decline in language function for two or more years. There is preservation of cognitive functions and activities of daily living continue to be normal. We report a case of progressive aphasia in a 65 year old lady. Primary progressive aphasia (PPA) is a clinical syndrome of progressive decline in language function for two or more years with preservation of activities of daily living and general cognitive functions. There is no space occupying lesion, infarction or other identifiable structural disorder to explain the deficit.[1] It represents a relatively selective left perisylvian degeneration and needs to be differentiated from generalized degenerative disorders e.g. Alzheimer's disease (AD) which may present with aphasia.[2] The syndrome was brought to clinical /sup> and a number of cases have been reported in western literature since then.[4],[5] However, there is lack of reports from the Indian subcontinent. We describe a case of progressive transcortical expressive aphasia without dementia

B26. Mazumdar B, Donovan NJ, Narang V. Sociolinguistic adaptation process of the Bangla Western aphasia battery-revised. Journal of Indian Speech Language & Hearing Association. 2018 Jan 1;32(1):23.

Abstract : Introduction: The purpose of this study was to complete a sociolinguistic adaptation and validation of the Western Aphasia Battery-Revised (WAB-R) (Kertesz and Raven, 2007), an English aphasia assessment into the Bangla language. Two hundred and fifty million people speak Bangla/Bengali in eastern parts of India and Bangladesh. Methods: This study had two steps: first, three professional translators performed the translation and back-translation processes on the WAB-R. Second, to validate the adaptation, 27 neurologically normal individuals and 36 patients with a history of cerebrovascular accident participated in this study. **Results:** Three types of adaptation processes, i.e., introduction of new words or phrases, direct translation, and direct translation replacing concepts were involved. As per different adaptation processes, Record form part 1 (derives aphasia quotient [AQ]) achieved 25% of sociocultural and linguistic changes whereas Record form part 2 (derives cortical quotient and language quotient) achieved 57% of sociocultural and linguistic changes. The items of Bedside record form (shorter version of the test) were taken from Record form part 1 and part 2. Normal controls completed the test with scores of 100% on most of the sub-tests while the patients' performance was significantly lower. Eighty percentage of the patients had aphasia, based on their test scores, and investigators could categorize the patients by aphasia type based on the AQ and bedside aphasia score. There is a high correlation between the subtest scores of Record form part 1 and Bedside record form. **Conclusion:** Some changes were needed to adapt the WAB-R for Bangla speakers. Preliminary validation study demonstrated that the Bangla WAB-R could differentiate the normal population from the patients with aphasia by their language performance. Investigators will attempt to standardize the test in the next phase of the study..

Keywords: Adaptation, Aphasia, back-translation, Bangla/Bengali, translation, Western Aphasia Battery

B27. Kaur H, Chopra S, Pandey RM, Bhatia R, Nehra A. Translation and adaptation of stroke aphasia depression questionnaire-10 to Hindi. Annals of Indian Academy of Neurology. 2017 Apr;20(2):153.

Abstract : Background:Depression is one of the most researched emotional responses after stroke and shows that the emotional impact of aphasia can have a marked negative impact on recovery, response to rehabilitation, and psychosocial adjustment. There is an evident dearth of validated instruments to assess depression in people with aphasia including Hindi, the national language of the country. Aims:The aim of this study was to translate and adapt the original English version of widely used hospital version of Stroke Aphasia Depression Questionnaire (SADQ-10) to Hindi. Subjects and Methods:English version of SADQ-10 was translated and adapted for the use in Hindi-speaking population in concordance to the WHO guidelines. Statistical Analysis Used:The intraclass correlation coefficient (ICC) analysis of the data was performed using SPSS, version 16, to compute the test–retest reliability. Results:The Hindi version of SADQ-10 yielded an overall high test–retest reliability (ICC = 0.91) as well as internal consistency (α = 0.98), which in turn were comparable to the original instrument in English. Conclusions:SADQ10-Hindi may assist the identification of depressed mood in patients with speech and language impairment in an Indian population as well. It is an easy to administer and quick test which can be used by health-care professionals in a hospital- or community-based settings.

Keywords: Aphasia, depression, Hindi, India, stroke

B28. Gupta S. Aphasia and Cognitive Sciences: Problems of Appraisal Tests in Indian Context. Indian journal of applied linguistics. 2000;26(1):87-97..

Abstract : Discusses the urgency of therapeutic appraisal tests for various types of aphasia in India, where the clinical population comes from multilingual, multiethnic, and multicultural backgrounds; has a low literacy level; and hails from various geographical regions. The need for good diagnostic tests is imperative for a detailed evaluation of language deficit so proper management and rehabilitation strategies can be planned. (Author/VWL)

Descriptors: Aphasia, Clinical Diagnosis, Cognitive Psychology, Cultural Pluralism, Diagnostic Tests, Foreign Countries, Illiteracy, Multilingualism

B29. Mallik N. Aphasia Test Using English as Second Language (ATESL). International Journal of Interdisciplinary Research in Science Society and Culture(IJIRSSC) June 2016 2(1) 105

Abstract : This paper presents a new aphasia test, one which is easy to administer, and is aimed at the people who have studied English as a Second Language (ESL). The prime aim of the test is to benefit Indians, but people from other non-native Anglo-phone nations would also be able to take the test.Indians learn English as a second language (linguistically speaking). As it is not possible to devise aphasia tests for every language in India (and even if that is done, it does not mean that the therapist/pathologist would be familiar with the language), the best solution is to devise a test where aphasiacs would be tested in English, but as a second language. The following test has been devised to serve the purpose.

Keywords: Aphasia, Aphasia tests, ESL, Linguistics, Neurolinguistics

B30. Kumar S, Goswami SP. Development of syntax comprehension test in Hindi language for persons with aphasia. Language In India. 2013;13(8):346.

Abstract : The study was carried out with the aim to develop a test of syntax comprehension in Hindi language for persons with aphasia. The present study was done in two phases. First phase included development of test material and in the second phase, the test battery was administered on neuro-typical adults and persons with aphasia. The developed material consisted of five sections, namely, prepositions, PNG markers, tenses, conjunctions and comparatives, and conditional clauses. The material was administered on 56 neuro-typical adults and 11 persons with aphasia aged 18 to 65 years. It was observed that there was a significant difference between the mean scores across the neuro-typical adults and persons with aphasia on the entire task in both the modalities. Based on this finding it is recommended that the developed test can be used for assessment of syntax comprehension for persons with aphasia.

Key words: Modality, Hindi, Task, Neuro-typical.

B31. Krishnan G, Mathew RE. Short version of the bilingual aphasia test in Malayalam. Annals of Indian Academy of Neurology. 2017 Jul;20(3):217.

Abstract : Background: Brain damage can impair the use of all languages in bilingual persons. For effective management of aphasia (i.e., impaired language) in such persons, assessment of all languages is essential. The most widely used test for this purpose – the Bilingual Aphasia Test (BAT) – is cumbersome and requires a considerable amount of time for administration. To overcome this limitation, a short version of the BAT has been recommended. Objective: The objective of this study was to derive a short version of BAT for Malayalam-English bilingual persons with aphasia and to establish the test–retest reliability as well as the content and construct validities of this version. **Methods:** Following the recommendations of the test developers, we used seven subtests from the draft of an adapted full version of Malayalam BAT. These subtests in Malayalam and their counterparts in English were administered on a group of 22 Malayalam-English bilingual participants with aphasia. The scores obtained from these two languages were used to establish content and construct validities of the short version of the BAT in Malayalam. Further, we readministered the short version of BAT in a group of ten participants with aphasia to examine the test–retest reliability within 14 days from the date of first administration. **Results:** The short version of BAT in Malayalam revealed high test–retest reliability as well as content and construct validities. The administration time ranged between 30 and 45 min. **Conclusions:** Thus, the short version of the BAT in Malayalam can be considered a valid and reliable language test that can be quickly administered in Malayalam-English bilingual persons with aphasia.

Keywords: Aphasia, bilingual aphasia, Malayalam, stroke

B32. Kiran S, Krishnan G. Stroke and aphasia quality of life scale in Kannada-evaluation of reliability, validity and internal consistency. Annals of Indian Academy of Neurology. 2013 Jul;16(3):361.

Abstract : Background: Quality of life (QoL) dwells in a person's overall well-being. Recently, QoL measures have become critical and relevant in stroke survivors. Instruments measuring QoL of individuals with aphasia are apparently rare in the Indian context. The present study aimed to develop a Kannada instrument to measure the QoL of people with aphasia. Study objectives were to validate Stroke and aphasia quality of life-39 (SAQOL-39) into Kannada, to measure test–retest reliability and internal consistency. **Materials and Methods:** The original English instrument was modified considering socio-cultural differences among native English and Kannada speakers. Cross-linguistic adaptation of SAQOL-39 into Kannada was carried out through forward–backward translation scheme. The scale was administered on 32 people from Karnataka (a state in India) having aphasia. For a direct understanding of the subject's QoL, scores were categorized into QoL severity levels. Item reliability of the Kannada version was examined by measuring Cronbach's alpha. Test–retest reliability was examined by calculating the intraclass correlation coefficient (ICC). **Results:** Kannada SAQOL-39 showed good acceptability with minimum missing data and excellent test–retest reliability (ICC = 0.8). Value of Cronbach's α observed for four items modified in the original version was 0.9 each and the mean α of all Kannada items was 0.9, demonstrating high internal consistency. **Conclusions:** The present study offers a valid, reliable tool to measure QoL in Kannada-speaking individuals with aphasia. This tool is useful in a cross-center, cross-national comparison of QoL data from people with aphasia. This instrument also permits direct translation into other Indian languages as the items are culturally validated to the Indian population. This study promotes future research using the Kannada SAQOL-39.

Keywords: Aphasia, Kannada, quality of life, stroke and aphasia quality of life-39, stroke

B33. Krishnan G., Pujari R., Roy K. Literacy-Based Normative Data for Elderly Adults on Linguistic Profile Test in Kannada and Malayalam. Annals of Indian Academy of Neurology, 2020 Aug;23(2):199

Abstract : Objectives: Literacy is an important variable that can influence the performance of persons with aphasia on language tasks. This study aimed to generate the literacy-based normative data in two Indian languages (Kannada and Malayalam) for a linguistic tool originally designed for adults with acquired language impairment following brain damage—the Linguistic Profile Test (LPT).[1] Methods: The Kannada and Malayalam versions of LPT were administered on 134 and 127 normal speakers of these languages, respectively. The participants were divided into three literacy groups (nonliterates, semiliterates, and literates). The scores on each section of the test as well as the overall scores were determined, as per the instructions provided in the test material. Results: The influence of literacy was apparent in semantic and syntax sections of the LPT. Participants from nonliterate group performed notably poorly on these two tasks compared to other two groups. Literacy, however, did not show an effect on the “phonology” section of LPT. Conclusion: The literacy-based norms of LPT developed here could improve the sensitivity of clinical evaluation by reducing the “false positives,” especially while evaluating the language skills of nonliterate persons with brain damage.

Keywords: Aphasia, Kannada, language, literacy, Malayalam

B34. Paplikar A, Iyer GK, Varghese F, Alladi S., Pauranik A., Mekala S., Kaul S, Sharma M, Dhaliwal R.S., Saroja A.O., Dharamkar S, Dutt A, Divyaraj G, Ghosh A, Kandukuri R, Mathew R, Menon R.,

Narayanan J., Nehra A, Padma M.V, Ramakrishnan S., Ravi S.K., Shah U., Tripathi M., Sylaja P. N, Varma R.P., A Screening Tool to Detect Stroke Aphasia: Adaptation of Frenchay Aphasia Screening Test (FAST) to the Indian Context Annals of Indian Academy of Neurology, 2020 Aug;23(2):168

Abstract : Background: Aphasia is a common consequence of stroke. To optimize recovery, it becomes critical as there are early identification and treatment of language deficits. The rising burden of stroke aphasia and lack of screening tools in the Indian context necessitates the need for a screening tool. Objective: We aimed to adapt and validate the Frenchay Aphasia Screening Test (FAST) to the Indian context in two widely spoken Indian languages, Telugu and Kannada, for the literate and illiterate population. Methods: A systematic process of adaptation and culturally appropriate modifications of the original FAST were done in 116 healthy controls and 115 patients. The validity of the adapted test was established. Results: The optimum cut-off values for detecting aphasia in our sample ranged from 25 to 25.5 (literate) and 13.5 to 15.5 (illiterate) with high sensitivity and specificity. There was also a significant correlation between aphasia scores for adapted FAST and the Western Aphasia Battery (WAB), establishing good convergent validity. Discussion: Results of the adaptation and validation of two Indian versions of FAST, suggest that it is an easy-to-use screening measure for detecting stroke-related language disabilities. The psychometric properties of the Indian version of FAST met the standardised requirements for adaptation and validation. Conclusions: The Indian version of FAST was found to be a reliable and valid bedside screening tool for aphasia in stroke patients. We aim that this study will facilitate the use of the test across other Indian languages and a large clinical population in the future.

Keywords: Adaptation and validation, aphasia testing, language, screening, stroke

B35. Singh P. Pauranik N., Pauranik A, Culturally Appropriate Stimuli for Cognitive Neuropsychology-Based Treatment "Intensive Language Action Therapy (ILAT)" Annals of Indian Academy of Neurology, 2020 Aug;23(2):135

Abstract : Context: A standardized set of picture stimuli for neuro-language disorder has been long overdue. Aims: To develop a standardized set of 303 pictures for use in experiments of Intensive Language Action Therapy (ILAT). **Methods and Material:** Several sources with standardized picture stimuli having culturally unbiased features were studied. Among those studies two prime sources (1) Snodgrass & Vanderwart (1980), 127 (89+37) items and (2) Neininger & Pulvermuller (2002), 147 (89+56) items were used extensively. Out of 303 stimuli, 89 items were common to both principle sources. An Indian study by George & Mathuranath (2007) has also been taken as an additional source. Line drawing stimuli were standardized on four variables of central relevance to memory and cognitive processing: name agreement, image agreement, familiarity, and visual complexity. Statistical analysis used: All measures related to 303 concepts i.e. % correct, H statistics, familiarity, image agreement and visual complexity were analysed descriptively. **Results:** Low mean and positive skew on H statistics and visual complexity show that many concepts had a high name agreement (13 concepts have H values of .0, and 55 have H values of 0.68 or below, where 0.68 represents consensus among all but few of the subjects on a picture's name) and were visually simple line drawings. The intercorrelations among the four measures were low, suggesting that they are indices of different attributes of the pictures. **Conclusions:** Usage of appropriate items/stimuli has immense potential to influence aphasia therapy outcome. This set of pictures and its normative

variable has enhanced the ILAT outcome. It could be generalised for other aphasia therapy too to understand its efficacy.

Keywords: Familiarity, ILAT, Imageability and visual-complexity, snodgrass and vanderwart.

B36. Barnali Mazumdar, Neila J. Donovan Maintaining Research Fidelity: Remote Training and Monitoring of Clinical Assistants in Aphasia Research. Annals of Indian Academy of Neurology, 2020 Aug;23(2):130

Abstract : Background: In aphasia research, to improve a study's reliability, the aphasia journals compel their authors to report fidelity. Aphasia researchers are mostly concerned about Type I and Type II errors to maintain the level of confidence. However, the third type (Type III error) can significantly affect the study outcomes and question the research fidelity. **Objective:** This study explains the methodology of how investigators maintained research fidelity in the context of hiring and training remote data collectors and conducted a multi-site data collection. **Methods:** The present study used a descriptive analysis design to explicate the three-step process of remote data collection: (1) remotely selecting and training data collectors, (2) remotely supervising data collection and data management, and (3) optimizing and monitoring screening/assessment fidelity. At the initial step, investigators interviewed seven candidates and short-listed four of them, who were trained using a standard training protocol and participated in a mock data collection. For the next two steps, data collectors video-recorded each study session and e-shared the data with the investigator, who watched all the video-recordings and provided necessary feedback with a focus on the screening sections. The screenings were a part of the inclusion-exclusion criteria. **Results:** Two data collectors (both clinical psychologists) with the highest scores were selected and received final training. One-to-one e-supervision by the investigator resulted in significant improvement in data collectors' performance. Only 4% of the total collected sample size was excluded, and 99 participants' data were analyzed. **Conclusion:** The present study adds information on maintaining research fidelity for remote data collection, where limited studies exist.

Keywords: Remote data collection, remote training and supervision, research fidelity, Type III error

B37. Mumby K. Preliminary results from using the Panjabi adaptation of the Aphasia Screening Test. International Journal of Language & Communication Disorders. 1990 Aug;25(2):209-26.

Abstract : The Panjabi adaptation of the Aphasia Screening Test (AST) has been used with a small group of stroke patients and the preliminary results are reported. All the patients are described and their test results plotted. Observations are made about the test procedure, with recommendations for its further use

B38. Kaur H, Nehra A, Chopra S, Sati H, Bhatia R, Kumaran S.S., Pandey R.M., Srivastava MVP Development and Validation of a Comprehensive Neuropsychological and Language Rehabilitation for Stroke Survivors: A Home-Based Caregiver-Delivered Intervention Program. Annals of Indian Academy of Neurology, 2020 Aug;23(2):113

Abstract : Introduction - Stroke is one of the major disabling noncommunicable diseases in India and worldwide, with Disability Adjusted Life Years (DALYS) between the age group of 20 to 64 years.[1,2] An increasing number of young stroke survivors (SS) imposes significant social and financial implications on their families due to the loss of their major productive years of life.[3] Globally, most strokes occur in low- and middle-income countries where many of the affected people have limited or no access to rehabilitation services.[4] India has seen a change in terms of the stroke care units and physical rehabilitation following a stroke Context: Aphasia is a major disabling symptom after a stroke that profoundly affects the quality of life of stroke survivors (SS) and their caregivers. Comprehensive neuropsychological rehabilitation has emerged as a complementary intervention that helps in improving the associated cognitive and psychological deficits and quality of life following a brain injury. A standardized, simple, and easy to administer intervention that can be delivered as a home-based intervention can assist in faster recovery. Aims: To describe the development, validation, and feasibility of a home-based, caregiver-delivered comprehensive neuropsychological and language rehabilitation for SS. **Methods and Material:** A culture-specific picture and task-based 8-week training workbook and manual were developed based on extensive review and focused group discussions. This intervention targeted areas of language (comprehension, fluency, and naming) and cognition (working memory, attention and concentration, executive functioning, and response inhibition). It was standardized on 40 healthy controls (HC) and 15 SS. Before recruitment, written informed consent was obtained from each patient, their primary caregiver, and the HCs. **Results:** All tasks were found to be effective in discriminating the performance of SS from the HC. The performance of the HC with respect to the errors and the time taken for each task was used for the hierarchical arrangement of the tasks. The developed intervention was later validated on 15 SS where they significantly improved in the pre-post assessment of language functioning ($P < 0.001$), quality of life ($P < 0.001$), and depression ($P < 0.001$). **Conclusions:** This intervention can be feasible to administer as a home-based intervention and may help to alleviate language and neuropsychological complaints after stroke in low-literate or mixed-cultural populations. Further, large sample size studies are recommended.

Keywords: Aphasia, cognition, cognitive remediation, India, neuropsychology

B39. Mitra IH, Krishnan G. Adaptation and validation of stroke-aphasia quality of life (SAQOL-39) scale to Hindi. Annals of Indian Academy of Neurology. 2015 Jan;18(1):29 *(See the abstract in Section M)*

B40. R, Krishnan G. Adaptation and validation of stroke-aphasia quality of life (SAQOL-39) scale to Malayalam. Annals of Indian Academy of Neurology. 2015 Oct;18(4):441. *(See the abstract in Section M)*

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[C]

Clinical Neurology, Clinico-anatomical correlations

C1. Balasubramania. S., Shanbhogue. K.R., Bijoy Menon K, Gopinathan S, Natarajan V, (2005). Disconnection in Language Disorders; Annals of Indian Academy of Neurology, 8, 95.

Abstract : Disconnection can be a pathophysiological mechanism in language disorders. We report three cases where disconnection is postulated as a causative factor for the aphasic syndromes. These are alexia without agraphia, conduction aphasia and aphasia. The pathophysiology is discussed and the “neural network" theory of brain function highlighted.

Keywords : Disconnection, Alexia, Agraphia, Conduction Aphasia, Neural Network.

C2. Bhatnagar SC, Jain SK, Bihari M, Bansal NK, Pauranik A, Jain DC, Bhatnagar MK, Maheshwari MC, Gupta M, Padma MV. Aphasia type and aging in Hindi-speaking stroke patients. Brain and language. 2002 Nov 1;83(2):353-61.

Abstract : In this study, the clinical profile of Hindi-speaking stroke patients with aphasia from northern India has been investigated. We examined the interactional effect between age and gender with aphasia type in 97 Hindi-speaking right-handed individuals, the majority of them with a confirmed diagnosis of a cerebrovascular accident. The subjects included in the study ranged from 3 weeks to two years post-onset with a diagnosis of a common classical aphasia (Broca's, Wernicke's, anomic, global, conduction, and transcortical) types involving both males and females. Also examined was the interaction between literacy and aphasia type since the subjects had varied exposures to education (total illiteracy to professional/university education). While the data reported here about Hindi-speaking aphasics are relatively in agreement with the age-aphasia type patterns discussed in western countries, nonetheless some differences were also observed. The mean age of Indian patients with aphasia was significantly lower. Also, in addition to some gender and literacy related differences, an outstanding difference was that many clinical symptoms that are known to co-occur with aphasia were not readily reported by subjects with stroke.

Keywords : Aphasia, Age, Gender, Hindi, Literacy.

C3. Bhatoe, H.S., & Rohatgi, S. (2002). Transitory alexia without agraphia following Head injury. Neurology India, 50, 227-228.

Abstract : A 35-year-old right handed female was detected to have profound inability to read without any neurological deficit including verbal speech and MMSE, after regaining consciousness. CT Scan showed a small extradural hematoma over right temporoparietal region and a small area of hemorrhagic contusion over the left frontal convexity. She could not

identify individual letters or words but writing, both spontaneous and to dictation was normal, as was spelling and copying. She could not read her own writing. The site of the lesion was possibly the deep parieto-occipital periventricular white matter, since she did not have visual field defects or object agnosia. Color naming was defective. She made a rapid and complete recovery in 3 days. It is likely that there was interruption of vertical fasciculus by shearing of the deep white matter in the occipital lobe in our patient..

Keywords : Alexia, Agraphia, Head Injury, Color Naming.

C4. Chakraborthy, A., Sumathi, T.A., Mehta, V.S., & Singh, N.C. Piture-naming in patients with left frontal lobe tumor – a functional neuroimaging study. Brain Imaging and Behavior

Abstract : The objective of this study was to investigate behavioral performance as well as cortical activation patterns while picture-naming, in patients with left frontal lobe tumor prior to surgery. Functional magnetic resonance imaging was used to compare behavior and brain activations while 10 patients with a tumor in the left frontal lobe and 9 controls, named aloud simple pictures presented in a block design inside a 3 T Philips Achieva scanner. Evaluations of task performance included naming accuracy and articulation time. Behaviorally, patients took significantly longer to articulate picture names but naming accuracy was preserved. Analysis of brain activations showed differences only in the frontal regions of the cortical network. In particular, while the frontal activations in the control population were focused and localized in the left inferior orbito-frontal gyrus, in patients the frontal network was distributed and included a significantly greater number of clusters that were distributed in homologous or near homologous areas of the (orbito-frontal gyrus) left and/or right hemisphere of the frontal lobe. Our results suggest that in patients with a left frontal lobe tumor the process of naming simple pictures is preserved but the cortical network of activation in the frontal region is altered and is distributed in the frontal regions of both hemispheres.

Keywords : Picture naming, Frontal lobe tumor.

C5. Dua SG, Kembhavi S, Arora B. Hemiparesis and aphasia in a child with acute lymphoblastic leukemia. Annals of Indian Academy of Neurology. 2011 Oct;14(4):319.

C6. Girija, A.S., Somanath,V. (1999). Epilepsy, Acquired Aphasia with Focal Cortical Dysplasia; Annals of Indian Academy of Neurology, 2, 177.

Abstract : A six year old boy having complex partial seizures with secondary generalization of four months duration developing isolated expressive dysphasia, later progressing to global aphasia is being reported. His awake EEG showed a left temporal spike wave discharge and sleep EEG showed continuous spike and ware discharges. MR imaging demonstrated focal cortical dysplasia in the left frontal and opercular region, a combination that has not been reported earlier.

Keywords : Acquired childhood Aphasia, Cortical Dysplasia.

C7. Gupta, A.(2003). Cortical Evoked Potentials in Aphasics. Unpublished Dissertation (Guide : Vanaja, C.S.), AIISH, Mysore.

Abstract : This study aimed to investigate the cortical evoked potentials (LLR, P300, & MMN) in persons with aphasia. The LLR and P300 were administered at repetition rate of 0.9/s by presenting stimulus at 80 dBnHL and the MMN at repetition rate of 3.1/s and 60 dBnHL. Five persons with aphasia in the age range of 3.1/s and 60 dBnHL. Five persons with aphasia in the age range of 15 to 70 years were taken for the study. The results revealed that LLR was abnormal in two of three anomic subjects, whereas, P300 was affected in all the three. MMN was found to be affected in two anomics, while in the third, ic could not be recorded. IN the case of Broca's Aphasia, only N2 and P300 recordings of right ear showed abnormality. In conduction aphasic, LLR was found to be prolonged in the left ear. Abnormality. In conduction aphasic, LLR was found to be prolonged in the left ear. Abnormality in P300 was seen for right ear showed abnormality. In conduction aphasic. LLR was found to be prolonged in the left ear. Abnormality in P300 was seen for right ear while MMN was found to be affected in left ear. In general, the study showed extreme variability in the recorded cortical evoked potentials making in difficult to explain the site of lesion.

Keywords : Cortical Evoked Potentials, Aphasia, LLR, P300, MMN.

C8. Jacob, A.E., Karanth, P., & Thomas J. (2000). Laterality in the India Population. Paper presented at the 1st International Conference 'Neurology, Language and Cognition-2000' Triruvananthapuram.

Abstract : Cerebral dominance is the functional specialization of one half of the brain. This takes place as the child grows older and his brain matures. A parallel has been drawn between manual dominance and dominance for language and measures of handedness have been used determine of cerebral dominance. Measures of handedness includes both inventories and quantified procedures (Bishop, Ross & Bright, 1996 and Calvert & Bishop, 1998). In countries like India there is still a taboo against left handedness and consequently a lower incidence of sinistrality reported (Karanth and Rangamani, 1988). Quantified procedures of handedness than inventories. We therefore carried out both these measures of establishing handedness in an Indian population. The results will be presented and their implications discussed. Results showed an incidence of sinistrality as low as 8.8%. among those who claimed to be right handers, 4.4% reported to have been force shifted. A comparison between the measures showed that the QHP and the inventory had no significant difference.

Keywords : Handedness, Dominance, Sinistrality, India.

C9. Karanth, P., & Rangamani, G.N., (1988). Crossed-aphasia in multilinguals; Brain and Language, 34 (1), 169-180.

Abstract : Reports of crossed aphasia in single case studies of bilinguals have led to incidence studies of crossed aphasia among larger groups of stroke patients. Among a few others, studies carried out in India (*Indian Journal of Medical Research*, 61, 9; P., In *Language processing in bilinguals: Psycholinguistic and neuropsychological perspectives*) have lent support to the notion of a higher incidence of crossed aphasia among bi- and multilinguals and form major citations

in support of the hypothesis that bilingualism could lead to a greater bilateral cerebral representation of languages. This paper reports on the incidence of crossed aphasia in a large unselected population of stroke patients in monolingual and multilingual speakers of South India, which is in agreement with the previous reports of a higher incidence of crossed aphasia in multilinguals. However, along with this high incidence of crossed aphasia a low incidence of sinistrality was also seen. In order to confirm these findings and their significance two further studies were carried out Aman incidence study of crossed aphasia in a population of mono- and multilingual aphasics and an incidence study of hand dominance in a normal population. The results and their significance to the issue of crossed aphasia in multilinguals are presented

C10 Kaul, S., Varalaxmi, E. A., Sreenivas, C., Suvarna, A., Meena, A.K. & Murthy, JMK (2000). Aphasia in various stroke subtypes Hyderabad Stroke Data. Paper presented at the 1st International Confernce 'Neurology, Language and Cognition-2000', Thiruvananthapuram.

Abstract : In a large cohort of 900 patients of ischemic stroke, 102 (12%) suffered from various aphasic syndrome. Among males 11% and among females 16% suffered from aphasia. Mean age was 61 year (range 20-84 year). Eighty six percent had ischemic stroke and 14% had intracerebral haemorrhage. Motor aphasia was found in 63%, global aphasia in 22% sensory aphasia in 10%, anomic aphasia in 3%, subcortical aphasia in 2% and transcortical motor aphasia in 2% of patients. The underlying stroke subtype was haemorrhage in 14%, extracranial carotid disease in 18%, intracranial vascular disease in 19%, cardioembolic stroke in 13%, lacunar stroke in 2% and unknown in 34% of patients. The aphasic syndromes occurred in 15% of stroke patients. Women seemed to be a higher risk. Motor aphasia was the most common type and occurred mostly due to involvement of Broca's area. Subcortical aphasia was rare in ischaemic stroke. There did not seem to be any significant co-relation between any stroke subtype and aphasia, except its rarity in lacunar infarction.

Keywords : Aphasia, Stroke, Incidence, Ischemic, Cardioembolic, Hemorrhage.

C11. Krishnan, G., & Tiwari, S., (2010). Selective impairment of verb retrieval in subcortical Aphasia; Indian journal of applied linguistics, 36 (1-2).

Abstract : Selective impairments of word-class retrieval skills have been extensively reported in the literature. Such findings posit that the conceptual knowledge is represented in specific categories, with possibility different neural representations. Although there are myriads of such findings in the literature, similar reports are scanty from the Indian context. Against this backdrop, we present two subjects with comparable subcortical lesions and aphasias. Interestingly, one subject showed selective difficulty in retrieving verbs. An attempt is made in this paper to discuss the reason for such a selective verb retrieval deficit in one patient alone and the relevance of probing into such dissociations in the Indian context. Based on our observations, we advocate the incorporation of verb naming task in the routine screening of subjects with brain damage.

Keywords : Subcortical Aphasia, Selective Impairment, Verb Retrieval.

C12. Krishnan, G., Nair, R., Lokesh, B. & Tiwari, S. (2007). Atypical aphasia : A case report. Asia Pacific Journal of Speech, Language and Hearing, 10(4), 231-236.

Abstract : Atypical aphasia are rarely reported in the literature. Occurrence of such aphasias raises serious criticism on the current understanding of brain-language relationships. This study reported the case of a subject who exhibited predominantly posterior language symptoms following damage to anterior areas in brain. The subject also exhibited atypical recover of his linguistic skills.

Keywords : Aphasia, Atypical, Functional Organization, Recovery.

C13. Krishnan, G., Rao, S.N., & Rajashekhar, B. (2009). Apraxic agraphia : An insight into the writing disturbance of posterior aphasia. Annals of Indian academy of Neurology, 12(2), 120-123.

Abstract : Background : Reading and writing disturbances are common accompaniments of aphasia following brain damage. However, impaired writing in the absence of apparent primary linguistic disturbances is infrequently reported in the literature. Materials and Methods ; A 67-year-old right handed subject underwent neurological, neuroradiological and linguistic investigations following development of a minimal right upper limb weakness. Result : The patient had polycythemia and the neurological investigation revealed right upper limb paresis. The neuroradiological investigation revealed right upper limb paresis. The neuroradiological investigation revealed hypodense areas involving the gray-white matter of the left postero-parietal and frontal lobe, left caudate and lentiform nuclei, and the anterior limb of the internal capsule, suggesting an infarct. The linguistic investigation revealed a mild anomic aphasia with apraxic agraphia. This mild anomic aphasia resulted primary from the relatively poor scores on the verbal fluency tests. Discussion : The marked writing impairment, even with the left hand, points to disturbances in written output. This finding should raise suspicion about hidden apraxic agraphia in subjects with posterior aphasias.

Keywords : Agraphia, Apraxia, Writing, Posterior Aphasia.

C14. Krishnan, G., Tiwari, S., Pai, A.R., & Rao, S.N. (2010). Subcortical global aphasia without hemiparesis. Procedia – Social and Behaviour Sciences, 6, 96-97.

Abstract : Owing to the unusual dissociation between linguistics and motor function, global aphasia without hemiparesis (GAWH) is a rare condition. Often, this condition persists or recovers to Wernicke's or transcortical motor aphasia. GAWH subsequent to subcortical stroke is an extremely rare condition having only two cases reported thus far. In this context, the authors presented the case of 55-year-old man who experience global aphasia without motor deficits following an episode of stroke in the subcortical areas. The authors portrayed this case as an evidence for anomalous cerebral functional organization.

Keywords : Global Aphasia without hemiparesis, GAWH, Functional Organisation.

C15. Krishnan, G., Tiwari, S., Rao, S.N., & Kiran, S. (2008). Subcortical aphasia : A misnomer ? Evidence from incidence and variability. Paper presented at the 46th Annual Meet of the Academy of Aphasia.

Abstract : The authors reviewed a series of 72 patients with subcortical stroke to study the incidence and types of aphasia. Among this cohort of stroke subjects, only eight persons exhibited aphasia (2 thalamic, 2 basal ganglia, & 4 with lesions in other subcortical structures.) Further, the authors observed extreme variability in the aphasic profiles of their subjects with same lesion sites. With the evidence from this retrospective study, the authors argued that subcortical structure may not directly participate in language processing, drawing support from the recent hypothesis on cortical hypoperfusion following subcortical lesion.

Keywords : Subcortical, Aphasia, Incidence, Variable, Hypoperfusion.

C16. Krishnan, G., Tiwari, S., Rao, S.N., & Rajashekhar, B.(2009). Crossed nonaphasia and its implications for brain-langauge relationships in right-handed subjects. Asia Pacific Journal of Speech, Language and Hearing, 12(1),71-77.

Abstract : Anomalous lateralization of linguistic functions is observed in a small group of right-handed subjects with unilateral brain damage as either crossed aphasia or crossed non-aphasia (left hemisphere damage without aphasia but with symptoms of right hemisphere damage such as visuospatial deficits). The incidence of crossed non-aphasia is reportedly far less than that of crossed nonaphasia, a clinical manifestation that often could go unnoticed. An attempt is made to explain the observed clinical manifestations from the perspectives of the current understanding of anomalous organization of cognitive functions in the brain as well as its implications on language representation in right-handed subjects.

Keywords : Crossed Nonaphasia, Functional Organisation.

C17. KuJan-Mar, K.A., Murthy, J.M.K., Kumar A.K. (1993). Alexia without agraphia : A case report with CT demonstration of the lesion and review of literature. Neurology India, 41(2):109-111.

C18. KuJan-Mar, K.A., Murthy, J.M.K., Bhaskar, G., (1993). Anterior cerebral artery territory infarctions : a clinico-radiologic study based on CT. Neurology India, 41(3),137-142.

Abstract : Clinical features of acute infarcts in the anterior cerebral artery territory are correlated to the topography of lesions on CT Scan in 15 patients. The most common clinical feature, hemiparesis with crural dominance correlated well with the involvement to the contralateral paracentral lobule in all 12 patients. Patients who had facio-brachial weakness and hemiparesis showed infarcts limited to the periventricular white matter around anterior horn of lateral ventricle. Large medial-basal frontal lesions were associated with behavioral disturbances in 5 patients. In 3 patients who had patchy lesions involving the paracentral lobule, supplementary motor area and medial frontal areas with sparing of the fronto-polar areas had bladder disturbances in3 patients, while 3 other patients who had involvement of the same areas did not show bladder disturbances. The size of the infarct seems to have not much correlation as compared to the site and structures involved. Supplementary motor area lesions had associated speech disturbances like mutism, transcortical motor aphasia and decreased non-fluent verbal output, in one case each. Clinical features in anterior cerebral artery territory have more often fair correlation with topographic lesions on CT.

Keywords : Mutism, Aphasia, Supplementary Motor Area.

C19. Singh, M., Observed Hand preference and language disorders.

Abstract : In the present study, we made language disorders. Hand preference was assessed through observation for ten activities that are common to most handedness questionnaires. The handedness score of these children has been found markedly deviant from the scores of the matched group of normal children. For example, the incidence of left handedness has been found as high as 20% among the children with language disorders.

Keywords : Handedness, language disorder.

C20. Nair K.R., Virmani V., (1973) Speech and Language disturbances in hemiplegics; Indian journal of medical Research, 61, 1395-1403

Abstract : This study was conducted in patients with hemiplegia to evaluate the frequency and nature of speech disturbances associated with right hemispherical lesion and also to study the pattern of language seen in educated Indians who are mostly polyglots. Seventy percent right hemiplegics and 55 percent left hemiplegics had dysphasic disturbances. Cortical dysarthria was seen in a considerable number of patients. Physiological and linguistics bases for cortical dysarthria are discussed. Deficiency of gestural expression associated with expressive dysphasia and lack of spontaneity of speech was encountered in a significant number of cases. Associated praxic, Gnostic and 'Body Schema' disturbance in dysphasic and non-dysphasic hemiplegic patients were compared. Higher incidence of 'Body Schemia' disorganization in non-dysphasics was noted. Visuo-constructive apraxia was more severe in left hemiplegics while ideational and ideokinetic apraxias were more pronounced in right hemiplegics. In majority of educated Indian polyglots, uniform impairment for expression was seen in the language capacity was seen. In a highly educated polyglot patient, differential loss in his mother language with was seen as an interesting feature. These features are discussed with reference to the educational and cultural patterns of language expression prevailing in this country.

Annotation : In their seminal study published about four decades ago, Dr. Rajashekaran Nair and Vimla Virmani provided a comprehensive account of the speech and language disturbances in people with hemiplegia. The authors deserve a loud applause as they addressed a horde of issues that remain of great significance to the neuroscientists even today. Further, their attempts to investigate the linguistic disturbances in polyglots show the farsightedness of these authors, in the emerging multilingual world, and especially in a nation like India. For linguistic examinations, Nair and Virmani mainly used qualitative measures as formal assessment batteries were still to be developed in the country. In short, it is noteworthy that this study was pretty timely as the neuroscientists across the world were attempting to gain greater insights into the perplexing association between brain and behavior, which continues even today.

Keywords : Aphasia, Hemiplegia, Polyglot, apraxia, Dysarthria.

C21 Ojha, P.K., Nandavar, S., Pearson, D.M. & Demchuk, A.M., (2011). Aphemia as a presenting symptom in acute stroke. Neurology India, 5(3) 432-434.

Abstract : Aphemia is an apraxia of speech characterized by complete articulatory failure in the presence of preserved writing, comprehension and oropharyngeal function and can be the presenting manifestation of acute stroke. The responsible lesion is commonly in the left inferior frontal gyrus or the left motor cortex near the face M1 area. Three patients who developed aphemia due to acute ischemic stroke are described here. All had apraxia of speech due to acute infarct in the left motor cortex near face M1 area. Understanding the underlying speech disorder is crucial in planning the appropriate rehabilitation strategy.

Keywords ; Aphasia, Aphemia, Apraxia, Speech

C22. Rakhee, K.J., & Suresh, P.A. (2000). An unusual combination of symptoms of Gerstmann's syndrome, apraxia and alexia in a patient recovering from aphasia. Paper presented at the 1st International Conference 'Neurology, Language and Cognition-2000' , Thiruvananthapuram

Abstract : Classical Gerstmann's syndrome is thought to be an isolated lesion of the left angular gyrus resulting in finger anomia, right-left disorientation, acalculia and agraphia. The syndrome may be often associated with other features like apraxia and alexia. The purity of this syndrome as an isolated entity or as a recovering phase in aphasia is not fully sorted out. This case report describe features of Gerstmann's syndrome in addition to apraxia and alexia. But the most interesting observation was a peculiar type of disturbed body schema and supra modal dissociation of calculation and dissociation in individual components of mathematical ability. The case has been extensively analyzed in its features of calculation and body schema orientation and co-related with anatomical site of lesion.

Keywords : Gerstmann's syndrome, Body Schema, Acalculia, Agraphai, Anomia.

C23. Raksha, H.R. (1994). Differential Diagnosis of Dementia from Aphasia using a language test in Kannada : A Pilot study. Unpublished Dissertation (Guide ; Karanth, P.). AIISH, Mysore

C24. Raybarman, C., (2002). Landau-Kleffner Syndrome : A case report; Neurology India, 50.

Abstract : A healthy 5 year old boy developed aphasia, attention disorder and hyperkinesia preceded by transient formed visual hallucinations and emotional outburst, immediately after a stressful event of forced separation from his father. EEG showed generalized epileptiform activity. He was diagnosed as Landau-Kleffner syndrome (LKS). CT and MRI of the brain were normal. SPECT showed left mesial temporal hypoperfusion. He improved on antiepileptics and ACTH.

Keywords : Acquired childhood aphasia, LKS, Stress, EEG.

C25. Shivashankar, N., Vishnupriya, G., Raksha, H.R., Ratnavalli, E. (2010). Language profile of a child with Landau-Kleffner Syndrome; Indian journal of applied linguistics, 36 (1-2)

Abstract : We report here a longitudinal study of a 3.8 year old female child diagnosed as having Landau-Kleffner Syndrome (LKS). Speech language analysis was carried out over a two-year period while the child was on medical treatment regime of medication. However, the recovery was significant during the exacerbation phase although not complete. At the end of the two-year period, she was found to have a lag of over one and half year in the language function as against the chronological age. Detailed conversational sample of the child is reproduced at the end of this paper.

C26. Snithin S, Manikoth. M,. (2012). Can anti Epileptic drugs care aphasia ? An Insight into ictal aphasia, CARE Audiology & Speech Therapy Clinic, Kannur.

Abstract : When a patient exhibits paraphasias, poor auditory verbal comprehension with some right side weakness in addition to present CT findings it points in the direction of a probable left hemisphere cerebrovascular accident (CVA). In the present case the cause was seizures at the left temporal lobe making EEG indispensible in investigations for such unexplained aphasias to help in early diagnosis and treatment. Moreover even when the seizure activity was mainly at the temporal lobe, patient exhibited features of anterior aphasia as well. Hence the clinical symptoms, speech and language characteristics of Ictal aphasia need to be further studied in correlation with EEG findings for better differential diagnosis in unexplained aphasias.

Keywords : Seizure, EEG, Aphasia, Ictal.

C27. Suchitra N (1992). Linguistic Profiles of Aphasia Sub-Types. Unpublished Dissertation (Guide : Karanth, P.) AIISH, Mysore.

C28. Suvarna A., Rukmini M., Shailja M., Vani R., Kaul, S., (2010) Fluent Aphasia in Telugu : A case comparison study of semantic Dementia and Stroke Aphasia; Indian journal of applied linguistics, 36(1-2).

Abstract : This study presents two cases with fluent aphasia in Telugu with semantic dementia and post-stroke fluent aphasia. Comparable scores were obtained on the conventional neuropsychological and language tests that were administered on the two cases. Both cases demonstrated fluent, grammatical and well-articulated speech with little content, impaired comprehension and anomia. When conventional tests are supplemented with detailed testing of semantic memory and combined with an exhaustive history, a differential diagnosis was effectively made. It was possible to determine the type of word retrieval deficits in both cases. While the person with post-stroke fluent aphasia demonstrated an access type of word retrieval deficit, the person with semantic dementia demonstrated a degradation of the semantic system itself. Even though the two fluent aphasics were seemingly similar, marked differences in the type of problem and presenting symptoms were noticed. The study aims to elucidate the differential nature of fluent aphasia in these two disorders.

Keywords : Fluent Aphasia, Dementia, Differential Features, Semantic System, Word Access Anomia.

C29. Narang, V., Baruah, D.M., Yadav, R. (2010) Number recognition deficit and arithmetical disorders in cases of stroke. Indian Linguistics Volume 71, 123-146

Abstract : Twenty seven cases of stroke and five normal subjects as control group were studied to see if their numerical and arithmetical abilities were affected. The tests devised for the cases of stroke were aimed at finding out if the patients having aphasia always have acalculia and vice-versa; does occurrence of one indicate the presence or absence of the other; or do they occur independent of each other. The study also examines if patients having number recognition problem have anomia, word finding difficulties as well; if number recognition and arithmetical disorders are occur as mutually exclusive or inclusive problems the study also aimed at comparing the number recognition and numerical processing deficit in cases of suffering neurological damage in the left hemisphere with those of suffering neurological damage in the right hemisphere. Finally the study also reflects the nature of difficulty in handling numbers and numerical processes in the subject under study. There are some interesting results compelling us to take a fresh look at various hypothesis vis-à-vis numerical structures and arithmetical processing by the brain.

Keywords: Number recognition, Acalculia, Arithmetic processing, Anomia.

C30. Narang, V., Rayapa, S., Gopalakrishnan, R., (2007). When the left and the right do not communicate; Two case studies of punjabi aphasics with LHD and RHD; Indian linguistics, Journal of the linguistic society of India, 68.

Abstract : The present study is a comparative account of two aphasics with severe Dysarthria as a result of Aphasia, where one patient had left hemisphere damage and the other had right midline shift, which sometimes lead to a loss of communication between the two hemispheres. The two individual case studies show a much less impact on their language abilities such as phonological and syntactic functions, primarily comprehension, while their expression is severely affected. But it appears that the integration and consolidation of the left and the right hemispheric functions seems to be hampered. The two case studies are presented here along with a control of one age matched Punjabi speaker to highlight the points of similarity and contrast. This study leads us to the hypothesis that these injuries in the midbrain. Region can causes a loss of communication between the two hemispheres causing a speech and communication problem, primarily dysarthric condition that is not entirely aphasic.

Keywords : Hemisphere, Communication, Speech, Dysarthria, Aphasia.

C31. Verma, A., Singh, N.N., Mishra, S. (2004). Transitory alexia without agraphia : A disconnection syndrome due to neurocysticercosis. Neurology India 52(3), 378-9

Abstract : We describe a 65-year-old male who presented with acute onset inability to read, without any difficulty in writing. A clinical diagnosis of alexia without agraphia was made and the patient was subjected to routine investigations including contrast MRI. MRI showed a ring-enhancing lesion in left occipital area, suggestive of neurocysticercosis supported by quantitative enzyme-linked immunosorbant assay form purified cell fraction of taenia solium cysticerci (PCF-ELISA). Patient was treated with albendazole and prednisolone for one week. The clinical manifestation as well as the radiological finding resolved after treatment.

Keywords : Alexia, Agraphia, Disconnection Syndrome, Neurocysticercosis.

C32. Karthik DK, Khardenavis V, Kulkarni S, Deshpande A. Global aphasia in a case of bilateral frontal lobe infarcts involving both caudate nuclei. Case Reports. 2017 Nov 11;2017:bcr-2017.

Abstract : We report a 50-year-old man with history of systemic hypertension, nicotine addiction and a folk singer by profession was brought to the hospital with history of abrupt onset of speech arrest at the peak of a high note during his stage performance. His co-performer friend noticed that he was unable to restart his song performance despite back stage prompting. He appeared clueless and unresponsive with expressionless face all of a sudden. His relatives were certain that there was a dramatic change in patient's personality (from an extrovert to an introvert). The patient seemed disinterested in his surroundings. He seemed to have a 'vacant stare'. On examination, his blood pressure was 170/100 mm Hg. He was conscious, alert, but unresponsive to simple verbal commands. There was no speech output. Fundus examination showed grade 1 hypertensive retinopathy, no papilloedema. Motor functions were preserved. MRI of brain with magnetic resonance angiography (MRA) was done in view of strong possibility of cerebrovascular accident. The diffusion-weighted imaging and apparent diffusion coefficient sequences of MRI brain showed bilateral caudate, bihemispherical (left-right) cortical frontal, genu of corpus callosum diffusion restriction (figures 1 and 2). The MRA showed bilateral anterior cerebral arteries (ACA) thrombosis (figure 3). MRA indicates bilateral A1 occlusion, and infarction areas are corresponding to the territory of A1 perforating arteries. Other ACA territories are spared possibly because of collateral blood supply.

C33. Pai AR, Krishnan G, Prashanth S, Rao S. Global aphasia without hemiparesis: A case series. Annals of indian Academy of Neurology. 2011 Jul;14(3):185.

Abstract : Background: Global aphasia without hemiparesis (GAWH) is a rare stroke syndrome characterized by the unusual dissociation of motor and language functions. Issues regarding its etio-pathogenesis, lesion sites, and recovery patterns are extensively being debated in contemporary neuroscience literature. **Materials and Methods:**Four patients admitted in our hospital between 2005 and 2009 with GAWH caused by ischemic stroke were studied retrospectively with emphasis on number and site of lesions, etiology, and recovery patterns. **Results:**The clinical findings from our subjects showed that GAWH could result from either single/multiple lesions including subcortical lesions. The recovery was rapid, although not complete. One case evolved into Wernicke's aphasia as seen in earlier studies. Two subjects revealed evolution to transcortical sensory aphasia and one to Broca's aphasia which is distinct from previous proposals. Two cases showed lack of clinico-anatomic correlation during recovery. **Conclusions:** GAWH could result from both embolic and large vessel strokes and single or multiple lesions. The recovery pattern may be variable and may show lack of clinico-anatomical correlation indicating anomalous cerebral functional reorganization, questioning the conventional teaching of language representation in the brain.

Keywords: Global aphasia without hemiparesis, language, motor function, stroke

C34 Lahiri D, Dubey S, Ardila A, Sawale VM, Roy BK, Sen S, Gangopadhyay G. Incidence and types of aphasia after first-ever acute stroke in Bengali speakers: age, gender, and educational effect on the type of aphasia. Aphasiology. 2020 Jun 2;34(6):709-22.

Abstract : Background : The pattern of post-stroke aphasia in speakers of Bengali language has not previously been reported in the literature. Furthermore, the inter-relationship between age, gender, and level of education and aphasia typology has remained unsettled thus far. Aims : To investigate the incidence and type of aphasia in first-ever acute stroke patients who were speakers of Bengali language. **Methods & Procedures :** Bengali version of Western Aphasia Battery was used for language assessment in our study participants. Lesion localization was done by using magnetic resonance imaging(3T) for ischemic stroke (if not contraindicated) and computed tomography for hemorrhagic stroke. Among 515 screened cases of first-ever acute stroke, 208 presented with aphasia. Language assessment was done between 7 and 14 days in all study participants **Outcomes & Results :** The incidence of post-stroke aphasia in our sample was found at 40.39%. Types of aphasia were – Broca's (38.5%) followed by global (27.9%); Wernicke's (12.5%); transcortical motor (9.6%); anomic (4.3%); transcortical sensory (3.8%); isolation (1.9%); and conduction (1.4%). Mean number of years of formal education was significantly higher in fluent aphasia group in comparison with non-fluent group (10.51 years versus 7.01 years, $p = 0.003$). In logistic regression analysis, location of lesion (posterior perisylvian) ($p = 0.007$, OR = 5.406, 95% CI, 1.602–18.240) and education ($p = 0.044$, OR = 1.097, 95% CI, 1.003–1.199) were two independent predictors favoring fluent aphasia. **Conclusions :** Aphasia among post-stroke Bengali patients is quite frequent. The commonest type of aphasia in our sample was Broca's aphasia. Bengali-speaking people with higher education were more likely to present fluent aphasia.

KEYWORDS: Aphasia incidence, vascular aphasia, Bengali language

Annotation :*The authors report a relatively higher incidence (40.39%) of aphasia in first ever acute stroke patients as compared to the general consensus from review of literature. The relationship between higher education and type of aphasia (fluent > nonfluent) is intriguing and needs replication from larger number of subject speaking other Indian languages.*

C35. Maini B, Narayan R, Bhardwaj AK, Sharma PD. Expressive aphasia: an isolated and reversible complication of cerebral malaria in a child. Journal of vector borne diseases. 2012 Jun 1;49(2):117.

Key words : Aphasia; Cerebral malaria; India; neurological impairment; Plasmodium falciparum

C36. Krishnan P, Chowdhury SR. Posture-dependent aphasia: focal cortical dysfunction in the sinking scalp flap syndrome. Journal of neurosciences in rural practice. 2015 Apr;6(2):225.

Abstract : Decompressive craniotomies are being increasingly used in the treatment of raised intracranial pressure due to a variety of reasons like large infarcts, hypertensive hemorrhages and contusions. Though effective in decreasing raised intracranial pressure, they have certain complications like the sinking scalp flap syndrome that is caused by cortical dysfunction of the area below the craniotomy which is exposed to the effects of atmospheric pressure. We

describe a 60-year-old patient who underwent decompressive craniotomy for acute subdural hematoma and after an initial uneventful postoperative period developed incontinence, irrelevant verbalization and ataxia. He was found to have hydrocephalus and underwent a ventriculo-peritoneal shunt with resolution of his symptoms. Three weeks later his flap had sunk in deeply and the skin was non-pinchable and he was noted to have headaches, vomiting and retching when he sat up. In addition he became aphasic when seated and the symptoms subsided on lying down. A diagnosis of focal cortical dysfunction due to sinking scalp flap syndrome was made. We highlight the incidence and pathophysiology of this unusual complication of decompressive craniotomy and stress the need to be aware of this entity particularly in patients who do not show an initial improvement after decompressive craniotomy as the cause of their poor neurological status may not be explained by any other mechanism

Keywords: Aphasia, decompressive craniotomy, hydrocephalus, sinking scalp flap syndrome, syndrome of the trephined

C37. Meena UK, Lamoria RK, Millan RK, Agarwal P, Singh M, Bansal MC. Cortical blindness along with motor aphasia: An unusual presentation of fat embolism syndrome. Journal of clinical orthopaedics and trauma. 2016 Oct 1;7:17-21.

Abstract : Fat embolism syndrome presented with the classical triad of respiratory manifestations (95%), cerebral effects (60%) and Petechial rash (33%). Focal neurological symptoms in the form of combined bilateral cortical blindness and motor aphasia even prior to respiratory symptoms have been never reported in previous literature. We describe a case of these rare focal neurological symptoms secondary to the fat embolism syndrome in a young adult male following closed femur fracture.

Keywords : Femur fracture, Fat embolism syndrome, Cortical blindness, Motor aphasia, Gurd's criteria.

C38. Lahiri D, Dubey S, Sawale VM, Das G, Ray BK, Chatterjee S, Ardila A. Incidence and symptomatology of vascular crossed aphasia in Bengali. Cognitive and Behavioral Neurology. 2019 Dec 1;32(4):256-67.

Abstract : **Background**:Crossed aphasia (CA) refers to aphasia following a right-hemispheric lesion in right-handed individuals. It has been suggested that the prevalence of CA differs with language, although its worldwide incidence, as reported by most studies, is less than 3%. **Objective:** To find the incidence of CA in the Bengali language. **Methods:**From 2016 to 2018, in a hospital located in a Bengali-speaking area of eastern India, 515 cases of first-ever stroke were documented, out of which 208 patients presented with aphasia (40.38%) according to their scores on the Bengali version of the Western Aphasia Battery. **Results:** Among the patients with aphasia, 14 (6.73%; 8 men and 6 women) presented with CA. Of these, 10 were diagnosed with Broca aphasia and four with transcortical motor aphasia. No patient presented with Wernicke aphasia. **Conclusions**:The relatively high incidence of CA in our study suggests that bi-hemispheric language representation may be more prevalent in Bengali speakers than in speakers of other languages. The absence of crossed Wernicke aphasia in our study participants may represent a left-hemispheric advantage for receptive language abilities in

Bengali speakers. Further studies are required to clarify whether idiosyncrasies in the Bengali language may be responsible for the differential brain representation of language seen in our study participants.

Keywords: Bengali; Broca aphasia; crossed aphasia; transcortical motor phasia; vascular

Annotation : Can so called idiosyncracies of a language be responsible for differential brain representation ? A rather high incidence of crossed aphasia (14/208, 6.73%) in Bengali speakers suggesting bihemisphereic language localization.

C39. Lahiri D, Dubey S, Ardila A, Sawale VM, Das G, Ray BK. Lesion-aphasia discordance in acute stroke among Bengali-speaking patients: frequency, pattern, and effect on aphasia recovery. Journal of Neurolinguistics. 2019 Nov 1;52:100859.

Abstract : **Introduction :** Contemporary research papers have highlighted the issue of lesion-aphasia discordance in reference to the classic 'associationist' model provided by Wernicke-Lichtheim. The objective of the present study is to explore frequency, pattern and evolution of lesion-discordant aphasia following first ever acute stroke in Bengali-speaking subjects. **Methods :** Bengali version of Western Aphasia Battery, a validated scale, was used for language assessment in our study subjects. Lesion localization was done by using Magnetic resonance imaging (MRI) (3T) for ischemic stroke (if not contraindicated) and computed tomography (CT) for hemorrhagic stroke. Among 515 screened cases of first-ever acute stroke, 208 presented aphasia. Language assessment was done between 7 and 14 days in all study subjects and was repeated between 90 and 100 days in patients available for follow-up. Ischemic stroke cases with contraindication for MRI underwent CT imaging. Discordance between lesion and aphasic phenotype was determined only for right-handed subjects with cortical involvement (isolated or in combination with sub-cortical white matter) in the left hemisphere. Appropriate statistical tests were used to analyze the collected data. **Results :** Lesion-aphasia discordance was found in 20 out of 134 patients with aphasia who were dextral and had cortical involvement in the left hemisphere (14.92%). The pattern of discordance observed were-posterior lesion with Broca's aphasia (4; 20%); posterior lesion with global aphasia (8; 40%); anterior lesion with global aphasia (4; 20%), and posterior lesion with mixed transcortical aphasia (4; 20%). On univariate analysis, the factors significantly associated with lesion-aphasia discordance were hemorrhagic stroke ($p = 0.000$); posterior perisylvian location ($p = 0.002$), and higher education ($p = 0.048$). After adjusting for all other variables, hemorrhagic stroke was found to have strong association with lesion-aphasia discordance ($p = 0.001$, OR = 11.764, 95% CI, 2.83–50.0). Discordant cases were more likely to recover or change to a milder type compared to concordant cases ($p = 0.007$, OR = 11.393, 95% CI, 1.960–66.231), after adjusting for all other variables including initial severity of aphasia ($p = 0.006$, OR = 8.388, 95% CI, 1.816–38.749). **Conclusion :** Lesion-aphasia discordance following acute stroke is not uncommon among Bengali-speaking subjects. In the discordant group, preponderance towards non-fluent aphasia was observed. Discordance occurred more frequently after hemorrhagic stroke. Subjects with lesion-discordant aphasia presented better recovery during early post-stroke phase.

Keywords : frequency, Lesion-aphasia discordance, Pattern, Recovery, Stroke

Annotation : *Studies about lesion-aphasia discordance are as old as the availability of CT Scan since late 1970s. Yet new research questions and methods can be informative.*

C40. Lahiri D, Dubey S, Ardila A, Ray BK. Factors affecting vascular aphasia severity. Aphasiology. 2020 Jan 11:1-9.

Abstract : Background: Recent studies have emphasized the importance of initial aphasia severity as a determinant of aphasia recovery. However, data on predictors of initial post-stroke aphasia severity itself are far from adequate in the available literature. **Aims:** The objective of the present study was to enumerate the predictors of initial aphasia severity following stroke. **Methods & Procedures:** Bengali version of Western Aphasia Battery (BWAB), a validated instrument, was used for language examination. All patients were examined for language deficit during the first week after stroke. Severity was estimated by deducing aphasia quotient (AQ) and considering the severity scale as per BWAB. Lesion assessment was carried out by magnetic resonance imaging (3T) in ischemic stroke (if no contraindications were found) and computed tomography in hemorrhagic stroke. Demographic factors (age, gender, bilingualism, and number of years of formal education), lesion-related factors (type of stroke, lesion volume, cortical versus sub-cortical location, and site of lesion), and initial aphasia type were independent variables, whereas initial aphasia severity (non-severe, AQ = 50 or more; severe, AQ <50) was the dependent variable. Appropriate statistical tests were applied for the analysis of collected data. Among the 515 screened participants with first-ever acute stroke, 208 presented aphasia. **Outcomes & Results:** On univariate analysis, the factors found to be associated with higher initial severity were monolingualism ($p = .014$), hemorrhagic stroke ($p < .001$), larger lesion volume ($p < .001$), cortico-subcortical mixed stroke lesion ($p < .001$), and a non-fluent type of aphasia ($p < .001$). As per binary logistic regression analysis, independent predictors of higher severity were higher volume of lesion ($p < .001$, OR = 1.651), hemorrhagic stroke ($p = .004$, OR = 11.987), and non-fluent aphasia ($p = .012$, OR = 4.796). The overall predictive value of the regression model was 90.4%. **Conclusion:** The most significant determinants of initial aphasia severity in our sample of stroke patients were lesion-related factors and non-fluent aphasia.

KEYWORDS: Aphasia severity, stroke, aphasia recovery, non-fluent aphasia

Annotation :*The result of this simple and elegent study make initiative sense with respect to cerebral lesion related factors on neuroimaging [lesion volume, hemorrhage] However the nature of aphasia [nonfluent] as a predictor of vascular aphasia severity needs confirmation from larger studies.*

C41. Lahiri D, Ardila A, Dubey S, Ray BK. Analysis of an Unusual Case of Nonfluent Aphasia With Predominantly Posterior Perisylvian Lesion: An Apparent Paradox. Cognitive and Behavioral Neurology. 2020 Mar 1;33(1):45-51.

Abstract : Lesion site–aphasia type discordance has garnered increasing interest in cognitive neuroscience over the last century. Diaschisis, the network concept of cognitive functions, and interindividual variability are among the plausible explanations cited in the literature for such unusual clinical cases. We describe here the case of a nonfluent type of aphasia following an ischemic stroke predominantly affecting the left posterior perisylvian cortex in a right-handed

Bengali-speaking woman. The patient's comprehension was well preserved; however, she presented with a severe motor speech defect. MRI revealed an ischemic lesion in the left parietotemporal area, with slight involvement of the postero-inferior frontal cortex. We suggest two plausible explanations for this lesion-aphasia discordance: Our patient had bilateral representation of language receptive functions in her brain, and additional areas neighboring the classical Broca area may support some critical mechanisms of speech production. Taken together, these explanations may clarify why our patient was able to maintain the ability to decode language even though her language production was significantly affected.

Keywords: aphasia, nonfluent, lesion site–aphasia type discordance, posterior perisylvian cortex, stroke

C42. Krishnan G, Bathala L, Nair R, Tiwari S. Atypical Aphasia: A Case Report. Asia Pacific Journal of Speech, Language and Hearing. 2007 Dec 1;10(4):231-6.

Abstract : Atypical aphasias have been rarely reported in the literature. The occurrence of such aphasias raises serious criticism on our current understanding of the brain-language relationship. This case report discusses a subject who exhibited predominantly posterior language symptoms following damage to the anterior areas in the brain. The subject also revealed atypical recovery pattern of linguistic functions

C43. Bohra V, Khwaja GA, Jain S, Duggal A, Ghuge VV, Srivastava A. Clinicoanatomical correlation in stroke related aphasia. Annals of Indian Academy of Neurology. 2015 Oct;18(4):424.

Abstract: Context: With advances in neuroimaging, traditional views regarding the clinicoanatomic correlation in stroke patients with aphasia are being challenged and it has been observed that lesions at a given cortical or subcortical site may manifest with different aphasia profiles. **Aims:**To study as to whether there is a strict clinicoanatomical correlation between the type of aphasia and lesion site in patients with first ever stroke. **Settings and Design:** Observational study, based in a tertiary care center. **Materials and Methods:**Stroke patient's ≥18 years of age were screened and those with first ever stroke and aphasia were subjected to a detailed stroke workup and language assessment using the Hindi version of Western Aphasia Battery (WAB). Statistical analysis was done with χ^2 test with Yates correction and Kruskal-Wallis test. The level of significance was set at $P < 0.05$. **Results:**Overall aphasia was detected in 27.9% of the 260 screened cases with stroke. Amongst 60 cases with first ever stroke and aphasia, the aphasia type was: Global (33.33%), Broca's (28.3%), transcortical motor (13.33%), transcortical sensory (10%), Wernicke's (8.33%), anomic (5%), and conduction (1.67%) aphasia. A definite correlation between the lesion site and the type of aphasia as per the traditional classification was observed in 35% cases only. **Conclusions:**No absolute correlation exists between the lesion site and the type of clinical aphasia syndrome in majority of the patients with cortical and subcortical stroke.

Keywords: Aphasia, clinico-anatomic correlation, clinico-topographic correlation, stroke

C44. Bhaskaran R, Prakash M, Kumar PN, Srikumar B. Crossed aphasia leading to pure word deafness. The Journal of the Association of Physicians of India. 1998 Sep 1;46(9):824-6.

Abstract : We report a case of crossed aphasia following a vascular insult of the right hemisphere in a middle aged dextral man with subsequent evolution to pure word deafness. Development of pure word deafness during recovery from crossed Wernickes aphasia is an extremely rare clinical entity. Probably this is the first Indian report of this entity.

C45. Kshirsagar VY, Ahmed M, Colaco SM. Motor aphasia: a rare complication of scorpion sting. Journal of pediatric neurosciences. 2012 Sep;7(3):231.

Abstract : Scorpion sting is common in villages, and is an important public health problem in India. The clinical symptoms of envenomation by scorpion sting are by sympathetic and parasympathetic stimulation, causing a variety of symptoms. The leading causes of death are cardiac dysfunction and pulmonary edema. We present herein a case of scorpion sting in a 9-year-old boy who developed pulmonary edema and gradually developed cytotoxic cerebral edema with infarct leading to motor aphasia with upper motor neuron facial palsy.

Keywords: Cerebral infarct, motor aphasia, scorpion sting

C46. Patidar Y, Gupta M, Khwaja GA, Chowdhury D, Batra A, Dasgupta A. A case of crossed aphasia with apraxia of speech. Annals of Indian Academy of Neurology. 2013 Jul;16(3):428.

Abstract : Apraxia of speech (AOS) is a rare, but well-defined motor speech disorder. It is characterized by irregular articulatory errors, attempts of self-correction and persistent prosodic abnormalities. Similar to aphasia, AOS is also localized to the dominant cerebral hemisphere. We report a case of Crossed Aphasia with AOS in a 48-year-old right-handed man due to an ischemic infarct in right cerebral hemisphere

Keywords: Apraxia of speech, crossed aphasia, crossed apraxia of speech, right-handed

C47. Krishnan G, Tiwari S, Pai AR, Rao SN. Variability in aphasia following subcortical hemorrhagic lesion. Annals of neurosciences. 2012 Oct;19(4):158.

Abstract : Background-Vascular lesion of the subcortical structures leads to aphasia. Cortical hypoperfusion has been proposed to be the etiological mechanism in aphasia following subcortical vascular lesion. Subcortical aphasia shows considerable variability in its clinical profile. Such variability has been attributed to the variable sites of cortical hypoperfusion following ischemic lesion of the subcortical structures. **Purpose -** This study investigated the variability in clinical aphasic profile following subcortical hemorrhagic lesion. **Methods -** We retrospectively investigated the clinical aphasic profiles of twelve patients who reported to our hospital during a period of one year with subcortical hemorrhagic lesions. All patients underwent routine neurological examination, neuroimaging (CT/MRI) investigations and linguistic assessment. **Results -** Eight patients exhibited lesion to the basal ganglia and four showed thalamic lesion. All of them showed considerable variability in their aphasic profile. **Conclusion-** Subcortical hemorrhagic lesion leads to variability in aphasia. Variability in aphasia may be considered as an important consequence in subcortical vascular lesion. Observations from this study were suggestive of better preservation of, and when affected, faster recovery of comprehension skills.

Keywords: Subcortical aphasia, Hypoperfusion, Hemorrhage, Variability

C48. John AA, Javali M, Mahale R, Mehta A, Acharya PT, Srinivasa R. Clinical impression and Western Aphasia Battery classification of aphasia in acute ischemic stroke: Is there a discrepancy?. Journal of neurosciences in rural practice. 2017 Jan;8(1):74.

Abstract : Background: Language disturbance is a common symptom of stroke, a prompt identifier of the event, and can cause devastating cognitive impairments. There are many inconsistencies and discrepancies between the different methods used for its evaluation. The relationship between Western Aphasia Battery (WAB) and a simple bedside clinical examination is not clear. **Aim:** The aim of this study is to determine if bedside clinical impression of aphasia type can reliably predict WAB classification of aphasia and to describe the discrepancies between them. **Materials and Methods:** Eighty-two consecutive cases of acute ischemic stroke and aphasia were evaluated with bedside aphasia assessment, handedness by Edinburgh Handedness Inventory and WAB scoring was done. Kappa statistics was used to find the overall agreement of clinical impression and WAB. **Results:** Disagreement was seen predominantly for the nonfluent aphasias when the clinical impression was compared with WAB classification. WAB also had diagnosed three cases as having anomic aphasia using taxonomic classification, but same cases had normal language by aphasia quotient scoring of WAB. There was an overall agreement of 63.4% between patient's bedside clinical impression and WAB classification of aphasia, with a $P < 0.001$. **Conclusion:** Clinical impression was fairly reliable, as compared to WAB in assessing the type of aphasia. Clinical impression was appropriate in an acute setting, but WAB was required to quantify the severity of deficit, which may help in accessing prognosis, monitoring progression, and rehabilitation planning. Along with WAB, a bedside clinical impression should be done for all the patients to strengthen the description of aphasic deficit.

KEYWORDS: Aphasia, clinical impression, ischemic stroke

C49. Sreedharan S, Arun KM, Sylaja PN, Kesavadas C, Sitaram R. Functional connectivity of language regions of stroke patients with expressive aphasia during real-time functional magnetic resonance imaging based neurofeedback. Brain connectivity. 2019 Oct 1;9(8):613-26.

Abstract : Stroke lesions in the language centers of the brain impair the language areas and their connectivity. This article describes the dynamics of functional connectivity (FC) of language areas (FCL) during real-time functional magnetic resonance imaging (RT-fMRI)-based neurofeedback training for poststroke patients with expressive aphasia. The hypothesis is that FCL increases during the upregulation of language areas during neurofeedback training and that the training improves FCL with an increasing number of sessions and restores it toward normalcy. Four test and four control patients with expressive aphasia were recruited for the study along with four healthy volunteers termed as the normal group. The test and normal groups were administered four neurofeedback training sessions in between two test sessions, whereas the control group underwent only the two test sessions. The training session requires the subject to exercise language activity covertly so that it upregulates the feedback signal obtained from the Broca's area (in left inferior frontal gyrus) and amplifies the feedback when it is correlated with the Wernicke's area (in left superior temporal gyrus) using RT-fMRI. FC was measured by Pearson's correlation coefficient. The results indicate that the FC of the test group was weaker in the left hemisphere than that of the normal group, and post-training the

connections have strengthened (correlation coefficient increases) in the left hemisphere when compared with the control group. The connections of language areas strengthened in both hemispheres during neurofeedback-based upregulation, and multiple training sessions strengthened new pathways and restored left hemispheric connections toward normalcy.

Keywords : Aphasia, Functional connectivity, neurofeed back, real time fMRI, self regulation, stroke

C50. Bobba U, Munivenkatappa A, Agrawal A. Speech and language dysfunctions in patients with cerebrocortical disorders admitted in a neurosurgical unit. Asian journal of neurosurgery. 2019 Jan;14(1):87.

Abstract : Introduction: Speech and language abnormality among brain injury patients are common, especially during the acute stage. The details of same from Andhra Pradesh (AP) state are limited. The present study provides details of speech and language abnormality among brain damage patients, from a tertiary care hospital AP. **Materials and Methods:** This study was conducted at tertiary care hospital, Nellore, AP. Patients with acute brain damage due to traumatic brain injury (TBI), cerebrovascular accident (CVA), and postoperative cases of brain tumors were selected for the study. Detail of speech and language disturbances was accessed using Western Aphasia Battery. All patients were right-handed and Telugu was their first language. **Results:** There were totally 38 patients, of them 28 had TBI, 8 patients were postoperative cases of brain tumor, and 2 cases were of CVA. The mean age was 45.6 years. A total of 22 patients were literate. TBI patients with left cerebral hemisphere damage manifested with anomic, conduction, transcortical sensory, global, and Wernicke's aphasia. Four patients of postoperative brain tumor manifested with anomic and transcortical sensory aphasia had left-sided brain damage and mild dysarthria had right-sided brain damage patient. CVA patients had anomic aphasia and subcortical aphasia having right and left cerebral hemisphere damage, respectively. **Conclusions:** This study reports that acute brain damage due to various causes manifest with speech and language abnormality, especially when the left cerebral hemisphere is involved.

Keywords: Aphasia, aphasia, brain tumors, cerebrovascular accident, head injury, language, memory, speech, traumatic brain injury

C51. Lahiri D, Ardila A, Dubey S, Ray BK. A Longitudinal Study of Aphasia Due to Pure Sub-Cortical Strokes. Annals of Indian Academy of Neurology, 2020 Aug;23(2):106

Abstract : Introduction - During the late 19th century it was usually assumed that aphasia can be due to a subcortical pathology. Wernicke[1] in his classical aphasia classification introduced the subcortical aphasia subtype. At the beginning of the 20th century, however, Marie[2] rejected this idea and proposed that subcortical damage involving the basal ganglia (an area further known as “Marie’s quadrilateral space”) would result in dysarthria, not really in aphasia. Sometime later, Dejerine[3] described the so-called brain’s “language zone” corresponding to the perisylvian area of the left hemisphere, without any specific mention to subcortical structures. During the following decades, the idea of ‘‘subcortical aphasia’’ was somehow forgotten. Only during the late 20th century with the introduction of the computed tomography (CT) scan it was observed that aphasia was frequently associated with subcortical

pathology, and the discussion and interpretation of subcortical aphasia re-emerged. Contemporary neuroimaging techniques have significantly advanced our understanding of the brain organization of language and the involvement of subcortical areas in aphasia.[4,5] Nonetheless, whether true aphasia results from isolated subcortical brain damage, or whether it is due to a cortical extension or cortical deactivation, remains unanswered.[6,7] For example, Nadeau and Crosson[8] suggested that linguistic impairments associated with striatocapsular pathology are redominantly related to sustained cortical hypoperfusion and infarction not visible on structural imaging studies. **Introduction:** Contemporary neuro-imaging techniques have significantly advanced our understanding of the brain organization of language and the involvement of subcortical areas in aphasia. However, articles on sub-cortical aphasia, particularly in non-western languages, remain to be few and far between. We set out to explore aphasia typology in sub-cortical strokes among Bengali-speaking population with a focus towards providing a longitudinal view over a period of 3 months post-stroke. **Methods:** Bengali version of Western Aphasia Battery (BWAB) was used to assess and classify language dysfunction in our study participants. Conventional brain imaging techniques (CT scan & MRI) were used to detect and localize strokes. Uni-variate analysis for categorical variable (location versus aphasia typology) was performed using Chi square and Fischer's exact test (as applicable). Directional measures were calculated using lambda and Goodman-Kruskal tau (Range of -1 to + 1). Boot strapping was applied while calculating the directional measures because of inadequate numbers in some sub-sections the sample. **Results:** Frequency of sub-cortical aphasia was observed to be 29.80% (62/208) in the index study. Four location of strokes were associated with language dysfunction, of which putamen (53.23%) was the commonest followed by striato-capsular region (33.87%). Thalamus and peri-ventricular white matter (PVWM) strokes (6.45% each) were infrequent in our sample of sub-cortical aphasia. Global aphasia (30/62, 48.38%) was the most frequent type observed in acute phase while Broca's aphasia (23/53, 43.39%) dominated among the follow up cases. Aphasia recovery (with follow up AQ of 90.0 or more) was observed in 12 (22.64%) patients of whom majority (8/12) had striato-capsular strokes. **Conclusion:** The present paper illustrates the epidemiological aspects as well as longitudinal course aphasia following pure sub-cortical strokes.

Keywords: Aphasia, longitudinal, sub-cortical

C52. Jacob, A.E., Mr. Nandhkumar V, Laterality in Indian population; Unpublished, 1999 All India Institute of Speech and Hearing, Mysore

C53. Nehru, R., Agarwal, S., Rajesh, K.N., Puri, V., Choudhury, D., Prakash, V. Global Aphasia with Angular Gyrus Syndrome Without Hemiparesis. Annals Ind Acad. Neurol 2000; (3):136-137.

C54. Nehru, R., Garg, A. Non-initial Hindi vowels and bundled consonants in Landua Kleffner syndrome. Annals Ind Acad Neurol 2001;4(3):132.

C55. Garg, A., Nehru, R., Ranjan, N.K. A study of crossed aphasia with apraxic agraphia. Part 1. Clinical report. Annals of Indian Academy of Neurology 1998;1(2):97.

C56. Ranjan, N.K., Nehru, R., Garg, A., Rikhye, K. A study of crossed aphasia with apraxic agraphia. Part 2. Autonomous morpheme representation of inflectional morphology: dissociation between number and gender markers. Annals of Indian Academy of Neurology 1998;1(2):97.

C57. Ranjan, N.K., Nehru, R., Garg, A., Rikhye K. A study of crossed aphasia with apraxic agraphia. Part 3. The linguistic basis of apraxic agraphia. Annals of Indian Academy of Neurology 1998;1(2):97.

C58. Bhan, S., Chitnis, S., Manisha. Paraphasic errors in subcortical aphasia; Bhashachintan : A research journal of linguistics (2) 43-48

C59. Krishnan,G., Rao, S.N., Bellur R., Apraxic agraphia : An insight into the writing disturbances of posterior aphasias; Annals of Indian Academy of Neurology 2009;12(2):120-123

Abstract : Background: Reading and writing disturbances are common accompaniments of aphasia following brain damage. However, impaired writing in the absence of apparent primary linguistic disturbances is infrequently reported in the literature. Materials and Methods: A 67-year-old right-handed subject underwent neurological, neuroradiological, and linguistic investigations following development of a minimal right upper limb weakness. Result: The patient had polycythemia and the neurological investigation revealed right upper limb paresis. The neuroradiological investigation revealed hypodense areas involving the gray-white matter of the left postero-parietal and frontal lobe, left caudate and lentiform nuclei, and the anterior limb of the internal capsule, suggesting an infarct. The linguistic investigation revealed a mild anomic aphasia with apraxic agraphia. This mild anomic aphasia resulted primarily from the relatively poor scores on the verbal fluency tests. Discussion: The marked writing impairment, even with the left hand, points to disturbances in written output - apraxic agraphia - in the presence of near-normal spoken output. This finding should raise suspicion about hidden apraxic agraphia in subjects with posterior aphasias.

C60. Suresh, P.A., Maya, S., Praleema, L., Varghese, N., Kumar, S., Radhakrishnan , Landau – Kleffner Syndrome: Clinical Electro encephalographical, neuro radiological and speech pathology characteristics,. K –Proceedings of Fourth Annual Conference of Indian Academy of Neurology-September 27-29, 1996 – Page -31

C61. Kumar, S., Rahiman, P.A., Suresh, P.A., Radhakrishnan, K.. , Acute Pseudobulbar Mutism: A patient with an unusual stroke syndrome associated with good functional recovery. JAPI 1996, Vol.44, No.8, 567-568.

C62. Suresh, P.A., Subcortical aphasia - A clinico anatomical correlation. Annual conference of Indian Speech and Hearing Association 1995.

C63. Bhan, S. Crossed Aphasia - An Overview. Researchers Forum. C.A.L.T.S., University of Hyderabad.March 2012.

C64. Mittal, B., (Author), Karanth, P. (Guide). Language Impairment in Head injured patients. Dissertation Number.- D303, AIISH, Mysore

C65. Sunil Kumar Ravi (Author), Shyamala KC (Guide). An event related brain potential study of language processing in Kannada English Bilingual Aphasics, AIISH, Mysore

C66. Raksha HR (Author), Pratibha Karanth(Guide). Differential Aphasia. Dissertation Number.-D337, AIISH, Mysore

C67. Vaishna Narang, 2006. *Wernicke's Aphasia: Case Study of a Punjabi Aphasic Losing Spatial and Temporal Orientation*" Paper presented jointly with Priti Rekha Gogoi in 28th All India Conference of Linguistics, BHU, Varanasi, November 2006 (Proceedings under publication.)

C68. Bhatnagar SC.. Aging and Aphasia Type in Northern India Department of Neurology, P.G.i. Medical Sciences, Lucknow, India July 2004

C69. Bhatnagar SC.. Aging and aphasia type in India. Indian Institute of Advanced Studies, Shimla, India. June 2003

C70. Sreedharan, S., Chandran, A., Yanamala, V. R., Sylaja, P. N., Kesavadas, C., & Sitaram, R. (2019). Self-regulation of language areas using real-time functional MRI in stroke patients with expressive aphasia. *Brain Imaging and Behavior*, 1-17.

[D]

Phonology, Prosody, Sonority, Articulation

D1. Joseph, S., Intra-Word stressed syllabic duration in Non-fluent Aphasics and right Hemisphere Damaged. Unpublished Dissertation (Guide : Nataraja, N.P.). AIISH, Mysore

Abstract : this study investigated the durational aspects of speech in persons with right and left hemisphere damage. For this purpose, four persons were selected in each clinical group as well as a third group of four normal participants. They were required to produce a list of words with varying length where the initial syllable was stressed. The data were analyzed both perceptually and acoustically to examine the difference in performance as a function of groups. The results showed that the clinical (i.e., brain-damaged) group showed overall variability in performance. The persons with LHD and (non-fluent) aphasia showed increased duration of the syllable compared to the normal (control) participants.

Keywords : Prosody, Aphasia, Right hemisphere damage.

D2. Mukunthan S (2002). Protocol to Identity Apraxia of Speech in Broca's Aphasics. Unpublished Dissertation, AIISH, Mysore.

Abstract : The verbal perseveration elicited from five geriatric persons with Broca's aphasia using a set of five tasks is discussed in this study. A group of five age-matched normal participants was also included in the study. The task employed in this study included : picture naming, description of function, defining words, description of picture, and answering questions. The author reported of perseverations in both groups. However, the persons with Broca's aphasia showed recurrent type and the geriatric group showed continuous type of perseveration.

Keywords : Apraxia, Aphasia, Assessment, Perseveration..

D3. Nirmal, S. Vowels and Nasal consonant production in Persons with Bilingual aphasia : Unpublished Dissertation (Guide : Rajasudhakar) AIISH, Mysore

Abstract : The expressive language of individuals with Broca's aphasia is characterized by various errors in speech production deficits like timing errors, deficits in articulatory implementation, laryngeal coordination errors and errors in production of vowels. But it was not clear that to what extent these errors can co-exist in individuals with Broca's aphasia. So that study aimed at investigating to what extent various speech production errors can exist in individuals with Broca's aphasia. Twelve individuals with Broca's aphasia and twelve age and gender matched normally speaking individuals participated in the study. The participated were asked to read bisyllabic words beginning with nasals followed by long vowels and the responses were recorded with nasals followed by long vowels and the responses were recorded and were analyzed for nasal murmur duration, local amplitude change and global

amplitude change throughout nasal murmur, amplitude change at the point of release of nasal constant into the following vowel, vowel duration and the acoustic vowel space characteristics. Independent t-test was used for statistical analysis. The measured acoustical parameters had shown higher value sin individuals were found to have smaller, narrow acoustical vowel space suggestive of reduced tongue height and increased tongue advancement in the articulatory gestures.

Keywords : Broca's aphasia, Acoustic measures, Articulation, Vowel space.

D4. Vaishna, N. (2008). Linguistic and affective pitch in Punjabi speaking cases of stroke : A study in Neurology of pitch functions. Indian Linguistics 69, 2670274.

Abstract : This study investigated the ability of Punjabi-speaking persons with stroke-aphasia to comprehend and produce pitch at different level of communication (eg., Word, sentence, & affective discourse). A group of 12 Punjabi-speaking persons with aphasia were identified for this purpose. Additionally, a group of four normal participants was included as the control participants. All the participants were tested for their ability to comprehend and express pitch at different levels of communication viz. Words, sentences, and affective discourse. The results, in general, supported the previous hypothesis of impaired phonemic pitch with preserved affective pitch in persons with of LHD.

Keywords : Linguistic pitch, Affective pitch.

D5. Vasanta, D., & Dodd, B. (2007). Perceptual Factors in Phonological Disorders. A tool for assessing input phonological processing in Telugu-English Bilinguals. Osmania Papers in Linguistics, 33, 55-72

Abstract : Spoken verbal communication involves perceptual, cognitive linguistic and output mental processing plus oro-motor skills. Consequently, the search for a single ability in one of these aspects of speech processing that can explain phenomena in acquisition or disorder is misguided. During children's phonological development, the ability to process auditory –verbal stimuli (eg. Perceive speech contrast in different co-articulatory context) might develop at a different rate from cognitive-linguistic ability (deriving the phonological constraints specific to the language(s) heard) or motor speech ability. The rates of acquisition of these abilities might reflect individual differences between children due to aptitude or the language learning environment (eg. Monolingual v/s bilingual). Yet, the topic of testing perceptual abilities as part of phonological assessment has not grained sufficient attention from clinicians or researchers in the field of communication disorders. After reviewing some of the debates on the role of perception in phonological disorders, an assessment procedures that focuses on one aspect of perceptual processing in Telugu-English bilinguals is described in this paper.

Keywords : Phonology, Auditory, perception, Biilngualism.

D6. Vasanta, D., Suvarna, A., & Sireesha, J. (2010) Sonority Effects in Telugu Aphasics; Indian journal of applied linguistics, 36 (1-2), 159-169.

Abstract : The focus of this paper is application of the concept of 'sonority' to the study of aphasic speech. An assessment tool that is capable of examining sonorityeffects was developed and administered to a patient diagnosed to have progressive non-fluent aphasia. This took successfully distinguished the performance of the patient from that of two normal (control) adults with different degrees of literacy. The results based on accuracy and latency measurements in the segmentation and production tasks reveals that the difficulty of the patient is likely to lie with the integration of segmental and prosodic information of words during articulatory planning stage. The need for developing similar tools in other Indian languages and using them along with standard language assessment procedures is emphasized.

Keywords ; Sonority, PNFA, Prosody.

D7. Chinar, D. Breakdown of Prosody in cases of Punjabi Aphasics. Unpublished M.Phil dissertation (2004) Jawaharlal Nehru University, New Delhi.

D8. Narang, V. Linguistic and affective pitch in Punjabi speaking cases of stroke : A study in neurology of pitch functions. Indian Linguistics Volume 69 (2008) pp 267-274.

Abstract : Out of random sample of 40 cases of stroke, native speakers of Punjabi under treatment at the two hospitals of Ludhiana, 12 cases of aphasia were identified for a study of their comprehension and production ability of pitch at different levels of communication viz word, sentence and affective discourse (for affective communication). A normal control group of two males and two females also took the same test. The results generally support the previous hypotheses of phonemic pitch worst affected in cases of LHD, spared in cases of RHD; and affective pitch function disrupted in cases of RHD spared in cases of LHD. But at the sentence level the tests show mixed results, with very little difference in the performance of the two groups, which need to be studied further, on different languages.

D9. Paplikar, Avanthi, "Language-Mixing in Discourse in Bilingual Individuals with Non-Fluent Aphasia" (2016). CUNY Academic Works.https://academicworks.cuny.edu/gc_etds/1328

Abstract : Language-mixing (LM) as defined by Chengappa (2009, p. 417) is an "intra-sentential phenomenon referred to as the mixing of various linguistic units (morphemes, words, modifiers, phrases, etc.), primarily from two participating grammatical systems". LM is influenced by grammatical, environmental, and social constraints (e.g., Milroy & Wei, 1995; Bhat & Chengappa, 2005). Researchers have suggested that LM in patients with aphasia is a communicative strategy used to achieve successful exchanges between speakers; the effectiveness of this mixing, however, had yet to be demonstrated quantitatively.

In the current study we investigated whether LM is present in bilingual speakers with aphasia, and if so, at which linguistic level(s) (morphological, lexical, pragmatic, and phrase) LM is found. Once these questions were addressed, we asked whether the LM patterns were typical or atypical in nature in such individuals. Finally, we investigated the differences in pertinent discourse measures (productivity, dysfluencies, coherence, and communicative success) in bilingual speakers with and without aphasia in order to assess if LM truly helps them to produce a more successful form of communication.

A total of 64 individuals – one group of 32 bilingual individuals with non-fluent aphasia and another group of 32 bilingual healthy control participants were recruited from local hospitals in Mysore, India. The study made use of two types of discourse elicitation tasks: personal narratives and picture description. Healthy control and aphasia participant groups were encouraged to mix languages in one condition. Their performance in this condition was compared to when they were constrained from mixing in Kannada-only and English-only conditions.

Investigating brain damaged and non-brain damaged bilingual speakers from the same speech community allowed for the interpretation of typical and atypical patterns of language usage. The LM patterns that were similar in both groups, hence typical in nature were direction of LM, LM at various levels, LM frequency across tasks, and LM in different word classes. We observed four atypical patterns of language-mixing in individuals with aphasia: 1) they produced a higher percentage of mixing compared to the healthy control participants; 2) they produced a higher percentage of mixing in the Kannada-only condition than the English-only condition, i.e., they did not follow the instructions provided by the examiner during the Kannada-only condition; 3) they produced Kannada matrix language utterances in the English-only condition, which is atypical in the local Kannada-English speaking community; and 4) they produced more word-level mixing during Kannada-only and language-mixed condition than the English-only condition.

It is common practice for clinicians and researchers to promote the usage of two or more languages, as they believe it enhances communication (e.g., Muñoz et al., 1999; Chengappa, et al., 2004). However, in the current study, we found that the ability to use more than one language did not lead to a more successful form of communication. We found that individuals with aphasia produced more morphemes, words, phrases, and utterances when they mixed languages, but they did not score higher on the communicative success and coherence scales compared to when they were constrained from mixing.

D10. Goswami SP. Processing of Frequent versus Infrequent Words in Neuro-typicals and Persons with Broca's Aphasia-ERP Study. Language in India www.languageinindia.com ISSN 1930-2940 Vol. 13:8 August 2013

Abstract : The frequencies of occurrence of words have been studied in neuro-typical and persons with brain damage using behavioral and electrophysiological measures. Present study investigated the reaction time and accuracy of responses using frequent and infrequent words in persons with Broca's aphasia and their performances were compared with neuro-typical participants and also measured N400 component in neuro-typicals. Results showed an obvious difference in both the accuracy and reaction time for both frequent and infrequent words in persons with Broca's aphasia and a clear difference between frequent and infrequent words for latency and amplitudes of N400 was observed

D11. Narang, V. Articulatory Dysfunction in Parkinson's disease: An fMRI study 2009

D12. Saxena, M. Kumaran, S.S., Singh, S., Narang, V., Behari, M. 2nd Asian and Oceanian Parkinson's Disease and Movement Disorders Congress February 15-17 2009 page 53.

D13. Aashna Dangaich (Narang V. Guide) *Study of Acoustic Space of 6 years old Cerebral Palsy and Normal Children,* published in International Journal of Research Culture Society, Vol – 1, Issue – 10, December 2017

D14. Aashna Dangaich (Narang V. Guide) Comparison of Acoustic Space of 9-year-old Cerebral Palsy and Normal Children, published in International Journal of Advanced and Innovative Research, Vol – 6, Issue – 12, December 2017

[E]

Auditory Comprehension

E1. Bijoya, M. (2010). Development of Revised Token Test in Oriya. Unpublished Dissertation (Guide : Goswami, S.P.). AIISH, Mysore.3

Abstract : This study adapted in the original version of Revised Token Test (Mc Neil & Prescot, 1982) into Oriya, an Indian Language. The authors required a group of speech-language pathologies and linguists to translate the English version to Oriya. This translated version was administered on a group of 40 normal participants (in the age range of 20 to 60 years) and four persons with aphasia. The results showed poor performance in the clinical population (i.e., persons with aphasia). Further the author claims for certain hierarchy of comprehension deficits in normal participant in terms of the subjects (what the authors intend to express here is that of various subtests of RTT in Oriyashowed variable sensitivity while comprehending the spoken language.

Keywords : Revised Token Test, Oriya

E2. Goswami, S.P. (1998). Comprehension deficits in Aphasics; Unpublished Dissertation (Guide: Karanth, P.) MVST College of Speech and Hearing, Mangalore

Abstract : This study investigated the comprehension deficits at the phonologic, syntactic, and semantic levels in a group of seven persons with aphasia (3 global, 2 anomic, 1 conduction & 1 transcortical sensory aphasia). In addition to them, a group of seven matched normal participants were administered with Kannada version of Western Aphasia Battery, Linguistic Profile Test, and Revised Token Test. The aphasic group performed better on LPT followed WAB, which in turn was followed by RTT. Among them, anomic performed better followed by conduction, transcortical sensory, and global. Further, the mode of presentation, nature of the tasks, redundancy and the cues provided have shown to influence the performance. The performance of the aphasic group was better on phonology compared to semantics. On syntactic aspects, this group performed poor. The between group (aphasic vs. control) comparison of performance showed significant difference.

Keywords : Comprehension, Phonology, Syntax, Semantics.

E3. Goswami. S.P. (2004). Comprehension Deficits in aphasics. Unpublished PhD (Guide: Shymala, K.C.), Mysore

Abstract : This study investigated the comprehension deficits at phonological, syntactic, and semantic levels in a group of 46 Kannada-speaking persons with aphasia. As a control group, equal number of age, gender, handedness, and literacy-matched normal participants were included. The comprehension skills at the three levels were assessed with the Kannada versions of Western Aphasia Battery, Linguistic Profile Test and Revised Toke Test. In general,

the results showed that the comprehension skills of the aphasic group were inferior to that of the control group. Within the aphasic group, transcortical motor and anomic groups showed near-normal comprehension skills. Further , the performance improved from global to Wernicke to transcortical sensory to Broca's to transcortical motor to anomic aphasia. This study also noted deficits in the comprehension of numbers, geometric shapes, and right left directions. Finally, the gender did not seem to have an influence on the number.

Keywords : Comprehension, Aphasia, Kannada, Number, Right left, Geometric Shape

E4. Kumar, S., & Goswami, S.P. (2012). Phonology comprehension deficits in persons with aphasia. Language in India, 12(2), 643-658.

Abstract : This study aimed to develop a test of phonology comprehension in Hindi. As part of this, the comprehension of phonology was compared between a group of 60 neurologically normal participants and a group of 60 neurologically normal participants and a group of 13 people with aphasia. The test material consisted of two sections (syllable identification & syllable discrimination) and each of these consisted of 10 items under two modalities (i.e. auditory and orthographic). The results of this study revealed significant difference between the two groups in both modalities under each section of the test.

Keywords : Phonology, Comprehension.

E5. Sridevi, K (1999), Comprehension deficits in bilingual aspects aphasics. Unpublished Dissertation (Guide: Shyamala, K.C.) AIISH, Mysore.

Abstract : This study aimed to investigate the comprehension deficits in bilingual (Tamil-English) persons with aphasia. The authors selected a group of eight persons with aphasia (two each with Broca's Wernicke's, Anomic, & global) and an equal number of control (normal) participants. All the participants spoke Tamil as their primary language and had attended schooling up to (minimum) 10^{th} grade. The revised token test (RTT) in English as well as Tamil versions was administered on all participants. The results showed that person with aphasia performed poorly on all subtests compared to normal participants. While the latter showed no difference between languages and the subtests, some persons with aphasia showed better performance in Tamil (L1) and some showed the reverse pattern. Among the people with aphasia, those with anomic aphasia showed better comprehension followed by Broca's, Wernicke's and Global. Additionally, the authors found that the intensity of therapy (in terms of the number of sessions) positively correlated with performance on RTT.

Keywords : Bilingual aphasia, comprehension deficits, Revised Token Test.

E6. Vaid, J., & Pandit, R., (1991). Sentence interpretation in normal and aphasic Hindi speakers. *Brain and Language*, *41(2) 250-274.*

Abstract : In interpreting a sentence, listeners rely on a variety of linguistic cues to assign grammatical roles such as agent and patient. The present study considered the relative ranking of three cues to agenthood (word order, noun animacy, and subject-verb agreement) in normal

and aphasic speakers of Hindi. Because animacy plays a grammatical role in Hindi (determining the nature and acceptability of sentences without accusative marking), this language is relevant to the claim that Broca's aphasia involves a dissociation between grammar and semantics. Results of Study 1 with normal Hindi-dominant speakers showed that animacy is the strongest cue in this language, while agreement is the weakest cue. In Study 2, Hindi-English bilinguals were tested in both their languages. Most showed the normal animacy-dominant monolingual pattern in Hindi, with a mixture of strategies from both languages in their interpretation of English. A substantial minority showed mixed strategies in both languages. Only 5 of 48 subjects displayed a complete separation between languages, with animacy dominance in Hindi and word order dominance in English. In Study 3, two Hindi-English bilinguals with Broca's aphasia were tested in both languages. Results indicate (a) greater use of animacy in Hindi than in English and (b) greater use of word order in English than in Hindi. The strategies displayed by these patients fall well within the range observed among bilingual normals. We conclude that the use of animacy in sentence interpretation by these aphasic patients reflects preservation of normal, language-specific processing strategies; it cannot be interpreted as a nonlinguistic strategy developed to compensate for receptive agrammatism. Results are discussed in light of other cross-linguistic evidence on sentence comprehension in monolingual and bilingual aphasics

E7. Veena N.R., (1982). Revised Token Test in Kannada. Unpublished Dissertation (Guide: Nataraja, N.P.). AIISH, Mysore

Abstract : This study developed the Revised Token Test in Kannada. The test was developed by having a group of 100 young speakers to list out five common objects, two primary colors, and two sizes to obtain a set of most frequently cited objects (5), colors (2), and sizes (2). Thus, the final set had 20 items. The test used a multidimensional scoring system with a maximum score of 15.

Keywords ; RTT, Kannada, Aphasia, comprehension.

E8. Varghese, L, (Author), Shyamala KC (Guide). Developmental of token test in Malayalam, AIISH, Mysore

E9. Kumar, S. (Author), Goswami. S. (Guide). Development and standardization of a test for comprehension in persons with Aphasia, AIISH, Mysore

[F]

Lexicon, Semantic, Naming

F1. Anirban, D.(2001). Boston Naming Test in Bengali. Unpublished Dissertation (Guide : Karanth, P.) Dr. MVST College of Speech and Hearing, Mangalore.

Abstract : This study aimed to develop the Bengali version of Boston Naming Test. For this purpose, a total of 80 normal participants (40 males & 40 females) were selected. Further, they were grouped into semi-literate (educational level 0-5 years). The modified version in Bengali included 57 pictures (47 original items from English BNT & 10 new culturally relevant items to the Indian context. The results showed better performance in the literate group compared to semi-literate group. However, the test was not administered on any person with Aphasia.

Keywords : Boston Naming Test, Bengali, Literacy.

F2. Anusuya, M. Tip of the Tongue phenomenon in Normal and Aphasic Adults : An Exploratory Study. Unpublished Dissertation (Guide : Shyamala, K.C.), AIISH, Mysore

Abstract : The tip of the tongue (TOT) phenomemon in bilingual people with aphasia and normal participants were compared to investigate :

- The word retrieval process in both languages
- The influence of age and language proficiency
- The influence of syntactic knowledge.
- The inhibition or facilitation of other languages on English and
- If the provision of semantic/ phonemic cues/ words would inhibit or facilitate the target word retrieval.

The study included three groups of 10 normal participants each (age range : 20-40, 40-60 & 60-80 years) and one aphasic group (3 anomic, 2 Wernicke's & 1 conduction : age range : 35-63 years). The author obtained natural TOTs (through diary study approach) as well included TOTs (through word retrieval tasks). The results from the normal groups showed that all participants across the age groups investigated showed TOTs in nouns, proper names, as well as in non-object names. TOTs were more prevalent in the elderly group and the young and middle aged group did not show a significant difference between them. Further, the litracy, economic status, as well as the vocabulary size seemed to have an influence on TOT phenomenon. There was a negative correlation between proficiency in English the number of TOTs. In the aphasic group, the persistent alternates reduced the resolution rates of TOTs and this was more frequent in young persons with aphasia. Further, young people with aphasia

showed faster resolution times. Finally phonemic cues were found to be more powerful than semantic ones in people with aphasia during the instances of TOT phenomenon.

Keywords : Tip of the tongue, aphasia, bilingualism, word retrieval..

F3. Arpita Bose. Naming deficits in Bilingual Aphasics. Unpublished Dissertation (Guide : Shyamala. K.C.) AIISH, Mysore

Abstract : This study aimed to compare and contrast the naming disturbances in the two languages of Kannada-English bilinguals. For this purpose, the author selected seven participants with aphasia (3 anomic, 2 Broca's and conduction aphasics each) following stroke to the experimental group and an equal number of matched normal participants to the control group. All participants were administered with three tasks such as confrontation, generative and responsive naming. In general , the results revealed poor performance in the aphasic group. The aphasic group showed parallel deficits in generative and responsive naming tasks in both language, but not in confrontation tasks. The performance was marginally better in L1. However, the difference did not reach statistical significance. The experimental group showed better performance with phonemic than semantic cues. Among the three types of aphasias, anomic performed better than Broca's Followed b conduction aphasia. Finally, individual variations as a function of premorbid fluency and usage were noted in the aphasic group.

Keywords : anomia, bilingual aphasia, word retrieval, confrontation naming, generative naming, responsive naming.

F4. Bhan, S. (1997) Comprehension and naming of objects among adult aphasics. Paper presented at the South Asian Langauge Analysis XVIII Roundtable.

Abstract : This paper examines the comprehension and naming of objects (Kitchen Utensils) in Hindi speaking adult aphasics. The study presents the finding of five fluent and two non-fluent aphasics – two Broca's, two Wernicke's, two T.S.A.'s and one anomic aphasic – observed at M.Y. Hospital, Indore; A.I.I.M.S and Pant Hospital, New Delhi; King George Hospital, Lucknow. They were administered 'semantic categories test in Hindi' in three consecutive recordings with an interval of one month between two recordings. Dissociation were found in comprehension and naming of object names among all the aphasics. The target object and named one were functional associates in T.S.A.'s naming (Kap->Pilet). The phenomena of collocation was found among Wernicke's aphasics. Less frequent object were difficult to name for all the aphasics.

Keywords : Comprehension, Naming, Dissociation.

F5. Bhan, S. (1998). Lexical semantic impairment in bilingual aphasics. Osmania papers in linguistics, 26.

F6. Bhan, S (2010). Lexical errors in narrative discourse of a bilingual (Telugu + English) Subcortical aphasic. Paper presented at the International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

F7. Deepa M.B. & Vaishna N. Anomia and number recognition deficit : Are they mutually exclusive or inclusive ? a study on 16 cases of stroke. Dept. of Language (English), I.G.N.T. University.

Abstract : Sixteen cases of stroke and five normal subjects are control group were studied to see whether number recognition deficit imply the existence of Anomia (word recognition problem) as well & vice versa. The tests devised for the cases of stroke were aimed at finding out if number recognition and word recognition occur as mutually exclusive or inclusive problems. The study also aimed at comparing the number recognition and numerical processing deficit in cases suffering neurological damage in the left hemisphere with those suffering neurological damage in the right hemisphere. The study also throws light on the correlation between number recognition as well as number processing deficits among brain deficit groups. There are interesting results compelling us to take a fresh look at various hypothesis vis-à-vis numerical structures and arithmetical processing by the brain.

Keywords ; Number Recognition, Word Recognition, Anomia, Arithmetic processing.

F8. Jain, P., Nehru, R. (2000). Category-specific perseveration : Hierarchical organization of lexical semantics revealed by Analysis of Perseverative errors. Paper presented at the 1st International Conference 'Neurology, Language and Cognition-2000, Thiruvananthapuram.

Abstract : Category specific preservation was first described by Nehru (1990) and comprises perseverative error responses on confrontation naming where the response is always a lexical item belonging to the same semantic category as the target lexical item, but not the lexical item itself. Category-specific perseveration occurs when the correct semantic category can be accessed, but not the correct lexical item within that category. The objective of the study is to describe category-specific perseveration and examine its bearing on organization of the lexical semantic system. A 78 years old right handed vegetable vendor with Binswanger's disease and stable Wernicke's aphasia was evaluated on a series of cognitive-linguistic tasks. Visual confrontation naming was tested on 10 categories. Performance was nearly completely impaired on all categories except 'animal' and 'fruits'. In the two categories 'animals' and 'fruits', the majority of targets were named as some other animal or fruit respectively, few were named correctly, and only one error in each category belonged to some other category. In the closely related category of 'vegetables', he performed poorly and category-specific perseveration was not observed in this category. Analysis of category-specific perseverative errors provides further evidence in favour of a hierarchical categorical organization of the lexical semantic system.

Keywords ; Category – specific perseveration, semantic system.

F9. Krishnan, G.(2012). An appraisal of lexical retrieval skills in subject with right hemisphere damage. Unpublished Thesis (Guide ; Karanth, P.) Manipal University, Manipal.

Abstract : The role of right hemisphere in lexico-semantic processing continues to remain as a debatable issue. Several techniques and paradigms employed in various population including people with commissurotomy, right hemisphere damage, aphasia subsequent to left hemisphere damage, and those with normal language skills have provided equivocal evidence. Thus, the current study aimed to investigate the debatable role of right hemisphere in lexico-

semantic processing by comparing the lexical retrieval skills in a group of right handed subjects with RHD with that of age-, gender, and literacy matched right handed neurologically normal control subjects. Additionally, the error analysis was performed to assess the nature of underlying lexico-semantic processing deficits in the clinical group, if any. For this purpose, a comprehensive battery of convergent (i.e., confrontation naming) and divergent (i.e. verbal fluency) tasks was developed and subsequently administered on the two groups was compared in term of the accurate scores as well as the errors. Under the divergent tasks, the accurate responses as well as certain additional measures such as cluster size , switching and time course of lexical retrieval were compared between the two groups. The between group comparison of the performance of various convergent tasks showed significantly poor performance by the subjects with right hemisphere damage on all but one (definition naming) task. The analysis of the errors in the same task showed a preponderance of the delayed correct responses, no response, and semantic errors. The comparison of performance on divergent group showed significant difference in the semantic and phonemic verbal fluency tasks. Subjects with right hemisphere damage showed significantly smaller cluster size only in the semantic, but not in the phonemic condition. The two groups did not show any difference in terms of the switching strategy under both semantic and phonemic conditions. The time course analysis showed a similar pattern in both groups with a gradual reduction in the number of exemplars generated across the four time quadrants of 60 seconds duration although the clinical group was significantly poor compared to the control group. Thus, the present study provided evidence for the role of right hemisphere in lexico-semantic processing. Additionally, the study advocates the use of comprehensive batteries with stringent scoring criteria such as the ones used in the present study in the assessment of lexical-retrieval skills of subjects with RHD.

Keywords : Lexical Retrieval, Right hemisphere Damage, Naming, Verbal fluency, convergent naming task, Divergent Naming Task.

F10. Krishnan G., Karanth P., & Bellur, R. (2012). Evidence for lexico-semantic processing in the right hemisphere. Paper (to be) presented at the Annual meet of the Academy of Aphasia, San Fransisco, CA.

F11. Krishnan G, Karanth, P. & Rajashekhar, B. (2012). Clustering switching and time courser analysis of verbal fluency tasks in people with right hemisphere damage. Paper (to be) presented at the Science of Aphasia XIII, Groningen, The Netherlands.

F12. Mathew, A.S. (2000). Lexical-semantic processing in a right Handedness individual with entire destruction to the left cortical language areas. Paper presented at the 1st International Conference 'Neurology, Language and Cognition-2000.

Abstract : This is the single case report of patient in whom considerable recovery of auditory comprehension occurred after total destruction of the classical language areas of the left hemisphere. The patient was tested on lexico-semantic tasks of (1) confrontation naming (2) generative naming (3) responsive naming (4) lexical semantic discrimination (5) category recognition (6) word-picture matching (7) word-object matching. Semantic incongruity, judgment task and figurative language inference were also tested in addition to auditory verbal comprehension. Patient performed poorly on confrontation generative and response naming when compared to other language task. Differential responses were seen on category–specific

naming with phonemic and semantic cueing. In the absence of any response following phonemic or semantic cueing, a combination of cueing elicited responses with increased time duration for response latency. Neologisms and paraphasias (Phonemic and semantic) were seen irrespective of the type of cueing. Clues to- lexico-semantic across hierarchies of phonemic and semantic dimensions could be implicated from response error analysis.

F13. Munna, Kumar, (2002). Boston naming test in Hindi; Unpublished Dissertation (Guide : Karanth, P.) MVST College of Speech and Hearing, Mangalore

Abstract : This study aimed to construct and establish the norms for Boston Naming Test in Hindi for children and adults. The participants from child group included 100 children who were further subgrouped into three categories based on their literacy skills (Semi-literates with < 2 years of education & literates from I to V grade.). The adult group included 80 participants (age range : 18-59 years) who were also grouped into semi literates and literates (cutoff grade : 2 nd). The results of this study showed significant difference between semiliterate and literate children, but not between adults of these two literacy levels. The difference in score between the two group of children was attributed to the developmental factors as well as the exposure to items. Additionally, it was observed that females semi-literates performed poorly compared to male semi-literates.

Keywords : Boston Naming Test, Hindi, literacy, gender.

F14. Nehru, R., & Ratnavalli, E. (1997). Lexical semantic organization and the representation of Meaning : Evidence from a case with category specific perseveration. Paper presented at the South Asian Langauge Analysis XVIII Roundtable.

Abstract : A 50 year old, right handed, illiterate, lady with top of the basilar syndrome and cortical blindness was asked to name objects on manual exploration. In addition she was asked to cut, peel, smell and taste suitable items. Finally, she was requested to describe the structure and function of objects and name them. The responses revealed a novel type of perseveration – category specific perseveration. That is, the perseveration – category specific perseveration. That is the perseveration errors was confined to the semantic category once accessed. The patient, tested on several categories, was able to name all the items correctly, except in three categories. Two of these were the closely related categories 'fruits' and 'vegetables'. The third was 'bedding'. The evidence suggests a fine grained hierarchical organization of the semantic lexicon, and is in accordance with several other reports in literature. According to the authors, this is the first evidence for category specific perseveration.

Keywords : lexical semantic, cortical blindness, tactile naming, perseveration, lexicon.

F15. Pauranik, A. (1996-97). Neurolinguistic study of naming errors (paraphasias) in Hindi speaking aphasics; Osmania papers in linguistics; 22-23, 107-134 .

Abstract : The speech and language of forty aphasic patients belonging to a wide variety of clinical types, viz, Broca's, Global, Conduction, Anoic, Trans Cortical (TC) motor, TC Sensory and Wernicke's was analyzed using Hindi in version of the Boston Diagnostic Aphasia Examination.

The naming errors noted in these patient was analyzed and a typology of paraphasias for Hindi speaking aphasics was offered The influence of variables like type of aphasia, age, sex, educational status and site of lesion on error types was discussed. An attempt was also made in this paper, to discuss some of the theoretical and clinical implications of the results of this study in relation to existing literature based on English language.

Annotation : Dr. Apoorva Pauranik offers a typology of paraphasias (naming errors) he noted in a group of forty Hindi speaking aphasic patients belonging to different clinical categories. I hope that the rich data-base provided by these patients and discussed in the paper will stimulate more neurolinguistic investigations with will permit us to come up with more language specific typologies.

Based on the analysis of paraphasias produced by 40 Hindi speaking aphasics, the author proposed a typology and discusses the results in relation to the construct, sonority and a model that depicts possible interactions between semantics and output phonology.

Keywords ; BDAE, Hindi, aphasia, assessment, anomia, paraphasia.

F16. Rajalakshmi, (1999). Boston Naming Test in Malayalam. Unpublished Dissertation (Guide: Nandkumar, V.) MVST College of Speech and Hearing, Mangalore.

Abstract : This study established the normative data for Boston Naming Test (BNT) in Malayalam-speaking people with varying literacy levels. A group of 90 persons (45 males & females each) in the age range of 18 to 40 years were selected for this purpose. They were further subgrouped into three groups of 30 persons (each group having equal number of males & females) on the basis of their literacy level (0-4, 4-10 and > 10years). Based on the Kannada adaptation of BNT, 55 items were selected to the new version in Malayalam and these items were administered on all participants. The results showed that literate subjects had higher scores and shorter naming latency compared to semi-literates. Within the semi-literate group, females obtained higher scores than males, though the latency was high in them compared to males. However, such effect of gender was not seen in the literate group.

Keywords : Boston Naming Test, Malayalam.

F17. Ridhima, B. Paraphasias in bilingual aphasia. Unpublished Dissertation (Guide : Shyamala, K.C.), AIISH, Mysore.

Abstract : In this study, the author compared the paraphasias in two groups (12 monolingual & 12 bilingual) of people with aphasia. The speech samples were collected while the participants were administered with picture description, repetition and naming tasks of Western Aphasia Battery. The responses were analyzed for errors and the paraphasic errors were grouped into one of the six types (i.e., semantic formal, mixed, unrelated, phonemic and jargon). The results revealed a task-specific effect on paraphasia. That is, in both groups the naming task elicited both semantic and phonemic paraphasias where as the repetition task showed a preponderance of formal paraphasias. On the other hand, the picture naming task showed a differential effect on the groups. While the monolingual group sowed phonemic and formal

paraphasias. With respect to the fluent-non-fluent dichotomy of aphasia, the non-fluent group showed more phonemic paraphasias and neologisms, irrespective of the mono-bilingual group membership. Finally, the bilingual group showed phonemic and formal paraphasias in this task, the bilingual group predominantly exhibited semantic paraphasias. With respect to the fluent-nonfluent dichotomy of aphasia, the non-fluent group showed more phonemic paraphasias and neologisms, irrespective of the mono-bilingual group membership. Finally, the bilingual group showed task-specific variations in the type of paraphasias as a function of the language (L1 vs L2). For instance, the fluent aphasics exhibited more semantic paraphasias while naming in both language, but more phonemic paraphasias in L1 and formal paraphasias in L2 on repetition task. Hoever, the picture description tasks did not show such differential effect on paraphasias in both language in this (bilingual) group. The non-fluent type, on the other hand, showed more phonemic paraphasias and neologisms in both languages.

Keywords : Paraphasias, bilingual Aphasia, Neologism.

F18. Shanthala, M.S. Naming deficits in Aphasics. Unpublished Dissertation (Guide : Shyamala, K.C.) AIISH, Mysore

Abstract : The performance on three naming (confrontation, generative & responsive naming) tasks was examined in a group of seven Kannada-speaking persons with aphasia (3 anomic,2 each in Broca's & conduction aphasias). Their performance was compared with that of an equal number of matched normal participants. The results of this study showed an apparent difference between the clinical and control groups on all three tasks. Phonemic cueing was more beneficial than semantic cueing. Further, the participants with Broca's aphasia showed shorter naming latency on confrontation naming task. The anomic group performed better in both responsive and generative naming tasks compared to Broca's and conduction types. At the group level, the aphasic participants showed significant difference in performance between confrontation and generative naming tasks as well as responsive and generative naming tasks.

Keywords : Anomia, Naming tasks, confrontation Naming, Generative Naming, Responsive Naming.

F19. Simmy, A.S. Confrontation naming versus picture – to – word Matching in Bilingual (Malayalam and English) Person with Aphasia. Unpublished Dissertation (Guide : Goswami, S.P.) AIISH, Mysore

Abstract : This study aimed to investigate the confrontation naming errors in a group of bilingual (Malayalam-English) persons with aphasias. Further, the author compared the results on naming tasks with the picture to word matching tasks in these languages. Thirteen participants (6 Transcortical sensory aphasia, 5 Broca's aphasia, 1 anomia & 1 transcortical sensory aphasia) were selected to the clinical group and an equal number of matched normal bilingual persons to the control group. All underwent preliminary linguistic investigations (Western Aphasia Battery Malayalam & party A of Bilingual Aphasia Test) followed by the two target tasks (i.e. confrontation naming & picture-to-word matching) in both languages. In general, the results of this investigation showed that the performance varied as a function of the task, but not language. Further, this was the case in both clinical and control groups. The author, thus concluded that the orthographic regularity of the language did not influence the

performance. Additionally, the result from this study was portrayed as an evidence for the common conceptual system in bilingual people.

Keywords : Bilingual Aphasia, Naming Task, Picture-to word matching, orthography, conceptual system.

F20. Sonia, M.C. (2010). Performance of normal adults on Malayalam BNT : A technique using Reaction time as a measure. Unpublished Dissertation (Guide : Subbarao, T.A.). MVST College of speech and Hearing, Mangalore.

Abstract : The present study aimed at finding the normative data in young adults using Malayalam version of BNT with the specific aim of measuring reaction times. Thirty native Malayalam speakers in the age range o f18-25 years participated in the study. The Malayalam version of BNT was administered using DMDX software. The results revealed a wide difference in reaction time for the test items and recall ranged from 797.48 cms to 1883.19 ms. This study differentiated naming errors in all the subjects. Inter language errors and non-preferred correct were the most frequent error patterns observed. There was significance difference within and between group errors on overall comparison of error pattern.

Keywords : Boston Naming Test, Malayalam, Reaction time, Naming.

F21. Sunil, K.R., Gnanavel, K., Vishnu, K.K., Shyamala, K.C. (2010). Action naming in bilingual (Kannada-English) Aphasics: Implications to models of lexical organization; Paper presented at the International symposium on bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : The present study was conducted to explore the nature of action naming deficits in bilingual (Kannada-English) Aphasics and also to investigate the type of lexical processing in these individuals. Ten fluent bilingual aphasics with Kannada (L1) as native language and English (L2) as their second language were considered while 10 age and gender matched normal bilinguals were taken. Action naming test was used to identify the deficits in action naming in these individuals. The picture stimuli were presented by using DMDX software at constant time duration and reaction time (RT) was measured. This was done in two conditions like naming in Kannada (L1) and naming in English (L2). These results revealed no significant differences between reaction time of L1 and L2 in normal subjects. The results also revealed that there is a significant differences between reaction time of L1 and L2 in aphasic group. This study suggests to provide language therapy in L1 which in turn improve the L2 language abilities in aphasic individuals. This is because, the above results suggest that the lexical processing of L2 depends on L1 Lexical system than on conceptual system.

Keywords : Action Naming, Verb Naming, Bilingual Aphasia.

F22. Paplikar A, Mekala S, Bak TH, Dharamkar S, Alladi S, Kaul S. Bilingualism and the severity of poststroke aphasia. Aphasiology. 2019 Jan 2;33(1):58-72.

Abstract : Background: Bilingualism has been associated with cognitive benefits in healthy people as well as in patients with cognitive impairment due to stroke and dementia. However, the relationship

between bilingualism and aphasia is more complex. While bilinguals are as likely as monolinguals to develop aphasia after stroke, studies of relationship between bilingualism and severity of poststroke language recovery are few and have produced conflicting results, with much evidence derived from immigrant populations or small case series. **Aims:** Against this background of limited number of studies, we set out to explore the relationship between bilingualism and severity of language impairment in stroke aphasia. We explored the hypothesis that enhanced cognitive abilities related to bilingualism may have a positive impact on recovery from aphasia. ***Methods & Procedures*:** We investigated 38 bilingual and 27 monolingual patients who participated in a longitudinal hospital-based stroke registry and were evaluated at least 3 months after stroke (mean 11.5 months). Patient performance on language and other cognitive functions was evaluated with Addenbrooke's Cognitive Examination – Revised (ACE-R) validated for use in aphasia in local languages and for varying educational levels. The results of monolinguals and bilinguals were compared after accounting for confounding variables, including age, gender, education, occupation, medical, and stroke characteristics. ***Outcomes & Results*:** Aphasia severity as measured by the language domain sub-scores (total of language and fluency scores) of ACE-R was significantly higher in monolinguals compared with bilinguals (7.0 vs. 14.4, maximum score 40; $p = 0.008$, effect size = −0.691). Bilinguals performed significantly better than their monolingual counterparts in attention, memory, and visuospatial domains of ACE-R. A univariate general linear model analysis showed that bilingualism was significantly associated with higher language domain scores of ACE-R after adjusting for other confounding variables. ***Conclusions*:** The results suggest that although bilingual speakers are at equal risk of developing aphasia after stroke as monolingual ones, their aphasia is likely to be less severe.

KEYWORDS: Poststroke aphasia, bilingualism, severity of aphasia, language impairment, aphasia recovery

F23. Chengappa S. Speech and language pathology in a multilingual context: Indian experience. Language in India. 2001 May;3:1-8.

Abstract : COMMUNICATION DISORDERS IN BI-/MULTI-LINGUAL CONTEXTS - Bilingualism is a perplexing reality in any human being who possesses it. Demographically, bi/multilingualism has been defined as the presence and use of two or more languages in a modern nation or state (Asher & Simpson, 1994). According to Reich (1986) 47.3% of the world's population speaks more than one language. However, deBot (1992) reports that the majority of the world's population is bilingual. It is well known that India is one of the largest bi/multilingual country. Indian constitution (8th Schedule) lists over 18 languages for official\administrative purpose, while more than 1652 mother tongues were reported spoken in India according to the Census of India 1961. Many of these languages and dialects may or may not have scripts but are in active use. The nature of bilingualism is not also the same across the country. This being so, it is interesting to study what has been done to cope with the complexities involved in bi/multilingualism vis-  -vis SLP/Communication disorders in India. In what follows here, I have made an attempt to review the situation with reference to SLP in the past unto present and suggest a few future trends in order meet the clinical and research needs of the field.

2. CONTRIBUTIONS IN THE PAST It is aptly said that necessity is the mother of invention. The Indian research and applications in the field of speech and hearing in the past developed a variety of ways to meet the needs of bi/multilingualism, since the inception of Speech and Hearing as a distinct field in India which took shape in 1960s. The first and foremost step was the founding of All India Speech and Hearing Institute in Mysore in 1965. AIISH was started in 1965 formally at Mysore in South India.

1. AIISH became the nodal agency for all speech and hearing work in India since then. AIISH was the only institute of its kind in the whole of South-East Asia at that time. This was a national Institute and the selection of students (for the under graduate and PG courses) entailed an all India zonal (North, South, West, East) and foreign countries (Malaysia, Singapore, Saudi Arabia, Nepal, etc.) quota for recruitment . The patient load however, came, at least initially, from Mysore city and adjoining areas of the state where Kannada is largely spoken. Obviously, most of the students enrolled in the undergraduate and post-graduate programs did not even have spoken language skills in this regional language. Therefore,they had to be trained in carrying out the assessment and intervention of SLH disorders in a language hitherto unknown to them. As a first step, thestudents were introduced to a Kannada language course in their first year of studies (Kannada knowing students would opt for a non-Kannada language course offered in the curriculum).

2. The students were often taken to Speech and Hearing disorder detection camps as an integral part of their training(and also for publicity for AIISH clinical services campaigns) in adjoining states like Kerala, Andhra Pradesh, and Tamilnadu, and also in some northern statues such as Madhya Pradesh, where the students were expected to cope with the local regional languages such as Malayalam, Telugu, Tamil, and Hindi. Also, a search for employment often took the graduates away from their home town or home state, and put them in a situation to cope with an unfamiliar language clinically.

3. To help such clinical services delivery, Dr.Rathna (the then professor of SLP and the Director of the Institute) proposed, in 1970s,that a common list of words, phrases and sentences in Indian languages that could be used with any language for functional purpose be prepared. While recognizing the need for a structured and tested lists of words, phrases and sentences specific to the languages of the individual cases, this informal procedure was encouraged, since the clinical services of assessment, counseling and intervention could be provided with the assistance of the caretaker(one of the parents of paediatric cases, spouse, sibling or children of adult cases).

4. MARCH TOWARDS THE PRESENT- In 1970s and 80s, the fruitful collaboration between the newly started Central Institute of Indian Languages in Mysore and All India Speech and Hearing Institute instilled interest in speech and hearing students for language-oriented SLP research in India. The linguistics researchers at the Central Institute of Indian Languages recognized, mainly through their participation as visiting teachers of psycholinguistics and linguistics courses in AIISH, how their structural description of Indian languages could be useful for speech and hearing programs in India. Although only a few showed greater interest and involvement in such a collaboration (for example, Professors M. S. Thirumalai, N. K. Sinha, K. Rangan, Ranjit Singh Rangila, and P. N. Duttabaruah)they certainly helped in our understanding of the complexity of Indian languages and the consequent bi-/multi-lingualism that prevails in India. Several Masters and Ph.D dissertations benefitted from this contact. In1980s, other government institutions and centers like All India Institute of Medical Sciences, New Delhi, and A.Y.J. National Institute for the Hearing Impaired, Bombay offering graduate courses in speech and hearing, and clinical services for North and Western Regions came up. Then came the Regional Rehabilitation Centers with their branches in Chennai (Tamilnadu), Hyderabad (Andhra Pradesh), Cuttack (Orissa), and New Delhi catering to the clinical needs clientele speaking Tamil,Telugu, Urdu, Hindi and Oriya. Essentially the clinicians spoke the major language of the area and assessment and intervention was conducted in the language of the client. At AIISH we had already set the tradition (from the very inception of the institute) of

assigning student clinicians to clients based on commonality of language as we had started getting a major inflow of students as well as clintelle from the neighboring state of Kerala speaking Malayalam language. The practice continues even today. The other NGOs like ISH at Bangalore and Shetty's at Mangalore, started in early 1990s offering initially undergraduate courses and later Postgraduate courses. The GOs Like NISH and ICCONS at Trivandrum started in Mid 1990s and are yet to start such courses.

5. DEVELOPING STANDARDIZED TESTS IN INDIAN LANGUAGES - Three decades ago, there were meager normative data available for quantification of speech and language skills in monolingual population. In the absence of standardized language tests clinicians often relied upon informal approaches for identification and quantification of a speech/language problem such as a delay/deviance, misarticulation, etc. No attempt was made to arrive at a language age or magnitude of the delay. Conclusions as to the presence of a language disorder was left to the clinician's intuitive judgment and her/his knowledge of norms based on western literature. This procedure was useful in identifying gross delays and disorders. This, in addition to Professor Rathna's strategy detailed above, worked to satisfy the basic clinical needs. Much research in the area of language disorders during 70s and 80s focused on developing tests based on data from monolingual population. When monolingual population was not available steps were taken to ensure that the language of consideration was mother tongue and the individual studied in the same medium of instruction. (In India, schools offer choices of a variety of medium of instruction. Often a student can choose between regional language, Hindi or English as his/her medium of instruction, depending upon the school he/she chooses to atttend. The regional language could be the mother tongue in several cases such as Hindi, Bengali, Assamese, Oriya, Kannada, Tamil, etc). This was how the articulation tests, norms on articulatory acquisition and other aspects of language acquisition were studied. This was probably in line with the trend in the western world in 1960s and 70s (by Templin, 1957; Carrow, 1968; Sander, 1972; Brown, 1973). The advent of purely linguistics-oriented approaches such as those of 'form, content and use' model by Bloom and Lahey (1978), and the various profiles of linguistic abilities by Crystal (1989) and others provided considerable insight into communication abilities of individuals with limited spoken language skills and those with mild/subtle language delays/deviance. It also became clear that a formal knowledge (of structures and functions) of a given language under consideration is necessary to administer and score the tests. We already had Phonological tests by Rathna, et al (1974) and LPT by Karanth (1986) and several monolingual language norms and studies on Bilingualism (such as Thirumalai&Chengappa, 1986), developed with the assistance of scholars from the adjacent Central Institute of Indian Languages at Mysore. The latter provided phonological and grammatical inventories on different Indian languages.

5. DEVELOPING AGE EQUIVALENT LANGUAGE AND ARTICULATION TESTS

Through the developments in psycholinguistics and related domains came the wealth of information which has facilitated not only quantification and differential diagnosis, but also intervention for specific disorders. Although the exigencies leading to Rathna's approach still remain, it would be grossly inadequate in the present context where language pathology necessitates highly specific treatment of issues. This led to several language specificity oriented programmes at the national level.

The first attempt towards developing age equivalent language and articulation tests in different Indian languages was a research project entitled "Development and Standardization of Language Profile Test and Articulation Test in Seven Indian Languages" jointly undertaken by the Regional Rehabilitation Training Center and A.Y.J. National Institute for the Hearing Handicapped, Bombay in 1990. The project aimed at developing LPT with reference to Phonology, Semantics and Syntax keeping in view the comprehension and production aspects in the lines of LPT developed by Karanth(1986) and articulation tests developed on the basis of Rathna et al (1972). From the raw scores it was possible to calculate the language and articulatory ages and levels of the children as well as adults. These have been useful in assessing language acquisition/mastery in mono- as well as bi/multilingual children in those languages. But considering that the normative data were collected on the monolingual population how far it would be assisting in faithful diagnosis and assessment in bi/multilingual clients would be debatable. To facilitate research in these related issues, a course on 'bi/multilingualism - cultural and ethnic issues' has been recently included in the curriculum at the Master's level at AIISH.

6. DEVELOPING TESTS FOR MULTILINGUAL CHILDREN.

There is a general assumption that multilingual environment has an adverse effect on first language acquisition in children with language delay. The clinician often finds it difficult to help parents of such children to foster one language as s/he may find situations where the language spoken at home, extended families, neighborhood, community, medium of instruction in school they wish to opt for are all different. How do we take a decision when there are so many permutations and combinations of languages presented? Take a situation in Mumbai, a cosmopolitan city in Maharashtra as seen in AYJIHH (Mani Rao & Geetha Mukundan, 1998).

Family pattern % of children with communication disorders (total sample = 74)

- Monolingual family, Language of home and medium of instruction at school are same. But the neighborhood is bilingual 7.2 Monolingual Family in bilingual neighborhood which includes home language. However, medium of instructionat school is different from that spoken in the neighborhood 13.4
- Monolingual mother, bilingual father with mother's language as one of these along with another language which may or may not be the medium of instruction in the school. Neighborhood is frequently blingual but is occasionally multilingual 4.1
- The parents and the neighborhood is bi/multilingual; both the parents are conversant with the medium of instruction at school 28.9
- Fully monolingual situation 22.7

The family pattern given under 4 appears dominant. The second largest group appears to be the monolingual (Marathi) having the regional language as home language too. Besides Marathi and Hindi, 15 other languages were identified: English, Bhojpuri,Gujarati,Kannada, Konkani, Kutchi, Malayalam, Marwadi, Punjabi, Sindhi, Tamil, Telugu, Tulu, Urdu and Sign language. The children had SLPs like Delay and Language deficits with Hearing Loss, Misarticulations, Stuttering, Voice disorders, etc. In such situations, selection of one language as against the others for speech training is indeed difficult.

7. MATERIAL DEVELOPMENT IN INDIAN LANGUAGES FOR SLP

This has been one of the primary and continuous goals of AIISH clinic. The student assignments include works necessary for assessment and management in different Indian Languages known to them. We get cases of child language disorders with SLI, Autism, Aphasia, Learning Disability, besides others like Mental Retardation, cerebral Palsied, etc., (in addition to cases like Voice, Articulation and Fluency disorders) and adult disorders like Aphasia, and Dyslexia/Dysgraphia. Patients could be monolingual/bi/multilingual, literate/illiterate population. They would usually be handled using their mother tongue/most familiar or fluent language/both the languages/all the languages for assessment and therapy in that order! Accordingly the clinicians in consultation with the supervisors prepare the reports and therapy programmes/home training programmes in the given language/s.

8. DATA BASE IN INDIAN LANGUAGES

Several of the Masters dissertations include database from Indian languages. They include development of a test, standardization of a test, an assessment protocol, a therapy program on monolingual or a bilingual/multilingual subjects. We have had several dissertations/research projects with cross-linguistic/bi/multilingual focus such as the following:

Language disorders in Indian Neurological patients; A study in neurolinguistics in the Indian context: An inter institutional departmental project by PrathibhaKaranth (1988).

Development of Language training materials in different Indian languages. A departmental project by Karanth (1990).

Aphasia in multilingual: Clinical evidences towards several organization of languages by Rangamani (1991)

Crossed Aphasia in Bilinguals ByRangamani and Karanth (1988)

Code-switching in an early Bilingual by ShyamalaChengappa (1984)

Simultaneous Acquisition of Two Languages by ShymalaChengappa and Thirumalai (1986)

Sentence Interpretation in Normal and Kannada-English Bilingual Aphasics By J.Vaid and ShyamalaChengappa (1988)

Developmental Milestones in Language Acquisition in Indian Languages by S.Chengappa and Basanti Devi (ongoing).

Language Processing in Bilinguals: A Tachistoscopic Study in Adults

Trace Deletion Hypothesis and Its Implications for Intervention with a Multilingual Agrammatic Aphasic by Y.Faroqui and ShyamalaChengappa (1998)

Neologisms in Child Language; A case study of a Bilingual by ShyamalaChengappa (1999)

Language Processing in Mono- and Bilingual Children: A Tachistoscopic Study by S.Chengappa and Jayanthi Ray

Comprehension Deficits in Bilingual Aphasics by Sreedevi(1998)

Naming Deficits in Bilingual Aphasics by Arpitha and ShyamalaChengappa (2000).

The list is by no means exhaustive but just a sample of the kind of work being done.

9. FUTURE RESEARCH

Need based investigations such as the following need to be addressed:

Indian languages with their varied structures and their interrelations across the different levels of language organization (Phono-morphological, Morpho-syntactic changes) can be exploited fruitfully for testing the validity of Anglo-centric generalizations, both theoretical and applied. One of the major trends in modern linguistics has been the application of such models developed in the West to description of Indian vernaculars. While it provides a starting point, such dependence on theories and models developed in the context of languages other than our own can't help us in building up much needed linguistic data base for different application purposes like language teaching, translation, language assessment and therapy.

Aphasia groups in non-English population have to be studied for their language symptoms/deficits and recovery patterns in each bi/multilingual combinations in the Indian subcontinent. It is well established now that language specific impairments and recoveries take place as evidenced by growing literature on Agrammatism. For example, agrammatic patients tend to err by omission in English and by substitution in richly inflected languages. As a result, English agrammatics appear much more severely impaired than their non English speaking counterparts. These qualitative and quantitative differences need to be further explored as already glimpsed in several Indian Languages like Telugu (Usharani, 1998), Kannada (Rangamani, 1991), Tamil (Srividya 1990), Faroqui (1998), etc. Similar parallels have been observed in Dyslexia research.

Even in the use of English, there are variations as to how it is spoken in different states of India. So, one can think of having region-based English norms when studies in English are done in India either singly or as a part of bilingual groups.

While there may be similarities, there could be variations too, across mono- and bilingual language acquisition/learning/relearning in individuals with or without brain insult. These need to be explored with the help of cross-linguistic studies.

In SLP, should we look at language knowledge/mastery of language as a part of communication process as a whole when we look at children/adults with language disorders? This has implications for language assessment as well as patterns of language recovery (Paradis, 1989). Differential recovery has been observed in bilinguals (Rangamani, 1991). While translation and standardization of WAS and BDAE have served the purpose of diagnosis to an extent we are not sure whether they measure the different aspects similarly even when they are culturally modified/adapted. BAT (Paradis, 1987) test appears a better option to several other tests. Kannada, Hindi, Tamil and Gujarati versions of BAT are available, though norms are not available for other Indian languages. Testing procedures are also not standardized in many cases. Do both/all languages need to be assessed always? In what order should languages be tested? What is the impact of having same examiner test both languages? Should she/he be a native speaker of the language/s in question? Isn't it too idealistic to expect this? These are some of the questions that still linger around us.

Bilingual phenomena as code mixing and code switching have to be studied thoroughly for each bilingual set up/group/pair. Can we have norms for these? If yes, can we take a decision as to whether or not we can consider/accept language mixing/language switching as normal bilingual variations? If so how much of it is acceptable/not acceptable in bilingual aphasics? These have implications for therapy.

The investigations relating to reading, models of reading, theories of reading, acquisition and disorders of reading seen in the last two decades based on alphabetic scripts like English need to be verified and cross validated with data from non-alphabetic Indian Orthographies. For instance, Karanth in her quite extensive research suggests that pure surface dyslexia or deep dyslexia could be very rare in Indian languages like Kannada and Hindi while it could be very common in English. Such studies are necessary in other groups of languages too.

Literacy and Language specific studies providing detailed linguistic analysis of materials used and the results obtained in a wide variety of psycholinguistic tasks are needed in order to understand not only the brain organization of languages and their deficits but also devise adequate intervention procedures in Indian SLP.

10. TO CONCLUDE

India offers a great opportunity and challenge to enterprising students of speech and hearing discipline. The problems we face in India are manifold. We know that we have not enough trained manpower yet to deliver clinical services to all. We live in a nation that is historically multilingual and multicultural. Our cities are becoming increasingly multilingual and multicultural. In the diversity, however, lies the challenge and our strength. We have broken new grounds to meet the exigencies and I do believe that given the short history of speech and hearing as a distinct discipline in India we will succeed in devising tests, other diagnostic tools and delivery services that will specifically take care of the special needs of Indian languages and multilingual patients.

F24. Sebastian S, Chengappa S, Kumar R S, Ballraj A. Agraphia and Anomia in Bilingual Individual with Left Temporal Lobe Lesion--A Case Report. Language in India. 2012 Sep 1;12(9).

Abstract: The present study reveals the case report of a 39 year old man with intracerebral hemorrhage in the left temporal lobe. He is a bilingual anomic aphasic patient with Malayalam as mother tongue and English as second language. There was a discrepancy in the scores between the tasks of automatic writing vs word retrieval writing in Malayalam and English. Lexical interference (borrowing of entire word from Malayalam) was found while writing English words in the subtest of written word retrieval of function words (grammatical words). Deficits in writing in the two different languages, i.e., English and Malayalam were definitely different. The scores for the subtest of written word retrieval of function words (grammatical words) was better for English language whereas the scores were better in Malayalam for other writing tasks associated with semantics. This difference in scores raises the question whether deficits can differ between syntax and semantics in different languages. Comparison need to be done in future research studies regarding the performance on oral production across languages so that a better understanding will be available whether the difference in the script is accountable to the difference in the scores or the language as such.

F25. Pauranik A. Bilingual alexia and agraphia: A neurolinguistic study. Brain and Language. 2005 Oct 1;95(1):241-2.

Abstract : Background Group studies in aphasia, alexia, and agraphia are uncommon. Too many variables or parameters of interest in behavioural sciences make it difficult to tabulate, analyze, and discuss the results unless one restricts the aims of study to some very specific questions and seeks observation in a narrow field. However, broad-spectrum group studies are useful. An overview of clinical spectrum can be sketched. Comparisons may be made across selected variables. Exceptional or socalled deviant observations of single case studies are evened out in large group studies. The present study was undertaken with the following aims: (a) Standardizing and validating a test battery for alexia and agraphia in Hindi–English bilinguals. (b) Classifying patients into various alexic syndromes, and then correlating them with aphasic syndromes and lesion morphology on CT Scan. (c) Comparing reading and writing performance in Hindi and English.

F26. Alladi S, Bak TH, Duggirala V, Surampudi B, Shailaja M, Shukla AK, Chaudhuri JR, Kaul S. Bilingualism delays age at onset of dementia, independent of education and immigration status. Neurology. 2013 Nov 26;81(22):1938-44.

Abstract : Objectives: The purpose of the study was to determine the association between bilingualism and age at onset of dementia and its subtypes, taking into account potential confounding factors. Methods: Case records of 648 patients with dementia (391 of them bilingual) diagnosed in a specialist clinic were reviewed. The age at onset of first symptoms was compared between monolingual and bilingual groups. The influence of number of languages spoken, education, occupation, and other potentially interacting variables was examined. Results: Overall, bilingual patients developed dementia 4.5 years later than the monolingual ones. A significant difference in age at onset was found across Alzheimer disease dementia as well as frontotemporal dementia and vascular dementia, and was also observed in illiterate patients. There was no additional benefit to speaking more than 2 languages. The bilingual effect on age at dementia onset was shown independently of other potential confounding factors such as education, sex, occupation, and urban vs rural dwelling of subjects. Conclusions: This is the largest study so far documenting a delayed onset of dementia in bilingual patients and the first one to show it separately in different dementia subtypes. It is

the first study reporting a bilingual advantage in those who are illiterate, suggesting that education is not a sufficient explanation for the observed difference. The findings are interpreted in the context of the bilingual advantages in attention and executive functions.

F27. Hegde M, Bhat S. Paraphasias in Multilingual Conduction Aphasia: A Single Case Study. Indian Journal of Applied Linguistics. 2007;33(2):45-52.

Abstract : Conduction aphasia is a type of fluent aphasia, which is caused due to the damage to the supramarginal gyrus and arcuate fasciculus resulting in repetition disturbance. It has been speculated that linguistic system in bilingual aphasics can breakdown in different ways across languages. There is a lack of detailed linguistic studies in specific aspects of bilingual aphasia in Indian context. The present study highlights linguistic investigations across languages in bilingual aphasics. Measures like spontaneous speech analysis, paraphasia checklist and paradigmatic distance could help in determining languages for therapy even though such decisions cannot be effectively carried out only by traditional test like Western aphasia battery. It is thus suggested that linguistic analysis form a part of routine aphasia evaluation and more subtypes be profiled in a similar way. (Contains 2 graphs.)

F28. Niharika M. K., Prema K. S. Rao. Behavioral and Electrophysiological Correlates of Semantic Processing in Kannada. *Research and Reviews: Journal of Neuroscience*. 2019; 9(2): 1–9p

Abstract : Semantics is one of the fundamentals of language components, encoding of which helps in understanding the meaning of the spoken or written language. The processing pattern of semantics has been studied extensively in different languages using either the conventional psycholinguistic experiments or advanced neuroimaging techniques. Previous studies have documented the behavioral and electrophysiological correlates of semantic processing in different languages. However, the correlation between these measures has not been well established. The current study aimed to examine semantic processing in Kannada and also to study the association between behavioral and event-related potential (ERP) measures derived on semantic processing. Young adult native speakers of Kannada performed a sentence judgment task during which behavioral measures and ERP components were recorded. The behavioral measures included reaction time (RT) and accuracy; ERP components considered were N400 latency and amplitude. The results did not show significant correlation between the behavioral and N400 measures although a distinct neural pattern for semantic processing in Kannada was evident. This variance in the findings is discussed with regard to the characteristics of language structure and ERP components.

Keywords: Semantic, Reaction time, N400, Kannada, ERP components, electrophysiological, linguistic stimuli

F29 Prema, K. S., Abhishek, B. P. Comparison of Confrontation Naming and Generative Naming Abilities in Neurologically Healthy individuals and Persons with Aphasia. Language in India (ISSN 1930-2940) 13 (1), 321-338

F30 Prema KS, Abhishek B.P. Performance on generative naming by neurologically healthy individuals and persons with Aphasia: A comparison. International Journal of Mind, Brain & Cognition 4 (1-2), 67-85.

F31. Vasanta, D. 2006. The role of semantic transparency in the processing of Telugu compounds. Intn. Journal of Dravidian Linguistics 35:2, 107-115.

F32. Vasanta, D., Viswanatha Naidu, Y., Bapi Raju, S. Patel, J. Suvarna, A. Sireesha, J. and Nigam, R. 2011. Action verbs and body parts. International J. of Mind, Brain and Cognition 2:1-2. 29-48.

F33. Vasanta, D. 2018. Body part Lexicon in Telugu. Intn. J. of Dravidian Linguistics 47:1, 99-139.

[G]

Morphology, Syntax, Agrammatism

G1. Datta, H., Karthikeyan, S., Obler, L.K., Karanth, P., Karpur, P., (2007) Agrammatics' sensitivity to inflectional optionality. Brain and Language, 103 (1-2), 33-34

Abstract : On the basis of Grodzinsky's (1984) argument that the bound morphemes are seldom omitted as doing so leads to an invalid words, the authors in this study investigated the inflectional optionality in two Kannada-speaking persons with agrammatism. That is, the nouns in Kannada could be produced with and without nominative case-endings (egs. Pustaka pustakavu). However, verbs in Kannada do not enjoy this optionality, as they, if to be correct, are produced always with the accurate inflections. On analysis of the speech sample obtained from the two participants through picture description, the authors noted (overall : whtout controlling accuracy) lower inflection/root ratio for nouns but not for verbs, where the ratio was 1:1. Yet, when the accuracy was controlled, the inflection/ root ratio of verbgs was comparable to that of nouns. Thus, the results from this investigation were consistent with Grodzinsky's arguments.

Annotation : Datta and colleagues provided confirmatory evidence for Grodzinsky's proposal that bound norphemes are never discarded when they are crucial to maintain the accuracy of the words. This had been reported in several languages in the past. The authors logically selected Kananda to test and extent Grodzinsky's hypothesis as this language shows optionality in inflections for nouns, but not for verbs. The results of Datta et al. is in agreement with that of Grodzinsky's hypothesis, as the participants showed.

Keywords : Agrammatism, Inflectional Optionality, Kannada.

G2. Devi B., (1997). The markedness principle ; its implications for speech-language pathology. South Asian Langauge Analysis XVIII Roundtable (1997) New Delhi

Abstract : The paper explicates the principle of markedness and examines its relevance to speech-language Pathology. The specific questions explored are (a) Do the patterns show a selective loss of the unmarked elements as against the marked elements ? Conversely, does the teaching of the marked elements facilitate the acquisition of language in the child with language delay or deviance in any significant manner ?

Keywords : Markedness, Language Acquisition.

G3. Gilu, J. (2006). Syntactic deficits in individuals with Broca's Aphasia; Unpublished Dissertation (Guide : Aithal, V), Manipal College of Allied Health Sciences, Manipal.

Abstract : This study investigated the syntactic processing in Malayalam-speaking people with Broca's aphasia. The results of this study showed that the comprehension of most of the syntactic structures were unaffected in Malayalam, whereas, they showed marked impairment in expression. The most difficult items were conjunctions, case markers, and participle constructions.

Keywords : Syntax, Malayalam.

G4. Meher, P. Comparative Study of transformations on noun and verb phrases in normals and Aphasics. Unpublished Dissertation (Guide : Thirumalai, M.S.) AIISH, Mysore

Abstract : This study compared the transformations applied to the noun and verb phrases in aphasic and normal participants. A group of 90 normal subjects (30 speakers each of Marathi, English, or Hindi Languages) in the age range of 18-35 years and 12 aphasics were taken for the study. The results showed that noun phrase transformations were easier to comprehend than verb phrases transformation for both normal and aphasic participants in all three languages. The limiting point of comprehensibility for aphasics were lower than that of the normal participants.

G5. Nayana (2011). Noun and verb processing in Individuals with Bilingual Aphasia. Unpublished Dissertation (Guide : Shyamala, K.C.). AIISH, Mysore

Abstract : This study aimed at investigating the reaction times and accuracy while processing nouns and verbs in a group of bilingual people (Malayalam-English) with aphasia. Ten participants were recruited to the aphasic group and a group of 10 normal bilingual people were included into the control group. Among 10 participants in the aphasic group, five were sub-grouped into anterior aphasia (1 Broca's, 3 transcortical motor & 1 anomic) and remaining five to posterior aphasia (2 transcortical sensory & 3 Wernicke's). Four sets of 10 color pictures (nouns used in Malayalam, nouns used in Malayalam and English, verbs used in Malayalam, & verbs used in Malayalam and English) were presented and the participants were required to named these items. Reaction time and accuracy were measured. The results revealed that noun retrieval was better in posterior aphasics. Further, most of the subjects performed better in native language than second language. In the second language noun retrieval was better compared to verb retrieval.

Keywords ; Bilingual Aphasia, Noun, Verb, Dissociation, Anterior Aphasia, Posterior Aphasia.

G6. Prema, K.S. (2007). Neurolinguistics of Linguistic Perseveration: Evidences from Clinical Population, Indian Journal of Applied Linguistics, 33 (2). AIISH, Mysore.

Abstract : It is generally well known that linguistic perseveration is a common symptom in individuals with brain damage and that its manifestation may be at the phonological, syntactic and/or semantic levels. The influence of perseveratory behavior in a subject's response to test stimuli and in therapeautic process has triggered the interests of the speech language pathologists. Speech language pathologists are also interested in the study of perseveratory responses in brain-injured children and adults as it helps to trace the underpinnings of neural

structures and functions. The study of various types of linguistic perseverations-continuous, stuck-in-set and recurrent-in normal geriatric individuals and brain injured presents a platform to draw a relationship between neuroanatomical degeneration/lesion with linguistic functions. The paper attempts to highlight the importance of linguistic analysis of perseveration, which serves as a non-invasive tool tounderstand the relationship between age related perseveratory phenomenon vs. pathological perseveration.

Keywords ; Linguistic, Perseveration, Geriatric, Brain Injury.

G7. Rani, U.A., (1996-97). Inflectional and derivational processes in Broca's Aphasia : A case study; Osmania papers in linguistics; 22-23.

Abstract : This paper presents preliminary results pertaining to recognition and production of certain inflectional and derivational processes in Telugu by a single subject with Broca's Aphasia. The patient's ability to recognize and produce correct plural forms (aspects of inflectional morphology) was better retained than derivational morphology. Recognition of derived forms was better retained than the ability to produce derivations. The subject appears to have the concept of derivation but seems to have problems in association and lexical formation. These results are discussed in the light of the findings based on previously reported research on aphasics from English, Italian, German, Hebrew and Japanese language backgrounds to stress the point that detailed linguistic analysis of the materials is essential in cross-language aphasiological research.

Annotation : Though, the empirical data presented in Usha Rani's paper is limited, the theoretical arguments she summarized call for fresh investigations that can challenge existing notions on lexical representations and processes.

This case study of a Telugu Broca's aphasic contains details of material used for assessing inflectional and derivational processes in Telugu. The author concludes that the brain damage has affected derivational processes more than inflectional processes in this case.

Keywords ; Morphology, Inflectional, Derivational.

G8. Rani, U.A., (1999). Agreement in Telugu Broca's Aphasics; Osmania papers in Linguistics, 25, 53-62

Abstract : The author presents preliminary results pertaining to the agreement pattern in two Telugu-speaking persons with Broca's aphasia. Both word and sentence lists were used to elicit the responses either through a repetition or correction task. In the imitation task, the participants showed difficulty with the conjoined structures with three nouns, where the verb has to agree with the first person plural subject compared to the simple structured sentence. This was attributed to the increased sentence length as person s with aphasia are apparently poor in processing larger sentences. In the correction task, the distance played an influencing role. That is the participants failed to correct the structure where the verb had to agree with the pronominal subject which is across the constituents, where as they corrected some

structures where the noun agreed with the quantifier within the constituent. The results from this study were in sharp contradistinction to similar ones in Hebrew and Italian.

Keywords : Grammatical Agreement, Sentence Length.

G9. Rani, U.A., Analysis of linguistic disability in Telugu agrammatics : Some preliminary results, Osmania University, Hyderabad

Annotation : After reviewing briefly, some of the major findings of cross language studies on Agramamtism, Usha Rani presents in her paper, some preliminary observations on the nature of Agrammatism in Telugu, based on the data she collected from three Broca's Aphasics. Using repetition as an elicitation technique, Usha Rani notes that all her subjects showed a tendency to drop the PNG markers as well as some case markers, especially, the accusative and instrumental markers in the sentence context, in addition to adopting a variety of sentence simplification strategies.

Keywords ; Agrammatism, Telugu, Cross-Linguistic, Syntax.

G10. Sapna B. (2001). Syntactic deficits in aphasics. Unpublished Dissertation (Guide : Shyamala, K.C.) AIISH, Mysore

Abstract : This study aimed to gather information on : a) syntactic deficits in aphasics, b) relation between syntactic comprehension and production in them, c) process which leads to syntactic deficits and d) the remedial procedures for the same. Seven subjects with aphasia (5 Broca's, 1 each with anomic and transcortical sensory aphasia) in the age range of 26-65 years were taken for the study. Five participants were males and two were females. Broca's aphasics showed more syntactic production errors, followed by transcortical sensory and anomic, in the order of reduction in errors. Similar pattern was observed in syntactic comprehension too. Mean length of utterance correlated with both syntactic comprehension and production. There was also correlated observed between comprehension and production of syntax (subjects with longer MLU comprehended complex utterance.). The study also highlighted the importance of specific therapy techniques (eg. Mapping therapy) that may be beneficial in the treatment of syntactic deficits.

Keywords : Syntax, Production, Comprehension, Mapping Therapy.

G11. Sharma, S., (2004) Syntactic deficits in Hindi speaking aphasics; Unpublished dissercation (Guide : Rajashekar, B.). Manipal College of Allied Health Sciences, Manipal

Annotation : Sharma (2004) investigated the comprehension and expression syntactic structures in Hindi-speaking people with Broca's aphasia. During comprehension, the verb intransitives and the case marker 'on' were the most difficult items whereas, plurals were relatively easier. The conjunctions, participle constructions and case marker 'in' were found to me most difficult during expression. The least difficult syntactic structures were PNG markers and plurals. Thus, Sharma argued that the syntactic features in Hindi do not impose equal difficulty in people with aphasia.

Keywords : Syntax, Aphasia, Hindi.

G12. Srividya,. R. Agrammatism in Tamil Speaking Broca's Aphasics. Unpublished Dissertation (Guide : Karanth P.) AIISH, Mysore

Abstract : Based on the assumption that the findings from investigations on language breakdown, especially on syntactic aspects, carried out in English may not be applicable in Indian languages, this study explored the agrammatism in a group of four Tamil-speaking persons with Broca's aphasia. Two participants were illiterates and three were females. Four tasks (spontaneous speech, story narration, grammatically judgment & picture pointing) were administered on all of them. The results showed both similarly and difference with the investigation on agrammatism in English. For instance, the nature of agrammtism errors (short mean length of utterance, dysprosody, abundance of content words with reduced closed class density score) in Tamil was similar to English, Yet, in contrast to the findings from agrammatic studies in English, the participants in this study performed poorly on grammaticality judgment task. Finally, the illiterates performed apparently poorly compared to the literates.

Keywords : Agrammatism, Broca's aphasia, Tamil, Grammaticality judgment.

G13. Vaid J & Pandit, R (1991). Sentence interpretation in normal and aphasic Hindi speakers. Brain and Language, 41(2) 250-274.

Abstract : In interpreting a sentence , listeners rely on a variety of linguistic cues to assign grammatical roles such as agent and patient. The present study considered the relative ranking of three cues to agenthood (word order, noun animacy and subject-verb agreement) in normal and aphasic speakers of Hindi. Because animacy plays a grammatical role in Hindi (determining the nature and acceptability of sentence without accusative marking), this language is relevant to the claim that Broca's aphasia involves a dissociation between grammar and semantic. Results of study 1 with normal Hindi dominant speakers showed that animacy is the strongest cue in this language, while agreement is the weakest cue. In study 2, Hindi-English bilinguals were tested in both their languages. Most showed the normal animacy-dominant monolingual pattern in Hindi, with a mixture of strategies from both languages in their interpretation of English. A substantial minority showed mixed strategies in both languages. Only 5 of 48 subjects displayed a complete separation between languages, with animacy dominance in Hindi and word order dominance in English. In study 3, two Hindi-English bilinguals with Broca's aphasia were tested in both languages, Result indicate (a) greater use of animacy in Hindi than in English and (b) greater use of word order in English than in Hindi. The strategies displayed by these patients fall well within the range observed among bilingual normals. We conclude that the use of animacy in sentence interpreatatin by these aphasic patients reflects preservation of normal, language specific processing strategies; it cannot be interpreted as a nonlinguistics strategy developed to compensate for receptive agrammatism. Results are discussed in light of other cross-linguistic evidence on sentence comprehension in monolingual and bilingual aphasics.

Keywords : Sentence interpretation, Hindi, Aphasia.

G14. Vaid, J. & Shyamala, K.C. (1998). Assigning linguistic roles : Sentence interpretation in normal and aphasic bilinguals. Journal of Neurolinguistic, 3, 161-183.

Abstract : In interpreting an sentence, listeners rely on a variety, of linguistic cues to assign grammatical roles such as agent and patient. In normal sentence comprehension these cues converge to enable sentence interpretation, yet when the cues are placed in competition they are differentially used by speakers. The present study investigated the relative strength of three cues to agenthood word order, noun animacy and subject-verb agreement I normal and aphasic Kannada-English bilinguals and Kannada monolingual controls. The findings are discussed with respect to other crosslinguistic evidence using the sentence interpretation paradigm and with respect to their bearing on theories of bilingual language representation.

Keyword : Bilingualism, Sentence Comprehension, Agenthood.

G15. Yasmin, F. & Shyamala, K.C. (1996-97). Trace deletion hypothesis and its implications for intervention with a multilingual agrammatic aphasic patient; Osmania papers in linguistics; 22-23.

Abstract : This paper describes a treatment strategy for a multilingual agrammatic aphasic patient by drawing on certain linguistic and psycholinguistic issues. Using a single subject experimental research paradigm, we examined emergent sentence production patterns in the subject. We used aspects of Grodzinsky's Trace Deletion Hypothesis (1995) and findings from neurolinguistic literature as a basis for selecting sentences to be introduced in the treatment. The subject was sequentially trained to produce wh-questions, and through training, generalization to untrained wh-questions was tested. The outcome of this experiment is discussed in terms of its relevance to our current understanding of the acquired syntactic deficits, language representation in multilingual speakers and the role of linguistic theory in language rehabilitation.

Annotation : Yasmeen Faroqi and Shymala Chengappa's paper illustrates the clinical utility of a theoretical construct from linguistics, specifically, the trace deletion hypothesis, part of the Government and Binding (GB) Theory to the treatment of a multilingual aphasic patient (for a tutorial on applications of GB theory, see leonard and Loeb 1988)

The theoretical construct, Trace deletion hypothesis proposed by Grodzinsky formed a basis for selecting sentence stimuli for therapy in Kannada for a multilingual (Telugu, Kannada, Hindi and English) aphasic patient. The details of the intervention program and generalization of results to discourse and untreated language are discussed in this article.

G16. Bhatnagar, SC. Agrammatism in Hindi ; A case study, Agrammatic aphasia - A cross language narrative source book (vol3) 1990) Amsterdam/philadelphia : John Benjamins Publishing Company.

G17. Mukundan L , Prema KS, Verbal perseveration in Broca's Aphasia : A study on Tamil speakers; Unpublished Master's Dissertation, University of Mysore, Mysore India (2002).

G18. Mammen, A., Karanth, P., Syntax comprehension defects in Parkinsons disease; Unpublished, 2002, All India Institute of Speech and Hearing, Mysore.

G19. Rani, U, Sastri JV, The preservation of word order in Aphasics; Word order in Indian Languages, Osmania University and Book links Corporation, 1996, pp. 193-200.

G20. Rani, U., Sailaja, V. Subject in child language and aphasic speech; Case for language studies : Papers in honor of Prof. B. Lakshmi Bai, Centre of Advanced Study in Linguistics, Osmania University and Books links corporation, Hyderabad.

G21. Bhan, S. Tense and Aspect impairments in a Telugu Transcortical Sensory Aphasic. International Conference on Tense, Aspect and Mood .Mysore:C.I.I.L.3--5.Feb. 2012.

G22. Bhan, S. Intercategorical and interacategorical errors in case forms and case roles in Hindi speaking aphasic Adults.O.P.I.L.Vol.39.Osmania university, Hyderabad.2011.

G23. Faroqi, Y. (Author), Shyamala KC (Guide). Trace Detection and its implications for intervention in a multilingual Agrammatic Aphasic Patient. Dissertation Number.- D361, AIISH, Mysore

G24. Bhatnagar SC. A NEUROLINGUISTIC ANALYSIS OF PARAGRAMMATISM: A STUDY OF THREE HINDI APHASICS., eLIBRARY ID: 7290420 अधूरा है

Abstract : This dissertation is a linguistic account of paragrammatism, an aphasiological syndrome which represents disturbances of the central language system and is largely associated with neuropathologies in the dominant temporal-parietal lobes. The linguistic characteristics of this syndrome are: fluent but logorrheic speech, normal sentential pattern, mild word retrieval problems, and lack of propositional meaning in the speech. This type of language disturbance is in contrast to agrammatism, which is typified by impaired paralanguage, effortful and dysfluent speech, and the absence of grammatical devices. Neuroanatomically, agrammatic disturbances are associated with lesions in the dominant frontal lobe.

The research subjects studied for this investigation are from the All India Institute of Medical Sciences, New Delhi. All subjects were assessed on a neurolinguistic test battery of aphasia (which has been developed by the investigator), and on their performances they were classified as paragrammatics. Neurological information was obtained through neurological assessments, neurosurgical notes, and angiograms. The subjects were requested to participate in a comprehensive treatment program, and all therapy sessions were recorded for the purpose of analysis. During therapy various neurolinguistic tasks were designed to assess the subjects ''metalinguistic judgment about various linguistic constructs, processes, and operations.

This dissertation is concerned primarily with the asemanticity of paragrammatism. One of the major findings is that this lack of coherent content in speech is due to the breakdown in the underlying semantic and syntactic constraints which bear directly upon propositional

speech. The disturbance is not in the early levels of sentence formation; the patients could select appropriate '' case frames '' and retained a fair ability to retrieve words. The deficit occurred in the '' case redundancy rules ''; this was exemplified by the patients '' selection of appropriate words but placement of these words in inappropriate cases. The case confusions were not random; rather they were governed by the animacy or inanimacy of the arguments in question. Some support was found for Jakobson's regression hypothesis, since the patients, as a rule, retained the unmarked '' case forms '' better than the marked ones. It was also found that the dichotomy between phrasal and clausal relations is not psychologically real, since the semantic confusions of the patients incorporated both of these relations.

G25. A Usharani, *Agreement in Telugu Broca's Aphasics* In **Osmania Papers in Linguistics (OPiL)** Vol.25. (1999). Pp.53-62.

Abstract : This paper presents preliminary results pertaining to the agreement pattern in Telugu Broca's Aphasics. The results of the paper are discussed in the light of the findings made in Hebrew and Italian Aphasics where the agreement is preserved, whereas it is disturbed in Telugu and Hindi Aphasics. The reason for the relative and intact agreement in Italian and Hebrew and disturbed agreement in Telugu and Hindi Aphasics is explained by the morphological distinction in the languages.3

G26. A Usharani and J.Venkateswara Sastry *on The Preservation of Word Order in Aphasics* In**Word order in Indian Languages** edited by V.Swarajya Lakshmi and Aditi Mukharjee. 1996 Hyderabad; Centre of Advanced Study in Linguistics, Osmania University and Book links Corporation. Pp.193-200.

Abstract : Six aphasic's data is utilized for this study, of which three aphasics (referred as a, b& c) data are taken from the unpublished Ph.D. dissertation of Usharani (1986) other three patients (referred as d, e & f) data are taken from the unpublished M.Phil dissertation of Jagan Mohanchari. All the patients are diagnosed as Broca's aphasic's. Our study confirms Bates et al's observation that the grammatical deficits in Broca's aphasia involve a selective impairment of the patient's ability to process grammatical morphemes and other aspects of syntactic structures, mainly word order, are left intact. In general complex constructions are not preferred by the aphasic's, omissions and substitution of inflection and function words are common.

Since the word order is acquired much earlier than the other inflectional markers, the aphasic's speech also retains the word order in spite of losing other inflectional categories. This explains the comprehensibility of the speech of Broca's aphasics.

G27. A. Usharani:*Analysis of Linguistics Disability in Telugu Agrammatics: Some preliminary Results*InLanguage Development and Language Disorders: Perspectives for Indian languages edited by B.Lakshmi Bai and D.Vasanta.1995;Centre of Advanced Study in Linguistics, OsmaniaUniversity and Bahri Publications Delhi. Pp. 267-278.

Abstract : Three Broca's Aphasics participated in this study. An assessment format was deigned to elicit essential components of Phonology, Morphology and Syntax of Telugu language as part of Usharani (1986) study. The main technique used for much of the data

collected was repetition. The data suggests that grammatical markers like case inflections and plural markers show a tendency to be dropped even in repetition. On the other hand content words like nouns, verbs or pronouns etc. are generally retained.

G28. V.Sailaja and A.Usharani: *Subject in child language and aphasic speech,* In**Case for Language Studies: Papers in honour of Prof.B.Lakshmi Bai**, edited by V.Swarajya Lakshmi, Centre of Advanced Study in Linguistics, OsmaniaUniversity and Book links corporation, Hyderabad.

Objectives of the present study: This study throws light on the following:

- The present study tries to focus on the emergence of the subject in the early speech of Telugu children
- The preference for the subjects in an utterance with the variation in words order through an imitation test.
- The psychological reality for the different word orders in normal adult speech.
- The subjects (covert or overt) in a sentence in the aphasic speech

This study shows that children would pay attention to the order of words in a sentence. Aphasic speech supports the necessity for the retention or presence of the subject in a sentence as the licensing inflectional is lost.

G29 A. Usharani: *Inflectional and derivational processes in Broca's Aphasia: a Case Study* In **Osmania Papers in Linguistics (OPiL)** Vol. 22-23 (1996-1997) Pp.135-148. Centre of Advanced Study in Linguistics, Osmania University.

This paper presents preliminary results pertaining to recognition and production of certain inflectional and derivational processes in Telugu by a single subject with Broca's Aphasia. The patient's ability to recognize and produce correct plural forms was better retained than derivational morphology. Recognition of derived forms was better retained than the ability to produce derivations. The subject appears to have the concept of derivation but seems to have problems in association and lexical information. These results are discussed in the light of the findings based on previously reported research on aphasics than English, Italian, German, Hebrew and Japanese language backgrounds to stress the point that detailed linguistic analysis of the material is essential in cross-language aphasiological research.

G30. A Usharani: *Agreement in Telugu Broca's Aphasics* In **Osmania Papers in Linguistics (OPiL)** Vol.25. (1999). Pp.53-62.

This paper presents preliminary results pertaining to the agreement pattern in Telugu Broca's Aphasics. The results of the paper are discussed in the light of the findings made in Hebrew and Italian Aphasics where the agreement is preserved, whereas it is disturbed in Telugu and Hindi Aphasics. The reason for the relative and intact agreement in Italian and Hebrew and disturbed agreement in Telugu and Hindi Aphasics is explained by the morphological distinction in the languages.

G31. Darshan H S, Goswami S P, Effect of Distance between Marker Agreement Dependencies on Sentence Comprehension in Persons with Aphasia. Annals of Indian Academy of Neurology, 2020 Aug;23(2):174

Abstract : **Background:** Rules and regularities are embedded in all the language structures. Extracting these helps in speech-language acquisition and processing. Sentence processing relies on transitional probability of the dependencies and its distance which are present within the sentence. **Aim:** To investigate the effect of distance between marker agreement dependencies on sentence comprehension in Persons with Aphasia (PWA) and Neuro- Typical Individuals (NTI). **Methods:** Ten PWA and Ten NTI were recruited for the study. Participants whose native language was Kannada (a South Indian Language) and received formal education of minimum 10th grade were selected. **Materials:** A total of 60 Kannada sentences were used and grouped into three categories i.e., short sentence (had short distance between dependencies) (SSD); Longer sentences (had long distance between dependencies) (LLD) and longer sentences (had short distance between dependencies) (LSD). The agreement markers in the sentence were manipulated w.r.t distance among them and grouped it as adjacent (short distance) and non-adjacent (long distance) type of sentences. **Procedure:** The participants were instructed to read the sentence and judge whether it is grammatically correct or not by pressing the key corresponding to 'yes' or 'no' on the keyboard. In addition, modified N-back task was administered. **Results and Discussion:** Accuracy and reaction time measures were derived for each sentence types. NTI showed better performance than PWA in sentence judgment task. Both the groups, performed poorly on LSD type of sentence when compared to other sentence types. LSD type was more complex due to the syntactic demands placed by the antecedent preposition, pronoun and adverb placed nearer to the verb and also longer distance between subject agreements to the verb.

Keywords: Aphasia, sentence processing, subject-verb agreement, working memory

G32. Ravi SK, Chengappa S, Narne VK. An ERP Study of Semantic Processing in Kannada-English Typical Bilingual Individuals--A Pilot Study. Language in India. 2013 Apr 1;13(4).

Abstract : Abstract: Considerable neurophysiological research has been conducted to explore the neural underpinning of semantic and syntactic processing in bilinguals by using various neuroimaging and electrophysiological techniques. However, the debate of the cortical organization of the two languages in bilinguals is still going on. The present study was carried out with aim of investigating how multiple languages are processed in the human brain. Event related brain potentials, specifically, N1 and N400 potentials were recorded from right handed typical bilinguals during a task involving silent reading. The participants in the experiment were five Kannada --English bilinguals of Karnataka state in southern part of India. The bilinguals, highly proficient in both languages, had exposure in both languages since the age of 5 years. The stimuli were words that would correctly complete a short, meaningful, previously shown sentence, or else were semantically incorrect. The task consisted in deciding whether the sentences were well formed or not, giving the response by pressing a button. The participants read 100 Kannada (50 correct & 50 incorrect) and 100 English (50 correct & 50 incorrect) sentences to compare the processing of the two languages within the group. The findings revealed subtle differences in the latency and amplitude measures of various ERP components such as N1, and N400 potentials. The present paper highlights the several processes that are involved in the differences in processing of these two languages and

their implications to the understanding of language processing in clinical populations such as in bilingual aphasia

G33. A. Usharani and J.Venkateswara Sastry, *The Preservation of Word Order in Aphasics* In Word order in Indian Languages edited by V.Swarajya Lakshmi and Aditi Mukharjee. 1996 Hyderabad; Centre of Advanced Study in Linguistics, Osmania University and Book links Corporation. Pp.193-200.

Abstract : Six aphasic's data is utilized for this study, of which three aphasics (referred as a, b& c) data are taken from the unpublished Ph.D. dissertation of Usharani (1986) other three patients (referred as d, e & f) data are taken from the unpublished M.Phil dissertation of Jagan Mohanchari. All the patients are diagnosed as Broca's aphasic's. Our study confirms Bates et al's observation that the grammatical deficits in Broca's aphasia involve a selective impairment of the patient's ability to process grammatical morphemes and other aspects of syntactic structures, mainly word order, are left intact. In general complex constructions are not preferred by the aphasic's, omissions and substitution of inflection and function words are common. Since the word order is acquired much earlier than the other inflectional markers, the aphasic's speech also retains the word order in spite of losing other inflectional categories. This explains the comprehensibility of the speech of Broca's aphasics.

G34. A. Usharani: *Inflectional and derivational processes in Broca's Aphasia: a Case Study* In Osmania Papers in Linguistics (OPiL) Vol. 22-23 (1996-1997) Pp.135-148. Centre of Advanced Study in Linguistics, Osmania University.

This paper presents preliminary results pertaining to recognition and production of certain inflectional and derivational processes in Telugu by a single subject with Broca's Aphasia. The patient's ability to recognize and produce correct plural forms was better retained than derivational morphology. Recognition of derived forms was better retained than the ability to produce derivations. The subject appears to have the concept of derivation but seems to have problems in association and lexical information. These results are discussed in the light of the findings based on previously reported research on aphasics than English, Italian, German, Hebrew and Japanese language backgrounds to stress the point that detailed linguistic analysis of the material is essential in cross-language aphasiological research.

G35. Bhatnagar, S. (1981) A Neurolinguisitc Analysis of Paragrammatism. Linguistic Research Inc., Edmonton, Canada

G36. Bhatnagar, S. (1989). *Hindi materials: a control subject*. In L. Menn, & L. Obler (Eds.), *Agrammatic Aphasia: A Cross-Language Narrative Sourcebook*. Vol. 3, pp. 1761-1773. Philadelphia: John Benjamin.

G37. Perlman, M., Bhatnagar, S., & Bright, W. (1989).Hindi grammatical sketch. In L. Menn & L. Obler (Eds.). *Agrammatic Aphasia: A Cross-Language Narrative Sourcebook*. Vol. 2, pp. 994-998. Philadelphia: John Benjamin.

G38. Bhatnagar, S. (1989). Agrammatism in Hindi: a case study. In L. Menn & L. Obler (Eds.), *A Grammatic Aphasia: A Cross-Language Narrative Sourcebook*. Vol. 2, pp. 975-993; 999-1011. Philadelphia: John Benjamin.

G39. Vineetha Sara Philip & S.P. Goswami (2020) Comparing verbal and aided single sentence productions in Malayalam-speaking adults with aphasia: a preliminary investigation, Clinical Linguistics & Phonetics,
DOI: 10.1080/02699206.2020.1855254

Abstract : The primary aim of the study was to investigate the semantic and syntactic aspects of verbal and aided single sentence productions in adults with aphasia and neurotypical adults to determine which mode allowed the exchange of information more effectively. The participants of this study included 20 adults with aphasia and 20 neurotypical adults who were native speakers of Malayalam, an Indo-Dravidian language spoken in the south-western state of Kerala in India. Thirteen action picture stimuli were constructed to elicit single sentences. The participants were expected to describe the action picture in a single sentence using spoken language as well as using Picture Communication Symbols (PCS). The semantic aspect of each sentence produced was analysed using Correct Information Unit (CIU) analyses, and the syntactic aspects were measured using (i) percentage of grammatically complete sentences, (ii) percentage of the correct number of verbs, and (iii) total number of syntactic errors. A sentence production accuracy scale was constructed to obtain a combined score for semantic and syntactic aspects of each sentence produced. The results suggested that while both verbal and aided modes were effectively used for the exchange of information by neurotypical adults and adults with anomic aphasia, the aided mode was used more effectively by adults with Broca's aphasia. To conclude, the study highlights the importance of (a) using visual symbols even for those with mild aphasia as it tends to improve phonological and articulatory abilities, (b) use of symbols to construct simple sentences to communicate in adults with severe aphasia, (c) evaluation of the ability to use alternate modes of communication and also the preferred mode of communication in adults with aphasia

Keywords : Sentence construction, symbols, speech, aphasia, Malayalam.

[H]

Narrative Discourse, Pragmatics

H1. Gayathri, H. (1985). Conversational analysis in aphasia. Unpublished Dissertation (Guide: Karanth P.) AIISH, Mysore.

Abstract : Participants were also assessed using appropriate test materials. The analysis showed that the syntactic errors outweighed phonological, followed semantic errors. Under syntactic constraints, the case makers were maximally affected which in turn were followed by the sentence types, predicates, PNG markers, participle constraints, tenses, morphophonemic structures and conjunctives. The aphasics used several choices to overcome these linguistic constraints. Of these, verbal choice repetitions (especially at word level) were the most frequent and were indirectly related to the degree of speech deficit. Under extraverbal choices, pantomimes and emblems were used most frequently, but it depends upon the severity of the linguistic constraints. The non-aphasic partner used greater number of morphemes, took more turns in interaction, shifted topic more often and used more conversational saves during communication breakdown. The results indicated that, in anterior aphasics, communication was enhanced by pragmatic strategies and the contribution of the conversational partner.

The conversational sample obtained from 10 persons (9 males & 1 female) with expressive aphasia was linguistically analyzed to examine the linguistic constraint encountered by the speaker, the choices made by them to overcome these constraints, and the effect of language on their conversation. The linguistic constraints were grouped under phonological, semantic, and syntactic. Further, pragmatic as well as functional non-verbal communication skills.

Keywords : conversational analysis, syntax, pragmatics, non verbal communication.

H2. Hema N., Baljeet R., Shyamala K.C., (2010) Discourse production in Fluent bilingual aphasics with CVA and TBI; Proceedings of International symposium on bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : The aim of this paper is to compare the thematic coherence under macrolinguistic aspect of discourse production characteristics between aphasics (5 each) with aphasia due to closed head injury and CVA. In addition to these two groups, 10 normal speakers matched with the clinical groups were also included. All were native kannada speakers with English as their second. Language for the past 10 years. Three groups of subjects participated in the present study. All were native.

Kannada speakers, using English as a second language since ten years. Fluent Aphasia (FA), Closed head injury (CHI), Normal control. An aphasic with CVA performed with poor local coherence is in agreement with previous reports and aphasics with TBI patient's apparently greater impairment in maintaining global coherence, as compared to local coherence.

Keywords ; discourse, bilingualism, aphasia, traumatic brain injury.

H3. Medha, K.A., (2010) Analysis of Spoken Narratives in a Marathi-Hindi-English Multilingual Aphasic patient; Indian journal of applied linguistics, 36, 1-2.

Abstract : In a multilingual country such as India, the probability that clinicians may not have command over different languages used by aphasic patients is very high. Since formal tests in different languages are limited, assessment of people from diverse linguistic backgrounds presents speech – language pathologists with many challenges. With a view to explore the possibility of eventually designing a suitable assessment procedure for multilingual aphasics, an attempt is made in this paper to discuss some of the language specific narrative devices used in generating spoken narratives by a Marathi-Hindi-English aphasic patient from Mumbai in each language. Different methodologies used in collecting and analyzing these narratives are described in this paper.

Keywords : Narratives, multilingual aphasia.

H4. Niyati, C. (2009). Comparison of discourse abilities in Hindi speaking normal individuals and Broca's aphasics -Effects of Elicitation Task; Unpublished Dissertation (Guide ; Veena, K.D.). Manipal University, Manipal.

Annotation : Niyati investigated the discourse abilities of 10 Hindi speaking people with Broca's aphasia. She compared their performance with a group of matched normal participants on narrative and procedural discourses. The results showed that, compared to the normal group, the clinical group showed significantly poor mean length of utterance, speaking rate, number of overall sentence, and faithful contents. Further, the clinical group showed significantly more number of irrelevant contents compared to the normal participants.

Keywords ; Discourse, Broca's aphasia, Hindi.

H5. Pauranik, A., (2010). Language assessment in Hindi-English Bilingual patients with Dementia; Indian journal of applied linguistics, 36, 1-2.

Abstract : The paper provides detailed assessment of a multilingual dementia patients using Boston Diagnostic Aphasia Examination (BDAE) adapted into Hindi by the author. After providing a brief review of literature on Dementia as understood in the west, the responses of the patient under different components of the BDAE are presented. The latter part of this paper deals with the need for inclusion of narratives from neurologically impaired patients. Normative data from healthy subjects are analyzed and presented along with some samples from patients with aphasia and dementia.

Keywords : BDAE, Dementia, Narratives, Aphasia.

H6. Goswami SP, Priyadarshi B, Mathew S, Vasudevamurthy A. Gestures and discourse markers: Communicative facilitators in persons with Aphasia. Journal of Indian Speech Language & Hearing Association. 2018 Jan 1;32(1):1.

Abstract : Introduction: Gestures provide a nonverbal channel for communication that is integral and entwined with every aspect of human interaction. The present study aims to highlight the contribution of gestures, discourse markers (DMs), and vocal gestures as communicative facilitators for maintaining the discourse in a person with aphasia (PWA). Methods: Discourse samples of two participants with Broca's aphasia and one control participant were audio-video recorded and transcribed. The communicative facilitators used by these participants were identified, scored, and analyzed from the discourse samples. Results: Results revealed high scores on the use of communicative facilitators among PWAs, using gestures and DMs in ways more than just to convey meaning. Both participants with aphasia differed on their use of verbal communication. They also differed on the quantity of communicative facilitators used to maintain the cohesiveness in discourse. The differences in use of verbal measures could be inferred based on the aphasia quotient obtained on the administration of Western Aphasia Battery-Kannada. These highly individualistic differences in the use of communicative facilitators in the absence of verbal expression are a product of various factors that influence and enhance the communication skills of the PWA; factors that may either be internal or external, with skills that are established before or after the stroke. Conclusion: The results of the present study suggest that PWAs have a significantly good communicative competence than what would be projected on any assessment scale that measures verbal components, and participants were noted to convey comprehensive information during discourse, compensating their poor verbal expression with communicative facilitators.

Keywords: Aphasia, communicative competence, communicative facilitators, discourse markers, gestures

H7. Pallickal M & Hema N. Discourse in Wernicke's aphasia. Aphasiology. 2020 Mar 23:1-26.

ABSTRACT : Background -Language can be viewed and analysed at many levels. One of them is, "language in use" or discourse. A complex system of cognitive and linguistic processes is required for the performance of discourse; any deficits at this system level can impair the use of language. Studies have shown impaired performance of discourse in individuals with Wernicke's aphasia (WA). In this condition the participant can talk fluently and excessively but lacks insight about the topic. The pattern of linguistic disruption seen in WA could be explored through the analysis of discourse grammar. **Aims -**The present study aims to investigate the narrative discourse abilities of individuals with WA in comparison with Neurotypical adults (NTA) using qualitative and quantitative methods. **Method & Procedure -**Five participants with WA (age 40–60 years) following cerebrovascular accident diagnosed by a Neurologist. Following this, WAB was administered on these participants. Five neurotypical Kannada bilinguals (age 40–60 years) were considered as controls. The narrative discourse sample on the topic "journey to a place" was video recorded and transcribed using IPA. Qualitative and quantitative discourse analysis approaches were used to assess the linguistic functions using discourse analysis scale and T-unit analysis respectively. **Results -**The results revealed a significant difference between WA and NTA. In qualitative analysis, WA showed a significantly lower mean values for narrative proposition total and narrative non-proposition total

($p < 0.05$). Within-group comparison of narrative proposition total and narrative non-proposition total of discourse using Wilcoxon's Signed Rank test revealed a significant difference for WA group. Findings were not significant for NTA group. For the quantitative analysis, the parameter Number of T-Units (NTU) showed significantly lower mean value for NTA group compared to WA group ($p < 0.05$). Both the groups obtained similar mean values for the parameters Number of Clauses (NC) and Number of Words Per Clauses (NWPC), $p > 0.05$. **Summary and conclusion:** This study facilitates the understanding about the discourse deficits in individuals with WA. During clinical presentation, most of the patients with fluent aphasia, Alzheimer's Dementia and Schizophrenia exhibits similar linguistic deficits and are misdiagnosed when not complemented with a medical report. In such cases, discourse analysis would help to tap the incongruency at qualitative and quantitative linguistic performance of discourse. Hence, there is a need to approach each patient differently during the clinical evaluations and interventions.

KEYWORDS: Wernicke's aphasia, discourse analysis scalepropositionalnon-propositionalT-unit analysisnarrative discourse

[I]

Reading and Writing

I1 Cherian, P.R., (1998) Analysis of reading errors in Malayalam speaking learning disabled children, Unpublished Dissertation (Guide : Karanth, P.). MVST College of Speech and Hearing, Mangalore.

Abstract : The aim of the study was to determine the progression of English reading skills in normal and learning disabled children and to compare the scores as well as to find the correlation between tasks. The study included two groups. First group included 90 normal school going children from Grades III, V and VII (30 in each) and nine learning disabled children (3 in each grade). Informal reading Diagnosis test was administered. The results obtained from the study revealed that the scores on complex tasks increased as a function of Grades in normal children, where as those with LD did not show such difference. The author portrayed it as an evidence for the slow development of learning skills in children with LD

Keywords : Learning Disability, Reading, Dyslexia and Malayalam.

I2. Das, T., Bapi, R.S., Padakannaya, P., & Singh, N.C., (2011). Cortical network for reading linear words in an alphasyllabary. Reading and Writing : An Interdisciplinary Journal, 24, 697–707 (2011).

Abstract : Orthographic differences across languages impose differential weighting on distinct component processes, and consequently on different pathways during word-reading tasks. Readers of transparent orthographies such as Italian and Hindi are thought to rely on spelling-to-sound assembly and show increased activation in phonologically tuned areas along the dorsal pathway, whereas reading an opaque orthography such as English is thought to rely more on lexically mediated processing associated with increased activation of semantically tuned regions along the ventral pathway. To test if biliterate Hindi/English readers exhibit orthography-speci!c reading pathways, we used behavioural measures and functional neuroimaging. Reaction times and activation patterns of monolingual English and Hindi readers were compared to two groups of adult biliterates; 14 simultaneous readers who learnt to read both languages at age 5 and 10 sequential readers who learnt Hindi at 5 and English at 10. Simultaneous, but not sequential readers demonstrated relative activation differences of dorsal and ventral areas in the two languages. Similar to native counterparts, simultaneous readers preferentially activated the left inferior temporal gyrus for English and left inferior parietal lobule (L-IPL) for Hindi, whereas, sequential readers showed higher activation along the L-IPL for reading both languages. We suggest that early simultaneous exposure to reading distinct orthographies results in orthography-speci!c plasticity that persists through adulthood.

Keywords : Orthography, Bilingual, fMRI, Hindi.

I3. Das, T., Kumar, U., Bapi, R.S., Padakannaya, P., & Singh, N.C. (2008). Neural representation of an alphasyllabary-the story of Devanagari, Current Science, 1381.

Abstract : We used functional brain imaging to study brain activation patterns when 16 native speakers read phrases in Devanagari, a writing system with alphabetic and syllabic properties. We found activation in the left insula, fusiform gyrus and inferior frontal gyrus, as seen for reading alphabetic scripts and in the right superior parietal lobule as associated with reading syllabic scripts. Additionally, we found bilateral activation in the middle frontal gyrus (Lt. BA 46, Rt. BA 6/44) which we attribute to complex visuo-spatial processing required for reading Devanagari, wherein consonants are placed linearly from left to right and vowels positioned non-linearly around them.

Keywords : Reading, Orthography, Functional Neuroimaging, Devanagri.

I4. Das, T., Padakannaya, P., Pugh, K.R., & Singh, N.C., (2011). Neuroimaging reveals dual routes to reading in simultaneous proficient readers of two orthographies., Neuroimage, 54(2):1476-87.

Abstract : Functional imaging studies have established cortical networks for reading alphabetic, syllabic and logographic scripts. There is little information about the different cortical areas that participate in reading an alphasyllabary. We use functional brain imaging to study the reading network for Devanagari, an alphasyllabary. Similar to syllabic scripts, the basic phonological unit that corresponds to a grapheme in Devanagari, called an akshara, is a syllable but the component consonant and vowel within akshara can always be visually analyzed giving it the appearance of an alphabetic system. Unlike an alphabetic system wherein arrangement of consonants and vowels is linear, in Devanagari, vowels can also be placed linearly in a sequential manner or non-linearly, above or below, making it visuospatially complex. In this study we used functional neuroimaging to ascertain the cortical reading network when 10 native speakers of Hindi, read linear words in Devanagari. Akin to other word reading studies, we find activation in the midfusiform gyrus (visual word form area, BA 37). Region of interest analysis shows involvement of left superior temporal gyrus (BA 41), inferior (BA 40) and superior parietal (BA 7) lobules. These findings suggest that the reading network for Devanagari, an alphasyllabary encompasses cortical areas involved in reading both alphabetic and syllabic writing systems.

Keywords : Orthography, Bilingual, fMRI, Hindi

I5 Das, T., Singh, L. Singh and Singh, N.C. (2007) Rhythmic structures of English and Hindi - new insights from a computational analysis, Progress in Brain Research, 168, 207- 72.

Abstract : Much information about speech rhythm is believed to be embedded in low frequency temporal modulations of the speech envelope. Using novel methods of spectral analysis we construct a spectro-temporal modulation spectrum and extract low frequency temporal modulations of spoken utterances to study the rhythmic structure of English and Hindi. The results of our spectral analysis reveal a narrower temporal bandwidth for Hindi as compared to English. We also calculate variability in syllable durations and find that variability in English is greater than Hindi. We relate temporal bandwidth of the modulation spectrum to variability in syllable duration and suggest that narrow bandwidth in the modulation spectrum

implies less variability, whereas broad bandwidth implies greater variability in syllable duration. Our results also demonstrate that syllabic information is contained in low frequency temporal modulations of the speech envelope. Our results suggest that the modulation spectrum can be explored as a promising tool to study the temporal structure of language.

Keywords : Rhythm Computational Analysis Spectrum, Syllable Duration, Hindi.

I6. Garg, A., & Nehru, R. (2000). Highly selective orthographic agnosia for non-initial position Hindi vowels in a case of post-traumatic aphasia. Paper presented at the 1st Internaitonal Conference 'Neurology, Language and cognition-2000', Thiruvananthapuram.

Abstract : On the basis of a series of previously reported researches in a variety of developmental and acquired reading disorders, we have repeatedly argued that the complex spatial configuration of non-initial position Hindi vowel (and bundled consonants) is the major source of Hindi reading impairment and that initial and non-initial position Hindi vowels are represented separately in the orthographic lexicon. The objective is to confirm these postulates. Single case study of a middle aged, right handed, polyglot, aphasic patient evaluated on a series of cognitive-linguistic task in Hindi and English. Reading aloud showed an extremely high error rate on reading non-initial position Hindi vowels. He was unable to name or identify any of them, though he could copy them perfectly. Unlike another case reported by us, he was unable to match any of the written non-initial position vowels with the respective targets, though he could match consonants and initial position vowels. Reading of English vowels was intact. This case has a highly selective orthographic agnosia for non-initial position Hindi vowels with sparing of the rest of the Hindi orthographic characters. This highly selective loss conclusively demonstrates that initial and non-initial position Hindi vowels are separately represented and processed in the mental lexicon.

Keywords : Orthographic Agnosia, Polyglot, Vowel, Hindi, Mental Lexicon.

I7. Girija, P.C., (1998). Analysis of writing errors in Malayalam-speaking learning disabled children; Unpublished Dissertation (Guide : Karanth. P.). MVST College of Speech and Hearing, Mangalore.

Abstract : This study examined the writing skills in normal school going children as well as to analyze and compare the writing errors in Malayalam speaking normal and learning disabled children. Two groups of subjects from grade I-V: normal school going children (10 in each grade) and learning disabled children (3 in each grade) participated in the study. Three major tasks dictation, copying and picture description were administered. The results revealed that there was increase in the grades. In dictation task, there was gradual decrease in the score as the grade increased. In copying task, performance of the normal children increased as the grades increased, whereas, in learning disabled children significant differences was seen between grade I and other grades. In picture description task, highly significant difference was noted between all the grades for normal children, where as significant difference was seen between all the grades in learning disabled children. In conclusion, LD children have slow learning process due to the impairment in decoding skills, phonic skills and perceptual-motor ability.

Keywords : Dysgraphia, Reading, Learning disability.

I8. Karanth, P., (1992). Developmental dyslexia in bilingual biliterates. In Reading and writing. 4:3, 297-306, Kluwer Academic, Netherlands

Abstracts : Dyslexia in bilinguals has been of interest for the implications it holds for the understanding of the brain and language. Several types of dissociations have been reported in the acquired dyslexias among adult bilinguals. However, reports of differing types and difficulties in the acquisition of two or more scripts among developmental dyslexics are relatively rare. This paper describes two such cases of developmental dyslexia in whom learning to read English as compared to Kannada and Hindi (two Indian scripts) were differentially affected. The implications of these findings for the understanding of reading acquisition and models of reading are discussed.

Keywords : Bilingual, Dyslexia, Alexia, Orthography.

I9. Karanth, P., (1998), Reading and reading disorders : An Indian perspective, Osmania papers in linguistics; volume22-23; 149-159

Abstract : The investigation of reading, its models, theories, acquisition and disorders, has emerged as a hot research topic in appled psycholinguistics during the last couple of decades. Much of the current research, however, has come out of the Western world and is thereby largely restricted to the reading of alphabetic scripts like English. These models and theories are in need of cross verification and validation with data from nonalphabetic scripts such as syllabic and ideographic scripts. This paper brings to bear, data from the semisyllabick Kannada script to two different aspects of current reading research – the disorders of reading and metalinguistic skills vis a vis reading. The emphasizes both the contrihution of such data to the refinement of current models of reading and the pitfalls of unquestioned application of the implications of existing Western theories to teaching and remedial work in this country.

Annotation : Prathibha Karanth summarizes the findings of some of the studies undertaken in India on reading and reading disorders, most of which being based on syllabic or semi-syllabic orthographies, post a challenge to the existing theories and models of reading acquisition and disorders based on language with alphabetic scripts.

I10. Karanth, P., (2002). The search for deep dyslexia in a semisyllabic script; Journal of Neurolinguistics, 15, (2) 143-155

Abstract : Current psycholinguistic models of the acquired dyslexias have largely been based on the 'alphabetic writing systems' and are in need of cross verification with data from readers of other kinds of 'writing systems'. The study of the acquired dyslexias in the two languages of the bilingual/biliterate patient could provide valuable insights into the influence of the script as a factor particularly when the two languages/scripts differ in nature. This paper describes the reading deficits of a bilingual/biliterate patient in his native Hindi and in English. Like most of the other Indian writing systems, Hindi (Devanagiri) is phonologically transparent, nearly always regular, and can therefore be treated sub lexically. Use of the lexical route, although not

prohibited, may not occur given that Hindi words, even the complex ones are phonologically transparent and there are very few irregular words. English, on the other hand, is a very irregular 'alphabetic writing system' and the lexical route is, consequently, very often required for both reading and writing. A.G., the patient reported here, while presenting with deep dyslexia in English had hardly any reading skills in his native language (Hindi). Given that the neural bases of sub lexical reading are impaired in deep dyslexia, the differential effect of this neural impairment on the processing of the two scripts is of interest for the validation of the psycholinguistic models and our understanding of the neural bases of reading

Keywords : Alexia, Dyslexia, Writing system, Devanagri, bilingual, psycholinguistic.

I11. Karanth, P., (2003). A cross-linguistic Study of acquired reading disorders; Implications for reading models, disorders, acquisition and teaching, Kluwer Academic, New York.

I12. Karanth. P., (2008). Cross-Linguistic study of Acquired Reading Disorders. Implications for Reading Models, Disorders, Acquisition, and Teaching. Kulwer Academic, New York

Annotation : In her present monograph, Karanth explores the nature of the acquired dyslexias in Kannada, one of the many so-called alpha syllabaries that are used to write both the Indo-Aryan and the Dravidian Languages of India. These studies are then compared and contrasted with normal and impaired reading in other relatively transparent scripts such as Japanese kana and Korean hangul, with mixed scripts such as English and Frenh, and with deep orthographies such as Japanese Kanji and Chinese Hanzi. The discussion takes place against the background of contemporary cognitive and computational models of reading an extends to cross-linguistic studies of reading acquisition and mature fluent reading. Consideration is also given to bi-or multi scriptal readers. The ability to read in more than one orthographic system is a necessity in many parts of the world, but the requisite skills are often ignored in the western literature.

Keywords : Dyslexia, Reading, Orthography, Alpha syllabary, Dravidian language.

I13. Krishnan, G., Pai, A.R., Tiwari, S., & Rao, S.N. (2011). 'I can write two, but not 2': Evidence for domain-specific within-modality dissociation for number digits. Procedia-Social and Behavioural Sciences, 23, 73-74.

Abstract : This study presented a novel and rare dissociation of number digits and number words in a person with primary progressive aphasia. The subject in this study was unable to write the number digits on self-writing and on dictation. His attempts to write the number digits often failed and he apparently ended up writing the accurate number words. The evidence from this study, thus showed that dissociation could occur within a give domain (here, number), and within the same modality (written/orthographic).

Keywords ; Agraphia, Domain, Digits, Modality, Dissociation.

I14. Kumar, U., Das, T., Bapi, R.S., Padakannaya, P., Joshi, R.M., & Singh, N.C. (2010). Reading different orthographies: An fMRI study of phrase reading in Hindi-English bilinguals. Reading and Writing, 23 (239-255)

Abstract : The aim of the present study was to use functional imaging to compare cortical activations involved in reading Hindi and English that differ markedly in terms of their orthographies by a group of late bilinguals, more fluent in Hindi (L1) than English (L2). English is alphabetic and linear, in that vowels and consonants are arranged sequentially. In contrast, Hindi, written in Devanagari, is an alphasyllabary and non-linear writing system wherein vowels are placed around consonants making it a visually complex script. Additionally, the grapheme to phoneme mapping in English is opaque while Devanagari is transparent. Effects of reading fluency were seen in significantly slower reading times and direct English–Hindi comparison showed left putamen activation for the less fluent language (English). Direct Hindi–English orthography comparisons revealed activation in the temporal pole and caudate nucleus of the right hemisphere, cortical areas known to be involved in semantic and visual processing. We also find activation in right superior temporal gyrus, which we attribute to the syllabic rhythm of Hindi. Our results suggest increased visuo-spatial demands for processing Hindi as observed in other visually complex orthographies.

Keywords : Reading, fMRI, Orthography, Hindi, Devanagri, Visual complexity.

I15. Nehru, R. (2000). The cognitive linguistic basis of developmental dyslexia. Paper presented at the 1st International Conference 'Neurology, Language and Cognition-2000', Thiruvananthapuram.

Abstract : The study was conducted on Hindi/English bilingual children. 30 dyslexic children were matched with 30 reading age group, chronological age group, 34 unselected poor readers and 10 children with ADHD with developmental reading disorder the results reveal that the error rate is more in the transparent language. The nature of language itself cannot explain the reason for dyslexia. It is clear from the study that an interaction between hierarchies of phonological and orthographic complexity at the word level, syllabic level, phonemic level on the one (phonological) side and graphemic sequential complexity, graphemic spatial complexity and orthographic violation of syllabic boundary on the (orthography) other side as the principal cognitive linguistic denominator underlying developmental as well as acquired disorders of reading and writing.

Keywords : Dyslexia, Cognitive, Orthography, Reading, Writing.

I16. Padakannaya, P., & Rao, C. (2006). Dual reading strategies. Psychological Studies, 51, 280-282.

Abstract : In experiments on rapid word reading in skilled readers of Kannada, there was no frequency effect if high and low frequency words are presented randomly in a single block (Padakannaya & Rao, 2002). The results suggested that Kannada readers use predominantly a nonlexical strategy while reading. This led to the question whether biliterate Kannada-English skilled readers use a different strategy to read English. It was hypothesized that if a common strategy is used for Kannada and English, then Kannada-English biliterates should not show frequency effect for English words. 40 skilled Kannada-English biliterates were tested on rapid

reading of English words of high and low frequency presented in single block condition and separate block condition. The results showed a significant frequency effect for reading of English words irrespective of conditions.

Keywords : Reading, Word Frequency, Kannada, Bilingual.

I17. Padma, T., Das, T., and Singh, N. C. (2008) Speech rhythms in children learning two languages, Complex dynamics in Physiological Systems - from Heart to Brain, Springer.

Abstract : In an increasingly global world where large populations of children acquire two languages there is very little information on when bilingual children exhibit speech rhythms that are language-specific. We examine the rhythmic features of speech from 70 children between 5 and 8 years, learning two languages, English and Hindi and 11 adults who are fluent speakers of both languages. We relate variability in syllable duration to speech rhythm and find that adults exhibit significant differences in durational variability between the two languages. We estimate syllable durations and calculate durational variability for both languages and find that at 5 years children exhibit similar durational variability for both English and Hindi. However around 7 years of age we find that durational variability for English becomes significantly larger than that of Hindi. Our findings are in accordance with the rhythmic classification of Hindi and English as syllable- and stress-timed languages respectively wherein durational variability is greater in stress-timed languages (English) than in syllable-timed languages (Hindi). We therefore suggest that children learning two languages exhibit characteristic speech rhythms around 7 years of age.

Keywords : Bilingual, Speech Rhythm, Syllable duration, Hindi.

I18. Pai,A.R., Krishnan, G., Prashanth, S., & Rao, S., (2011). Global aphasia without hemiparesis : A case series; Annals of Indian Academy of Neurology 2011; 14:185-188.

Abstract : Background: Global aphasia without hemiparesis (GAWH) is a rare stroke syndrome characterized by the unusual dissociation of motor and language functions. Issues regarding its etio-pathogenesis, lesion sites, and recovery patterns are extensively being debated in contemporary neuroscience literature. **Materials and Methods:** Four patients admitted in our hospital between 2005 and 2009 with GAWH caused by ischemic stroke were studied retrospectively with emphasis on number and site of lesions, etiology, and recovery patterns. **Results**: The clinical findings from our subjects showed that GAWH could result from either single/multiple lesions including subcortical lesions. The recovery was rapid, although not complete. One case evolved into Wernicke's aphasia as seen in earlier studies. Two subjects revealed evolution to transcortical sensory aphasia and one to Broca's aphasia which is distinct from previous proposals. Two cases showed lack of clinico-anatomic correlation during recovery. **Conclusions:** GAWH could result from both embolic and large vessel strokes and single or multiple lesions. The recovery pattern may be variable and may show lack of clinico-anatomical correlation indicating anomalous cerebral functional reorganization, questioning the conventional teaching of language representation in the brain.

Keywords : Global Aphasia without Hemiparesis.

I19. Pauranik, A. (2005). Bilingual Alexia and agraphia : A neurolinguistic study; Brain and language 95, 241-242.

Abstract : The present Study was undertaken with the following aims : (a) Standardizing and validating a test battery for alexia and agraphia in Hindi-English bilinguals. (b) Classifying patients into various alexic syndromes, and then correlating them with aphasic syndromes and lesion morphology on CT Scan (c) comparing reading and writing performance in Hindi and English.

Keywords : Bilingualism, Alexia, Agraphia, Hindi.

I20. Prema, K.S. & Karanth, P., (2000). Metalinguistic awareness and reading acquisition a cross sectional study in a semi-syllabic script. 1st International Confernce 'Neurology, Language and Cognition-2000' Thiruvananthapuram.

Abstract : Reading is a language-based skill. The process of reading acquisition requires a child to integrate a system for processing written language with one that already exist for processing spoken language. Hence, reading involves a multiplicity of skills, one of which is metalinguistic awareness. Many studies have investigated the relationship between metalinguistic awareness and reading, specially with reference to its role in the acquisition of reading. Some studies on readers of alphabetic scripts suggests that metaphonological skill is a pre-requisite for reading acquisition. This is, however, contraindicated by a few studies conducted by employing non-alphabetic scripts. In the present study, a cross-sectional population of 150 school children from grade-III to grade IV was tested for metaphonological, metasyntactic and metasemantic skills. The results suggests that the requisite skills for acquisition of reading in a semi-syllabic script differ from those attributed in the literature for alphabetic scripts. The results are discussed in the literature for alphabetic scripts. The results are discussed in light of the orthographic features of the script. Relevance of these findings to teaching reading highlighted.

Keywords : Reading, Metalinguistic, Metaphonology, Orthography, Script.

I21. Ranjan, N.K., Nehru, R., (2000). Grapheme-Phoeme conversion and phonological output buffer in the bilingual mental lexicon. 1st International Confernce 'Neurology, Language and Cognition-2000'. Thiruvananthapuram.

Abstract : A single case analysis of the reading performance of a patient with traumatic aphasic alexia was conducted to elucidate the nature of graphemic and phonemic representation and processing in the bilingual mental lexicon. Hindi reading of the patient was restricted to two or three letter-string single syllabic words and revealed slow and laborious letter-by-letter reading aloud. In 100% of the target word list, peculiar errors were encountered where the patient pronounced one or the other Hindi letters as the phonemically equivalent English letter, and then pronounced the Hindi word correctly. These findings provide empirical evidence if favour of our previously enunciated model of the bilingual mental lexicon comprising bi-directional grapheme-phoneme and phoneme-grapheme conversion between L1 and L2. This model is sufficiently explanatory for the findings observed in this case. In addition, we propose that it is necessary to postulate a phonemic output buffer (corresponding to the graphemic output buffer on the orthographic output side)as a cognitive device to explain the

correct pronunciation of the Hindi words after committing the peculiar errors on letter by letter reading aloud.

Keywords : Bilingualism, Mental lexicon, Grapheme-phoneme conversion, Hindi.

I22. Rao, C., Padakannaya, P., & Joshi, R. M. (2006). Development of scoring system for Kannada spelling assessment. Psychological Studies, 51, 49-51.

Abstract : The Kannada spelling performance of a group of primary schoolchildren on a list of 30 words taken from Bai's (1958) Kannada word reading list was used to develop a graded spelling scoring system. Conventionally, evaluation of spelling is done by classifying spellings rendered by the child into absolute categories of 'right' and 'wrong'. Using the 8-point Spelling Scoring Key, however, enables an assessor to score each word spelt on the basis of how closely the erroneous spelling approximates the correct spelling. Thus, the orthographic and phonetic acceptability of the incorrectly spelt word is used to decide the score to be given to it. Such a graded scoring system can be used to determine the overall level of progress the child has made in Kannada literacy acquisition.

Keywords : Spelling, Assessment, Kannada, Orthography, Literacy.

I23. Rao, C., Soni, S., & Singh, N. C. (in press). The case of the neglected alphasyllabary: Orthographic processing in Devanagari. Behavioral & Brain Sciences.

Abstract: We applaud Ram Frost for highlighting in the target article the need for multicultural perspectives while developing universal models of visual word recognition. We second Frost's proposal that factors like lexical morphology should be incorporated besides purely orthographic features in modeling word recognition. In support, we provide fresh evidence from Hindi (written in Devanagari), an example of hitherto underrepresented alphasyllabic orthographies, in which flexible encoding of aksara (character) position is constrained by the morphological structure of words.

Keywords : Orthography, Visual Word Recognition, Lexical Morphology, Devanagiri, Hindi.

I24. Rao, C., Vaid, J., Srinivasan, N., & Chen, H.C. (2011). : Evidence from Hindi/Urdu biliterates. Reading & Writing, 24, 679-695.

Abstract: Two primed naming experiments tested the orthographic depth hypothesis in skilled biliterate readers of Hindi and Urdu. These languages are very similar on the spoken level but differ greatly in script; Hindi is a highly transparent script, whereas Urdu is more opaque. It was accordingly hypothesized that form-based priming would be greater for Hindi than Urdu, reflecting greater reliance on a phonological assembly route in the more transparent Hindi script. Proficient Hindi/Urdu biliterate readers were presented with primes either in Hindi or Urdu script (Exp. 1), or in Roman transcription (Exp. 2), while targets were always in blocks of Hindi or Urdu. Across both experiments, form-based priming was observed only in Hindi. Additionally, target words were named significantly faster and better in Hindi than in Urdu. The results are taken as support for the hypothesis of differential reliance on phonological

assembly as a function of script transparency. Further, the greater graphemic complexity of Urdu script relative to Hindi appears to have contributed to slower and less accurate overall single word reading for Urdu than Hindi, despite the fact that Urdu was the first learned script.

Keywords : Orthography, Hindi, Urdu, Priming, Naming, Script transparency.

I25. Rathnavalli E, Murthy GG, Nagaraja D, Veerendra Kumar M, Jayaram M, & Jayakumar PN, (2000) Alexia in Indian bilinguals; Journal of Neurolinguistics, 13 (1), 37-46

Abstract : Dissociations in the degree and type of reading impairment in bilingual alexics have been attributed to a differential language representation in the brain. Two patients, one with pure alexia and the other with alexia and agraphia following stroke were evaluated in two languages, English and Kannada (a Dravidian language of South India with a semi-syllabic script). The patient with pure alexia had a severe impairment and made perceptual errors in reading English, while the second patient had mild alexia with visual paralexias in reading English. Both patients made predominantly script related visual errors in reading Kannada. However, in both, the errors made in Kannada resulted in predominantly non-words while in English, the errors were always real words. There was parallel impairment across the two languages in both the patients. These findings support the subsystem hypothesis where each language with its script (alphabetic and semi-syllabic) is a subsystem of a larger and common language/cognitive system. Further studies are required to establish models of reading and processing of scripts in Indian languages

Keywords : Alexia, Bilingual, Kannada, agraphia, writing system, Orthography, Semi-syllabic.

I26. Sarika, C., Subhadra, T.P., Singh, L., & Singh, N.C., Developmental profiles of language skills in bilingual children - assessments from speech production tasks.

Abstract : The comparison of a child's performance across a wide range of speech production tasks is routinely used for the assessment and remediation of developmental speech and language disorders. In an increasingly global world, large populations of children are bilingual and need to develop speech production skills such that the two languages do not mix in an inappropriate manner.

In this study we assess the developmental profiles of 70 typically developing bilingual children (between 5-8 years of age) learning Hindi and English. The native language Hindi was acquired by immersion primarily at home while the second language English was acquired at school and in social surroundings. Two tasks were administered namely picture naming and phrase repetition in both languages. Detailed analysis of their task performance revealed significant age effects, with improvements in performance in both tasks as children increase in age. However, analysis suggested no significant language effects for either of the tasks. The absence of language-based differences in task performance suggest parallel and equally paced development of language skills in the two languages in these bilingual children. We suggest that comparisons of performance across such speech-production tasks could provide useful insights while diagnosing speech and language disorders in children learning multiple languages.

Keywords : Bilingual, speech production, language disorder.

I27. Chengappa, S.K., Bhat, S., & Padakannaya P. (2004). Reading and writing skills in multilingual/ multiliterate aphasics: Two case studies; Reading and writing : An interdiscipilnary journal, 17 (1-2), 121-135.

Abstract : Reading and writing deficits in two multilingual speakers of Kannada , Hindi and English are described. Disorder of the two patients (G&S) had different etiologies. G had severe alexia with agraphia in English as well as in Kannada and Hindi. S exhibited dissociation across the languages, showing symptoms of surface dyslexia in English and mild dyslexia in Kannada. Both patients were tested on the Western Aphasia Battery and on test developed by Max Coltheart. Their test performance is described and discussed in the context of orthographic differences between English and various Indian Languages.

Keywords : Agraphia, Multilingual, Surface dyslexia, Kannada.

I28. Chatterjee, N.S., (2012) The developing biliterate brain.

Abstract : In modern day knowledge societies, literacy skills are a necessity. A UNESCO report on literacy states that literacy can be pivotal for development—at personal, family and community levels, as well as at macro-levels of nations, regions and the world (EFA Global Monitoring Report, 2006). Yet the cultural environments in which literacy is acquired vary vastly around the globe. With increasing immigration, multilingualism is now a global phenomenon (Agnihotri & McCormick, 2010), resulting in an educational milieu wherein readers are required to learn to read in a non-native language. This novel cognitive challenge is no longer restricted to a non-native English speaker learning English in the United States or the United Kingdom but also the challenge of a native English speaker having to learn to read Chinese, Hindi or Japanese in China, India and Japan respectively. In countries like India, wherein the state education system has a three-language formula, children are often required to learn to read as many as three distinct languages by age 10. The situation can be daunting for the child and the parent, particularly in situations when parents themselves are unable to read the language and thereby unable to help the child at home. It is critical that school instruction be adequate and paced at the appropriate level for the child. We outline here the design and challenges of investigating the development of literacy in children simultaneously exposed to instruction in two distinct languages.

Keywords : Literacy, Biliterate, India, Education, Reading.

I29. Suja, K.K., (2000). Category specific word alexia in Aphasia. Paper presented at the 1st International Conference 'Neurology, Language and Cognition-2000' Thiruvananthapuram.

Abstract : A right handed aphasic patient with lesion in the inferior frontal and temporoparietal regions of the left hemisphere showing a Brocas type of language disturbance exhibit a severe difficulty in reading and writing. The patient was evaluated on recognition naming a reading comprehension for letter, words and sentences. Writing to dictation, copying, serial and spontaneous writing were also tested at letter, word and sentence level. The patient

showed a better reading ability in comparison to writing. A striking feature observed was a category specific word alexia on writing, orthographic errors, lack of phoneme-to-grapheme correspondence were shown by the patient. Findings implicate a super modularly model underlying reading and writing functions.3

Keywords : Category-specific, alexia, agraphia, phoneme-grapheme correspondence.

I30. Ravi, S.K., Carmel, J.R., Chengappa, S.K. (2008). Acquired Dyslexia in Kannada speaking Adults with Right Hemisphere Damaged Individuals; The Journal of the Indian speech and hearing Association, 12, 49-54

Abstract : There are recent report emerging linking the site of lesions and the different types of dyslexia. Previous studies have reported that in all types of dyslexias except deep dyslexia, the lesion site in the left hemisphere. The aim of the present study is to study the different types of acquired dyslexia and their relation to right hemisphere damage. Subjects included five patients with right hemisphere damage following ischemic strokes. All the subjects were assessed for their reading abilities in Kannada using a tool Analyzed Acquired Disorders of Reading in Kannada by Coltheart and Incorrect responses included a response, which was semantically related to the stimulus word, visual errors, derivational errors, greater difficulty while reading function words and non-words. Three subjects were diagnosed as having deep dyslexia based on a qualitative analysis of their performances on the test. All the three subjects had lesions in the right temporal and frontal lobes. The findings revealed that acquired deep dyslexia could also be caused by right hemisphere damage. More research in this area in future would help to substantiate the role of the site of lesions for different types of acquired dyslexias.

Keywords : Deep dyslexia, Right hemisphere, Kannada.

I31. Suresh PA, Deepa C., Congenital Suprabulbarpalsy - A distinctive clinical entity with heterogeneity causes. Developmental Medicine and Clinical Neurology 2004,46:617-625

Abstract : Congenital supra-bulbar palsy is clinically characterized by problems of feeding, swallowing, drooling and dysarthria. Epilepsy , delayed motor, cognitive and language development, as well as learning disabilities may co-exist. Etiology of the syndrome is diverse, yet studies often attribute it to specific entities. We report on nine patients (Seven males, two females; are range 2 to 20 years), highlighting the heterogeneous causes of suprabulbar palsy using for early detection and management. We identified patients with symmetrical infarcts involving the perisylvian region, apart from already-recognized conditions, such as congenital bilateral perisylvian syndrome (CBPS : a neuronal migration disorder) and Worster Drought syndrome. CBPS simulates Foix-Chavany-Marie syndrome in adults because of staged stroke but differs in many respects. Anoxia or ischemia to the developing brain could be a common plausible aetiology. Studies with large groups of patients are required to differentiate the various subgroups and identify essential criteria for diagnosis.

Keywords : Congenital suprabulbar palsy, learning disability, CBPS, Foix-Chavany-Marie sydrome.

I32. Tiwari,S., & Krishnan, G. (2011). Recovery of alexia and agraphia in orthographically distinct languages : A report. Procedia-Social and Behavioural Sciences, 23, 37-38.

Abstract : The authors presented the case of 22 years-old female student who was promorbidly fluent in Kannada (L1), English (L2), and Hindi (L3). Following an episode of hepatic encephalopathy , she lost her ability to speak and understand English and Hindi, though she could communicate through Kannada (L1) and functionally. A detailed assessment 5-months=-post-onset revealed anomic aphasia and severe alexia and agraphia in Kannada. She continued to show severe disturbances in all forms of language use (speaking, understanding, reading & writing) in her L2 and L3. The authors discussed this selective impairment and recovery in the light of the recent functional neuroimaging investigations.

Keywords : Agraphia, Hepatic Encephalopathy, Alexia, Anomia, selective Recovery, Orthography.

I33. Vaid, J, Gupta A. (2002) Exploring word recognition in a semi-alphabetic script : the case of Devanagari; Brain and Language 81, 679-690.

Abstract : Unlike other writing systems that are readily classifiable as alphabetic or syllabic in their structure the Indic Devanagari script (of which Hindi is an example) has properties of both syllabic and alphabetic writing systems. Whereas devanagri consonants are written in a linear left-to-right order, vowel signs are positioned nonlinearly above, below, or to either side of the consonants. This fact results in certain words in Hindi for which, in a given syllable, the vowel precedes the consonant in writing but follows it in speech. The current research exploited this property of the script to examine when the disparity between spatial and temporal sequencing would incur a processing cost and the implications of the findings from naming speed, accuracy and writing order for the level at which words in Devanagari are segmented. The results support a partly phonemic and partly syllabic level of segmentation, consistent with the structural hybridity of the script.

Keywords : Word Recognition, Semi-alphabetic, Hindi, Writing system, Devanagari

I34. Ravi SK, Chengappa SK. Reading comprehension of sentences in Kannada-English bilingual individuals with aphasia. International Journal of Medical and Health Sciences. 2014;3(1):7-13.

Abstract : The present study aimed at exploring the sentence comprehension proficiency in Kannada-English bilingual individuals with aphasia in L1 and L2 using accuracy and reaction time measures. 20 Kannada-English bilingual individuals with aphasia followed by CVA in the age range of 26 to 75 years participated in the study. Western Aphasia Battery-Kannada was used to diagnose the type of aphasia and measurement of aphasia quotient. International Second Language Proficiency Rating Scale (ISLPR) was used to assess proficiency in the two languages. A total of 50 correct sentences, 50 semantically violated and 50 syntactically violated sentences in each language were presented randomly using DMDX software. All the subjects were asked to read the sentences and judge whether the sentence was correct in meaning and form and press the appropriate response keys. Accuracy and reaction time were measured for all three types of sentences in each language and statistical analysis was done. Results of both accuracy and reaction time measurements revealed significant deficits in

sentence comprehension in Kannada as well as English. Mean accuracy scores were better and longer reaction times were seen in Kannada than in English although they were statistically not significant. The results are discussed in terms of variables affecting the sentence comprehension in individuals with aphasia such as proficiency levels, age of second language acquisition and exposure/usage levels

I35. Lahiri D, Dubey S, Ardila A, Sawale VM, Das G, Ray BK. Lesion-aphasia discordance in acute stroke among Bengali-speaking patients: frequency, pattern, and effect on aphasia recovery. Journal of Neurolinguistics. 2019 Nov 1;52:100859.

Abstract : Introduction : Contemporary research papers have highlighted the issue of lesion-aphasia discordance in reference to the classic 'associationist' model provided by Wernicke-Lichtheim. The objective of the present study is to explore frequency, pattern and evolution of lesion-discordant aphasia following first ever acute stroke in Bengali-speaking subjects. **Methods :** Bengali version of Western Aphasia Battery, a validated scale, was used for language assessment in our study subjects. Lesion localization was done by using Magnetic resonance imaging (MRI) (3T) for ischemic stroke (if not contraindicated) and computed tomography (CT) for hemorrhagic stroke. Among 515 screened cases of first-ever acute stroke, 208 presented aphasia. Language assessment was done between 7 and 14 days in all study subjects and was repeated between 90 and 100 days in patients available for follow-up. Ischemic stroke cases with contraindication for MRI underwent CT imaging. Discordance between lesion and aphasic phenotype was determined only for right-handed subjects with cortical involvement (isolated or in combination with sub-cortical white matter) in the left hemisphere. Appropriate statistical tests were used to analyze the collected data. **Results :** Lesion-aphasia discordance was found in 20 out of 134 patients with aphasia who were dextral and had cortical involvement in the left hemisphere (14.92%). The pattern of discordance observed were-posterior lesion with Broca's aphasia (4; 20%); posterior lesion with global aphasia (8; 40%); anterior lesion with global aphasia (4; 20%), and posterior lesion with mixed transcortical aphasia (4; 20%). On univariate analysis, the factors significantly associated with lesion-aphasia discordance were hemorrhagic stroke ($p = 0.000$); posterior perisylvian location ($p = 0.002$), and higher education ($p = 0.048$). After adjusting for all other variables, hemorrhagic stroke was found to have strong association with lesion-aphasia discordance ($p = 0.001$, OR = 11.764, 95% CI, 2.83–50.0). Discordant cases were more likely to recover or change to a milder type compared to concordant cases ($p = 0.007$, OR = 11.393, 95% CI, 1.960–66.231), after adjusting for all other variables including initial severity of aphasia ($p = 0.006$, OR = 8.388, 95% CI, 1.816–38.749). **Conclusion :** Lesion-aphasia discordance following acute stroke is not uncommon among Bengali-speaking subjects. In the discordant group, preponderance towards non-fluent aphasia was observed. Discordance occurred more frequently after hemorrhagic stroke. Subjects with lesion-discordant aphasia presented better recovery during early post-stroke phase.

Keywords : frequency, Lesion-aphasia discordance, Pattern, Recovery, Stroke

Annotation : *Studies about lesion-aphasia discordance are as old as the availability of CT Scan since late 1970s. Yet new research questions and methods can be informative.*

I36. Sawhney IM, Suresh N, Dhand UK, Chopra JS. Acquired aphasia with epilepsy–Landau-Kleffner syndrome. Epilepsia. 1988 Jun;29(3):283-7.

Abstract : Landau-Kleffner syndrome is characterized by long-lasting acquired aphasia associated with seizures and EEG abnormalities. Three new cases of this rare syndrome are reported from India.

I37. Vaid J. Padakannaya P (2004). Reading and writing in semi-syllabic scripts : An introduction, Reading and Writing: An Interdisciplinary Journal, 17, 1-6.

I38. Garg A, Nehru R. A cross-linguistic study of biliterate - Part VI. Visual implicational scale for so called phonological vowel errors in written spelling. Annals of Indian Academy of Neurology 1998;1(1):44

I39. Garg A, Nehru R. A cross-linguistic study of biliterate - Part VII. Visual implicational scale for so called phonological vowel errors in reading aloud. Annals of Indian Academy of Neurology 1998;1(1):44

I40. Nehru R, Garg A. A cross-linguistic study of biliterate - Part VIII. Visual errors and unclassifiable consonant errors on reading in context. Annals of Indian Academy of Neurology 1998;1(1):44-45

I41. Nehru R, Garg A. A cross-linguistic study of biliterate - Part IX. Non-initial position vowel graphemic representation and metalinguistic monitoring impairment : language specific and language universal factors. Annals of Indian Academy of Neurology 1998;1(1):45

I42. Gupta A., Developmental dyslexia in a bilingual child; Journal of personality and clinical studies (2002) 18, 19-26

I43. Karanth, P., Developmental dyslexia in a bilingual biliterates; Reading and writing, 4:3, Kluwer Academic, Netherlands (1992)

I44. Padakannaya P, Rao C, Effect of word frequency and lexicality on reading speed.; Second international conference on Neurology, Language and Cognition, Institute for communicative and cognitive neurosciences, Cochin India (2002)

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This book is an interpretation of Dyslexia and Reading difficulties; it is a 'ready reckoner' that gives to the teacher a condensed source of current knowledge, but is obviously selective. So far as theory is concerned, the book interprets the topic in view of PASS (Planning Attention Simultaneous Successive) processes, that is the four major processes of knowing and thinking that replace IQ and redefine intelligence. For the School Psychologists, this book is an interpretation that gives preeminence to PASS theory of cognitive processes to explain 'unexplained reading disability,' unexplained by IQ assessment. Neuropsychology's contribution is discussed right from the beginning chapters of this book. So the book will be perceived by school psychologists as having a theoretical bias that however does not interfere with extant knowledge in the field. Rather, it ventures into the frontier regions of the field searching for explanations and solutions with a broad beam of a theory's flash light.

[J]

Bi/Multilingualism

J1. Bhan, S., & Chitnis, S. (2010). Lexical errors in Narrative discourse of a bilingual subcortical aphasic. Paper presented at the International Symposium on Bilingual Aphasia. (ISBA) AIISH, Mysore.

Abstract : Semantic and phonemic paraphasias were frequently observed in present study. The patient is a typical subcortical aphasic, reflecting features of both non-fluent and fluent aphasias. While misnaming. The speech was characterized by emptiness, circumlocutions, and semantic confusion. These are reflective of word finding difficulty in her speech. The patient deleted initial subject of the sentence, while repeating longer sentences.

Keywords ; Paraphasia, Bilingual, Subcortical aphasia, circumlocution, empty speech, fluent aphasia, non-fluent aphasia.

J2. Bhat. S. (2010), Effects of conversational contexts on Language mixing in Kannada-English Bilingual Aphasics, Paper presented at the International symposium on bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : Six aphasic and six normal Kannada-English bilinguals were the subjects. Western aphasia Battery and short version of Kannada-English bilingual aphasia test were administered to assess the effect of aphasia on their two languages. Conversational samples were elicited from the subjects in three different contexts (monolingual Kannada, monolingual English and bilingual) on three different topics and three different days. Present study revealed that assessment in bilingual context should be an important part of routine assessment of bilingual aphasic. A bilingual rehabilitative option should be considered in therapy programs for bilingual aphasics as the communicative efficiency is seen to improve in bilingual conditions. Appropriate code mixing and code switching can be taught and enhanced in such population .3

Keywords ; Bilingual, Aphasia, Kannada, Conversational Analysis, Rehabilitation.

J3. Durjoy Lahiri , Alfredo Ardila , Souvik Dubey , Alok Mukherjee , Kingshuk Chatterjee & Biman Kanti Ray (2020): Effect of bilingualism on aphasia recovery, Aphasiology, DOI: 10.1080/02687038.2020.1812032

Abstract : **Background:** The severity of post-stroke aphasia has also beenreported to be less in bilingual patients compared to their mono-lingual counterparts **Aim:** To analyze the effect of bilingualism on aphasia recovery during the early post-stroke phase. **Methods:** Bengali version of Western Aphasia Battery (WAB) was used for language assessment. It was administered during the first week and 90–100 days post-stroke. Severity assessment was done by calculating aphasia quotient (AQ). We enrolled 155 monolingual and 53 bilingual patients with aphasia, of whom 120 monolingual and 43 bilingual participants were followed up. **Results:**

The probability of recovering was higher for bilinguals than in monolingual patients. When the location of stroke was analyzed, the percentage of patients recovering in the "medium" class was higher for bilingual than monolinguals by fair margins for sub-cortical and mixed cortico-subcortical strokes With respect to gender, bilingual patients present better recovery than monolinguals in both genders, but especially in males. The mean improvement of AQ in low age ($p = 0.22$), high volume ($p = 0.05$), and low AQ ($p = 0.17$) groups were found to be fairly higher for bilinguals in contrast to monolinguals. **Conclusions:** This is, to our knowledge, the first study reporting differences in aphasia recovery between bilingual and monolingual subjects. Bilingual participants experienced better aphasia recovery following a stroke when viewed through the lens of different variables.

Keywords : Aphasia recovery; bilingualism; stroke

J4. Bijoyaa M., Liveem, M. T., Shyamala, K.C., (2010). Conversational and graphemic output analysis in subcortical bilingual aphasia - a case study; Proceeding of International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : This research is part of an emerging focus in which conversational interaction and written expression is considered a window into human brain contingencies. Conversational and graphemic output analysis revealed a different and distinctive pattern in our participation, there by prompting us to look into several factors in terms of familiarity, nature of acquisition, orthography and usage of the two languages there by involving an enquiry into the social structure and organization of everyday talk in interaction, besides the bilingual delineation.

Keywords : Bilingualism, Conversational Analysis, Graphemic Analysis, Orthogrpahy.

J5. Chandy, S.M., Bhat, S., (2010). Naming performance of normal Malayalam - English adults on Boston Naming Test. Paper presented at the International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : We attempt to find the naming performances in bilinguals with differed proficiency in Indian context. The present results show the effect of linguistic proficiency on naming abilities across languages and have been discussed in the same light. Significant differences were found through statistical analysis in the reaction time between LP and HP subjects performances. Significant differences were not present for all error categories. The possible reason for the better performances of HP bilinguals on naming test could be due to their increased vocabulary and increased use of the language.

J6. Dutta, H. (2010). Neurolinguistic issues/ correlates of bilingual aphasia. Paper presented at the international symposium on Bilingual Aphasia (ISBA), AIISH Mysore

Abstract : The focus of this study was to investigate how L1 lexicon is affected in individuals who have been predominantly using L2 as their primary language. Specifically, we asked whether L1 lexicon access performances changes due to 1) a reduction of L1 strength from decreased L1 use interference from. Using a lexical cross-modal and cross linguistic picture-word priming paradigm we investigated lexical access in two groups of Bengali-English

speaking individuals who are dominant in their L1 and L2 respectively. Words were presented in 1) two conditions a) matched : where the pictures and the auditory words matched and b) mismatched : where the picture did not match the auditory words and in 2) two languages a) English b) Bengali. Participants were asked to covertly name the picture that appeared on the screen and then decide the number of syllables in the auditory word that appeared on the screen and then decide the number of syllables in the auditory word that followed the picture. They pressed '1' for words with one syllable and '5' for words with more than one syllable. Both reaction time (RT) and electrophysiological (ERP) measures were examined.

Keywords : Bilingual Aphasia, Lexicon, Cross-modal, Picture word priming, ERP.

J7. Ganesh, A.C., Jaivikas, H.H., Subba Rao, T.A. (2010). Bilingualism & inhibitory mechanisms : Evidence from a bilingual Negative priming task; Proceedings of International symposium on bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : Objective of the study was to examine cross-language Kannada-English (K-E) and English Kannada (E-K) cross language NP priming from ignored stimuli in bilinguals. The present findings provide evidence for the role of inhibitory processing resources in selective attention and for their applicability to bilingual language processing.

Keywords : Bilingualism, priming.

J8. George, R., Singh, M.A.A., Maria, I.M., Bhat,S. (2010). Cross linguistic naming performance in Kannada-Tulu bilingual aphasics; Proceeding of International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : This study aimed to investigate the effect of cueing hierarchies (i.e. phonemic, semantic and grapheme) at two levels : a) Language (within language and cross-linguistic) and b) response language (i.e., with and without constraints on response language). Two groups of subjects were selected from the study. The control group consisted of thirty normal participants in the age group of 20-50 years with a mean age of 40 years. The clinical group comprised of three persons with Broca's aphasia. (A1 52 year/F, A2 41 year/F & A3 38 year/M). The subjects could comprehend and express Kannada and Tulu languages (South-Indian language of Dravidian origin) prior to brain insult. 35 scanned line drawings of different lexical categories were selected based on familiarity rating by 30 normal fluent in Kannada and Tulu speakers. The basic format of this study was based on Boston naming test (BNT). The result revealed that there are no universally accepted rules for the response patterns with the provision of cues. Overall, results of our study shows that Broca's aphasics, showed better responses for phonemic cues followed by grapheme cues and then semantic cues.

Keywords ; Bilingual, Aphasia, Naming, Cross-Linguistic, Cueing.

J9. George, S., Padmatharani, K.S., Thomas , P.T., Shanbal, J.C. (2010). Linguistic profiling in Bilingual aphasia; Proceeding of International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore

Abstract : The results of profiling directly have their applications in treatment planning for patients with language deficits. As observed in MsG patterns of a deficit can be identified and treatment goals can be framed. It is clear for example, that important goals for Ms. G to work on perseverations, verbs forms, to improve clause verb phrases and increase the mean length of utterance. Tools like LARSP may provide to be a very important diagnostic tool for Speech Language Pathologists (SLPs) as part of their assessment battery for aphasics.

Keywords ; Bilingualism, Aphasia, Assessment, LARSP.

J10. Grover, V., Obler, L.K., (2010). Manifestation of Agrammatism in Hindi : Possibilities for Agrammatism in Hindi-English Bilinguals; Paper presented at International symposium on bilingual Aphasia (ISBA), AIISH, Mysore

Abstract : Based on this review and differences in the manifestation fo agrammatism in Hindi and English, interestingly there are broader questions that can be asked as well cu as, within Hindi inflections, are there categories that are less impaired or relatively spared ? Does the word – order remain intact for both languages in Hindi- English bilinguals ? What happens to code switching ? These are some questions that can be answered by studying Hindi – English bilinguals with agrammatism in depth.

Keywords : Agrammatism, Cross-linguistic, Code switching, Word-order, Hindi.

J11. Hegde, M., Subbarao, T.A., Bhat, S. (2010) Agrammatism in Kannada-English Bilingual Aphasic-A single case study; Proceedings of International symposium on bilingual Aphasia (ISBA), AIISH, Mysore

Abstract : The present study focuses on one Kannada-English speaking bilingual agrammatic aphasic subject. Specifically, narrative samples in two languages of the subject are analyzed and compared for characteristics of agrammatism. The 60 year old Broca's aphasic subject showed varied performance across L1, Kannada and L2, English on narrative performances task. It was also noted that NNSLA provides an analysis tool necessary for the assessment of language deficits in aphasics. Such analysis is expected to provide information for rehabilitation of aphasics using linguistic approaches.

Keywords : Agrammatism, Kannada, Bilingual, Rehabilitation.

J12. Hegde,M., Subbarao, T.A., Bhat., S. (2010) Descriptive analysis of linguistic impairment in Kannada-English bilingual Aphasic : A single case study; Proceeding of International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore

Abstract : This study emphasizes on the merits of descriptive analysis in bilingual persons with aphasia especially in those languages, where standardized test are unavailable. Further, such analysis, according to the authors, helps the clinicians to measure the recovery from language impairment and judge the improvement (prognosis).

Keywords : Descriptive analysis, Bilingual Aphasia, Informal Assessment.

J13. Karanth, P., (2010) Recent advances in the management of Bilingual Aphasia; Paper presented at International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : Much of what has been done in this area so far suffers from serious methodological issues. What is required is a greater degree of methodological rigor in assessment relating assessment results to premorbid proficiencies, a closer look at the assessment outcome in terms of structure of the language and writing systems and therapeutic intervention that takes all of these as well as the environmental factors into consideration. Monitoring of changes needs to be carried out periodically over an extended period of time, both behaviorally and through neuroimaging. The status of provision of intervention for our many aphasic both mono and bi/multilingual also leaves much to be desired .

Keywords : Bilingual, Aphasia, Assessment, Recent Advances.

J14. Krupa, E.D., (2002) Language mixing in Malayalam-English bilingual aphasics ; Unpublished Dissertation, (Guide : Shyamala, K.C.) AIISH, Mysore.

Abstract : The present study compared the code-switching in a group of bilingual (Malayalam-English) people with aphasia with that of a group of neurologically normal bilingual participants. This study included six persons with Broca's aphasia in both languages. The control group was matched to the clinical group on age, gender, social, and literacy levels. Bilingual Aphasia Test was used for this study. The data obtained were analyzed in terms of the Matrix, Language Frame mode. The results of this study showed that all normal participants and three from the clinical group used the language of the interiocutor. For those participants who were Malayalam-dominant bilinguals, informal observation revealed increased reaction/ response time in English (i.e., weaker language). All the normal participants and one clinical participants did not show embedded language insertions. ML + EL constituents were produced by four control and five clinical participants. Further, two control and four clinical participants used syntactic structure of Malayalam while translating from Malayalam to English. Finally, the extent of code switching was observed to be influence by the permorbid language fluency..

Keywords : Bilingual Aphasia, code switching, Malayalam, Matrix language frame, proficiency.

J15. Kumar, S., Code Mixing and Code Switching in Hindi-English Bilingual Aphasics. Unpublished Dissertation (Guide : Shyamala, K.C.). AIISH, Mysore

Abstract : This study compared the code mixing and code switching across bilingual persons with aphasia and normal participants. Five aphasics and five normal participants were taken for the study. All participants were Hindi-English bilinguals. Western Aphasia Battery and short version of BAT were administered on bilingual aphasics in Hindi and English. The result revealed the similarities and differences in code switching and mixing during verbal interactions of both groups. Embedded Language (EL) insertion and Matrix Language (ML) + Embedded language (EL) constituents were observed more frequently among aphasics. Individual differences in the frequency and type of constituents produced and the context in

which they were produced were significantly evident in the code switching patterns of bilingual aphasics.

Keywords : Code switching, code mixing, Hindi, Matrix Language, Embedded Language.

J16. Manju, M.P., Swapna, N., (2010). Verbal perseveration in a Bilingual Aphasic : A case study; paper presented at International symposium on bilingual Aphasia (ISBA), AIISH, Mysore.

J17. Nilipour, R. (2010). Language specificity and bilingual aphasia. Paper presented at International symposium on bilingual Aphasia (ISBA), AIISH, Mysore.

J18. Obler, L.K., (2010). Bilingualism and Aphasia - An overview. Paper presented at International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : Clearly cross-language studies of bilinguals with aphasia can provide interesting approaches to study of language after aphasia and more broadly, of language organization in the brain. Case studies will, logically, never suffice to resolve the questions of interest concerning the two or more languages of the individual with aphasia; however rather, what are needed are group studies. The difficulty with those, of course, is that there is already substantial heterogeneity among even monolinguals with aphasia; among bilinguals or multilinguals, with their varying language histories, of course, the heterogeneity is even more pronounced.

Keywords : Bilingual, Aphasia, Group Studies, Assessment.

J19. Rajani S. & Prema K.S. (2008). Cross language priming in bilingual aphasics. Student Research at AIISH, Mysore, Vol 1II: 2004-2005, Part-B: Speech Language Pathology, AIISH, Mysore, pp. 112-126.

Abstract : The aim of this study was to grain insight into lexical processing in blingual people with aphasia and normal participants using semantic and translation priming paradigm. The experiment was designed to induce automatic processing by using a stimulus set with a stimulus onset asynchrony of 250 ms, relatedness proportion of 0.3 and a nonword ratio of 0.5. Five bilingual (Kannada & English) persons with aphasia and five normal bilingual participants were taken for the study. Results revealed that significant semantic and translation priming was present in Kannada-English condition in both groups, where as semantic and translation priming was present only in normal participants in English-Kannada condition, and not in aphasic group. Translation priming was larger than semantic priming in both the groups. Translation and semantic priming was larger in Kannada English condition in both groups. This study concluded that words in a bilingual's two languages share a common conceptual representation.

Keywords : Semantic, Priming, Bilingual, Aphasia, Translation, Kannada.

J20. Raksha, R.M., Avinash, M.C., Shruthi, T.S., Subbarao, T.A., (2010). Grammaticality judgment under non-optimal processing Conditions : Deficits induced in normal bilingual participants to resemble those observed in aphasic patients; Paper presented at the International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : In this paper, we have shown that highly selective deficits in grammar can be reproduced by altering the processing climate, changing the sensorimotor conditions under which grammatical processing must be achieved. These results are precisely what we would expect under a distributive scenario for language and other complex cognitive skills.

Keywords : Grammar, Bilingualism, Aphasia.

J21. Rangamani, G.N., (1991). Aphasia and Multilingualism: Clinical evidences towards the cerebral organization of Languages. Unpublished Thesis (Guide : Karanth, P.). AIISH, Mysore

J22. Rao, E.M., Mukundan, G. (1996-1997). Speech language disorders and multilingualism : The Mumbai experience; Osmania papers in linguistics; volume22-23.

Abstract : It is increasingly becoming clear that the speech language assessment protocols based on norms collected from monolingual population are inappropriate for assessing communication problems in multilingual client. An empirical study was conducted in the city of Mumbai to study that nature of multilingualism, especially the language use patterns in families having children with communication disorders. The results of this study not only indicated that the observed patterns of language use among these communities differ from those proposed in the west, but raised some important issues pertaining to assessment professional training and recruitment of clinical staff. The implications of the results of this study are discussed and a few problem areas awaiting further research are identified.

Annotation : Drawing on their own clinical experience, Mani Rao and Geetha Mukundan argued that the speech-language assessment procedures based on norms collected from monolingual populations are grossly inadequate for assessing children with communication disorders, especially those coming from multilingual backgrounds in cities like Mumbai. Some of the questions they raised echo the concerns expressed by Geetha Durairajan about the objectives of language assessment in multilingual set-ups. In the next paper.

Keywords : Multilingualism, Communication Disorders, Assessment, Professional Training.

J23. Shwetha, C., Mohan, P. & Shyamala K.C., (2010). Motivational Factors in individuals with bilingual aphasia; Proceeding of International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore

Abstract : The purpose of this study is to evaluate motivational factors in Kananda-English bilinguals with aphasia with respect to rehabilitation. A total of 10 (7 males and 3 females) Kannada-English bilingual aphasics, diagnosed at AIISH were included in the study, who was native Kannada speakers. The Intrinsic Motivation Inventory (IMI) (Ryan, 1982) was modified and administered to assess the participant's subjective experience related to motivation

towards the communication. Descriptive statistical analysis were carried out to find out the motivation of the individuals with aphasia towards the communication. The scatter plot supports the view that people with aphasia not only want to 'perform', they also want to find their performances meaningful (i.e. interactions to be more satisfying.)

Keywords : Bilingual Aphasia, Motivation, Rehabilitation..

J24. Shyamala, K.C., Bhat, S. & Prakash, P., (2004). Reading and writing skills in multilingual/ multiliterate aphasics: Two case studies. Reading and writing : An Interdisciplinary Journal 17(1-2), 121-135.

Abstract : Reading and writing deficits in two multilingual speakers of Kannada, Hindi and English are described. Disorders of the two patients (Mr G and Ms S) had different etiologies. Mr G had severe alexia with agraphia in English as well as in Kannada and Hindi. Ms S exhibited dissociation across the languages, showing symptoms of surface dyslexia in English and mild dyslexia in Kannada. Both patients were tested on the Western Aphasia Battery and on tests developed by Coltheart. Their test performance is described and discussed in the context of orthographic differences between English and various Indian languages.

Keywords : Alexia, Agraphia, Indian orthography, semi-syllabic, Alpha syllabic.

J25. Shyamala, K.C., Krupa, E.D., & Bhat, S. (2004). Language switching and mixing in Malayalam-English bilingual aphasics. Asia Pacific Disability Rehabilitation Journal, 15(2), 68-76.

Abstract : Language mixing defined as inappropriate switching from one language to another, is a frequently observed recovery pattern among bilingual aphasics. In spite of the fact that a significant among of population in India is bilingual, language mixing is one of the least research areas. Also, the distinction between language mixing exhibited by bilingual aphasics and the normal process of code switching employed by neurologically normal bilingual speakers is not very marked. Hence, the present study was taken up with the purpose of investigating the similarities and difference in the code switching behaviors of aphasics and neurologically normal Malayalam-English bilingual speakers. There was an increased in code switching behavior but the quality of switches did not differ when compared with those in normal subjects. These results could be a reflection of increased reliance on two languages as compensatory strategy in this set of subjects.

Keywords : Code switching, code Mixing, Bilingual Aphasia, Malayalam.

J26. Dash T, Kar BR. Bilingual language control and general purpose cognitive control among individuals with bilingual aphasia: evidence based on negative priming and flanker tasks. Behavioural neurology. 2014 Oct;2014.

Abstract : Background. Bilingualism results in an added advantage with respect to cognitive control. The interaction between bilingual language control and general purpose cognitive control systems can also be understood by studying executive control among individuals with bilingual aphasia. Objectives. The current study examined the subcomponents of cognitive control in bilingual

aphasia. A case study approach was used to investigate whether cognitive control and language control are two separate systems and how factors related to bilingualism interact with control processes. Methods. Four individuals with bilingual aphasia performed a language background questionnaire, picture description task, and two experimental tasks (nonlinguistic negative priming task and linguistic and nonlinguistic versions of flanker task). Results. A descriptive approach was used to analyse the data using reaction time and accuracy measures. The cumulative distribution function plots were used to visualize the variations in performance across conditions. The results highlight the distinction between general purpose cognitive control and bilingual language control mechanisms. Conclusion. All participants showed predominant use of the reactive control mechanism to compensate for the limited resources system. Independent yet interactive systems for bilingual language control and general purpose cognitive control were postulated based on the experimental data derived from individuals with bilingual aphasia

J27. Padakannaya P, Mohanty AK. Indian orthography and teaching how to read: A psycholinguistic framework. Psychological Studies. 2004;49(4):262-71.

ABSTRACT : This paper presents a view point that existing western theories and models of reading may not be applicable for understanding how we read Indian languages written in Indic scripts. There is a need to understand the whole process of reading from Indian orthographic point of view. Indian languages are not written using alphabets or logographs but aksaras. Aksara, the graphemic unit in Brahmi derived Indian Scripts, is unique in its characteristic features. The concept of aksara and its linguistic design are not given due weightage in teaching reading and writing in India where the general practice has been to follow the western models ignoring their suitability and relevance to Indic writing system. In this paper, we present a brief discussion on aksara followed by psycho-educational implications and a tentative psycholinguistic framework on how to teach reading Indic scripts.
Key words: aksara, orthography, brahmi, alphasyllabary

J28. Avanthi Paplikar, Shailaja Mekala, Thomas H. Bak, Santosh Dharamkar, Suvarna Alladi & Subhash Kaul (2019) Bilingualism and the severity of poststroke aphasia, Aphasiology, 33:1, 58-72, DOI: 10.1080/02687038.2017.1423272

Abstract ; Background: Bilingualism has been associated with cognitive benefits in healthy people as well as in patients with cognitive impairment due to stroke and dementia. However, the relationship between bilingualism and aphasia is more complex. While bilinguals are as likely as monolinguals to develop aphasia after stroke, studies of relationship between bilingualism and severity of poststroke language recovery are few and have produced conflicting results, with much evidence derived from immigrant populations or small case series. Aims: Against this background of limited number of studies, we set out to explore the relationship between bilingualism and severity of language impairment in stroke aphasia. We explored the hypothesis that enhanced cognitive abilities related to bilingualism may have a positive impact on recovery from aphasia. Methods & Procedures: We investigated 38 bilingual and 27 monolingual patients who participated in a longitudinal hospital-based stroke registry and were evaluated at least 3 months after stroke (mean 11.5 months). Patient performance on language and other cognitive functions was evaluated with Addenbrooke's Cognitive Examination – Revised (ACE-R) validated for use in aphasia in local languages and for varying educational levels. The results of monolinguals and bilinguals were compared after accounting for confounding variables, including age, gender, education, occupation, medical, and stroke

characteristics. Outcomes & Results: Aphasia severity as measured by the language domain sub-scores (total of language and fluency scores) of ACE-R was significantly higher in monolinguals compared with bilinguals (7.0 vs. 14.4, maximum score 40; p = 0.008, effect size = −0.691). Bilinguals performed significantly better than their monolingual counterparts in attention, memory, and visuospatial domains of ACE-R. A univariate general linear model analysis showed that bilingualism was significantly associated with higher language domain scores of ACE-R after adjusting for other confounding variables. Conclusions: The results suggest that although bilingual speakers are at equal risk of developing aphasia after stroke as monolingual ones, their aphasia is likely to be less severe.

Annotation : *Bilingualism in India offers a more fertile ground not only interns of sheer numbers but in a qualitative sense too, because it is more organic and ingrained in the society as compared to other communities where in the multilingualism may be more often because of immigration. The number of subject in this study is small, yet the results point in the same direction as those for dementia. Bilingualism is associated with a less severe aphasia.*

J29. Verma A, Singh NN, Misra S. Transitory alexia without agraphia: A disconnection syndrome due to neurocysticercosis. Neurology India. 2004 Jul 1;52(3):378.

Abstract :We describe a 65-year-old male who presented with acute onset inability to read, without any difficulty in writing. A clinical diagnosis of alexia without agraphia was made and the patient was subjected to routine investigations including contrast MRI. MRI showed a ring-enhancing lesion in left occipital area, suggestive of neurocysticercosis supported by quantitative enzyme-linked immunosorbant assay from purified cell fraction of taenia soliumcysticerci (PCF-ELISA). Patient was treated with albendazole and prednisolone for one week. The clinical manifestation as well as the radiological finding resolved after treatment

J30. Sharma B, Handa R, Prakash S, Nagpal K, Bhana I, Gupta PK, Kumar S, Sisodiya MS. Posterior cerebral artery stroke presenting as alexia without agraphia. The American journal of emergency medicine. 2014 Dec 1;32(12):1553-e3.

Abstract :Alexia without agraphia (pure alexia) was the first of the disconnection syndromes to be described by Dejerine who reported a patient of alexia without agraphia secondary to an embolic occipital lobe infarct. We herein report a 55-year-old man who presented with alexia without agraphia with magnetic resonance imaging suggestive of left posterior cerebral artery infarct involving left occipital lobe and splenium of corpus callosum. Alexia without agraphia is a relatively uncommon clinical condition, which should always be thought in a patient presenting with difficulty in reading with normal visual acuity. Ophthalmologists should also be aware of this disconnection syndrome as many patients initially take their advice due to predominant visual complaints. Early diagnosis and treatment of this condition help in ensuring the patient and attendants about nonprogressive nature of the disease and may prevent further episodes of stroke

J31. Sheetal S, Mathew R, Byju P. Alexia Without Agraphia-report of Five Cases and Review of Literature. The Journal of the Association of Physicians of India. 2019 Jul;67(7):78-80.

Abstract : Alexia without agraphia (also called pure alexia or word blindness) was the first of the disconnection syndromes to be described. It results from the loss of visual input to the language area without involvement of the language area. The most common cause is occlusion of the left posterior cerebral artery with involvement of left occipital cortex and the splenium of corpus callosum. However, it can also be caused by any lesion affecting the splenium of corpus callosum disrupting the white matter tracts from the left visual cortex to the angular gyrus. We hereby describe five cases of alexia without agraphia, of which three are due to involvement of the left occipital cortex and splenium, and two are due to involvement of the splenium of corpus callosum alone.

J32. Karanth P. Pure alexia in a Kannada-English bilingual. Cortex. 1981 Jul 1;17(2):187-97.

Abstract : The case history of a fifty seven year old Kannada-English bilingual who suddenly lost his ability to read is presented. The relative severity of the reading disorder at various levels, in Kannada and English, as well as its recovery is described. The possible reasons for the findings as well as their implications for the interpretation of alexia as a total inability to read, are discussed.

J33. Ratnavalli E, Murthy GG, Nagaraja D, Veerendrakumar M, Jayaram M, Jayakumar PN. Alexia in Indian bilinguals. Journal of Neurolinguistics. 2000 Jan 1;13(1):37-46.

Abstract : Dissociations in the degree and type of reading impairment in bilingual alexics have been attributed to a differential language representation in the brain. Two patients, one with pure alexia and the other with alexia and agraphia following stroke were evaluated in two languages, English and Kannada (a Dravidian language of South India with a semi-syllabic script). The patient with pure alexia had a severe impairment and made perceptual errors in reading English, while the second patient had mild alexia with visual paralexias in reading English. Both patients made predominantly script related visual errors in reading Kannada. However, in both, the errors made in Kannada resulted in predominantly non-words while in English, the errors were always real words. There was parallel impairment across the two languages in both the patients. These findings support the subsystem hypothesis where each language with its script (alphabetic and semi-syllabic) is a subsystem of a larger and common language/cognitive system. Further studies are required to establish models of reading and processing of scripts in Indian languages.

Keywords :Bilingualism, Agraphia

J34. Bhatoe HS, Rohatgi S. Transitory alexia without agraphia following head injury: letter to editor.

Abstract : Alexia without agraphia (also called posterior alexia or associative alexia) is a rare disturbance usually due to vascular etiology, but the syndrome may also be seen in CNS infections and tumors. Head injury has not been mentioned as one of the etiological factors. A 35 year old right handed female sustained head injury in a road traffic accident. She had transient loss of consciousness followed by gradual recovery. Glasgow coma score on admission was 12/15, and there was no other neurological deficit. Non -contrast CT brain showed a small extradural hematoma over the right temporoparietal region and a small area of hemorrhagic contusion over the left frontal convexity. Her hematological, biochemical and

coagulation parameters were within normal limits. Twenty-four hours later, although her GCS was 15/15, she was detected to have profound inability to read. She could not identify individual letters or words, but writing, both spontaneous and to dictation was normal, as was spelling and copying. She could not read her own writing. However, her spontaneous speech, fluency, naming (except colour naming) and auditory comprehension were normal. There was no associated visual field defect, agnosia, acalculia or right left dissociation. Mini-mental examination score was within normal limits. Repeat CT brain did not reveal any change in the appearances of the previously observed lesions, or in the brain. Conservative management was continued and she showed gradual and complete recovery from alexia over the next three days.

J35. Sebastian S, Benedict AS. Crossed Lexical Type of Alexia with Agraphia. Language in India. 2013 May 1;13(5).

Abstract :We report a right handed patient with right middle cerebral artery infarct who recovered from aphasia and has persisting agraphia and alexia. The types of errors that he showed were similar in writing as well as reading, characterized by spelling errors that would preserve the phonological form of the target word. The sparing of language functions other than reading and writing suggests the possibility of different language functions being represented in different lobes or the possibility of differential cerebral reorganization for different functions. The co- occurrence of same type of agraphia and alexia, i.e., lexical type raises the question whether reading and writing share a common neural circuit.

Keywords: crossed aphasia, lexical alexia , lexical agraphia

J36. Krishnan G, Rao SN, Rajashekar B. Apraxic agraphia: An insight into the writing disturbances of posterior aphasias. Annals of Indian Academy of Neurology. 2009 Apr;12(2):120.

Abstract :Background: Reading and writing disturbances are common accompaniments of aphasia following brain damage. However, impaired writing in the absence of apparent primary linguistic disturbances is infrequently reported in the literature. Materials and Methods: A 67-year-old right-handed subject underwent neurological, neuroradiological, and linguistic investigations following development of a minimal right upper limb weakness. Result: The patient had polycythemia and the neurological investigation revealed right upper limb paresis. The neuroradiological investigation revealed hypodense areas involving the gray-white matter of the left postero-parietal and frontal lobe, left caudate and lentiform nuclei, and the anterior limb of the internal capsule, suggesting an infarct. The linguistic investigation revealed a mild anomic aphasia with apraxic agraphia. This mild anomic aphasia resulted primarily from the relatively poor scores on the verbal fluency tests. Discussion: The marked writing impairment, even with the left hand, points to disturbances in written output – apraxic agraphia – in the presence of near-normal spoken output. This finding should raise suspicion about hidden apraxic agraphia in subjects with posterior aphasias.

Keywords: Apraxic agraphia, aphasia, pure motor agraphia

J37. Kumar KA, Murthy J, Ashok KK. Alexia without agraphia: a case report with CT demonstration of the lesion and review of literature. Neurology India. 1993;41(2):109-11.

Abstract :A case of alexia without agraphia with CT demonstration of the lesion is reported. The various types of occipital alexia and their anatomic bases have been reviewed.

J38. Karanth P. Reading into reading research through nonalphabetic lenses: Evidence from the Indian languages. Topics in Language Disorders. 2002 Nov 1;22(5):20-31.

Abstract : Reading—its teaching, acquisition, process, models, and disorders—continues to be investigated given the increasing importance of literacy and the consequences of the lack of literacy. Despite the voluminous research on reading, several key issues pertaining to reading remain unresolved. This article makes an argument for widening the research base on reading from the specific constraints of reading in alphabetic scripts to a larger database covering a variety of scripts to find solutions to some persistent questions. The justification for such an argument is provided here on the basis of research on several aspects of reading conducted in a series of studies on reading the alphasyllabaries of India.

J39. Vaid, J., (1997). Brain bases of Bilingual language functioning: What's right ? What's left ? Paper presented at the South Asian Langauge Analysis XVIII Roundtable, New Delhi

Abstract : A critical review of the extensive experimental neuropsychological literature on bilingualism dating from the late 1970s.

J40. Tiwari S, Krishnan G. Recovery of alexia with agraphia in orthographically distinct languages: A report. Procedia-Social and Behavioral Sciences. 2011 Oct 20;23:37-8

J41. Sebastian D. Multilingual Aphasia: An Unresolved Puzzle in the Linguistic Mosaic of India. Perspectives on Global Issues in Communication Sciences and Related Disorders. 2014 May;4(1):30-8.

Abstract :Multilingualism is an inherent part of the pluralistic nation of India, where linguistic diversity is large and heterogeneous. There are various contributing factors for this multilingual mosaic. Multilingual aphasia in the context of Indian cultures and languages has not been explored properly due to various reasons. Issues and challenges are present in both clinical and research domains. Tools for documenting deficits, language selection for treatment, and outcome measurement are the major issues in the clinical domain. Research issues are associated with the development of assessment tools, cognitive and neurological aspects in multilingual aphasia, and normal aspects of multilingualism. A collaborative approach is required to address these issues. The present paper is an attempt to focus on current issues and possible solutions for multilingual aphasia in India

J42. Faroqi-Shah Y, Sampson M, Baughman S, Pranger M. Inhibitory control, word retrieval and bilingual aphasia: Is there a relationship. Frontiers in Psychology. 2014

J43. Venkatesh M, Edwards S, Saddy JD. Production and comprehension of English and Hindi in multilingual transcortical aphasia. Journal of Neurolinguistics. 2012 Nov 1;25(6):615-29.

Abstract : This study investigates the two later-acquired but proficient languages, English and Hindi, of two multilingual individuals with transcortical aphasia (right basal ganglia lesion in GN and brain stem lesion in GS). Dissociation between lexical and syntactic profiles in both the languages with a uniform performance across the languages at the lexical level and an uneven performance across the languages at the syntactic level was observed. Their performances are discussed in relation to the implicit/explicit language processes (Paradis, 1994, Paradis, 2004) and the declarative/procedural model (Ullman, 2001b, Ullman, 2005) of bilingual language processing. Additionally, their syntactic performance is interpreted in relation to the salient grammatical contrasts between English and Hindi.

Keywords : Hindi, Transcortical aphasia, Multilingual

J44. Tiwari S, Krishnan G. Selective L2 cognate retrieval deficit in a bilingual person with aphasia: a case report. Speech, Language and Hearing. 2015 Dec 1;18(4):243-8.

Abstract : Lexical access in bilinguals has been debated for the last several decades. Although a large majority of bilingual people often experience aphasia in both languages, some show language-selective disturbances. Yet, selective difficulties in retrieving words that share similar semantic and phonological forms in the two languages have seldom been reported. Here, we report the case of a 45-year-old, right-handed, balanced bilingual subject (Kannada–Malayalam) who presented with aphasia following an episode of stroke. Language evaluation revealed word-selection type of anomia with selective naming disturbance in L2 compared to L1 (in spite of having native-like fluency in L2). On further probing into his anomia, he showed an inability to name cognate words in L2 even after successfully naming them in L1. These observations are discussed in the light of lexical access theories in bilinguals.

Keywords: Lexical access, Bilingual, Cognates

J45. Narang, V., Laskar, A., (2010). Assamese-English bilingual aphasia : L1-L2 deficit and translation ability in 25 cases of stroke; Paper presented at the International Symposium on bilingual Aphasia (ISBA), AIISH, Mysore

J46. Vergis M.K., Asthana,N., Goswami, S.P.. Influence of Lingualism on Generative naming Task; Journal of the Indian speech and hearing Association, 2008, Vol. 12 pp 55-61

J47. Manju Mohan P., Lakshmi S.M., Maria P.R., Jayashree C Shanbal & Louisa B Suting, Mental lexicon organisation in L1 and L2 in Kannada - English Bilingual Aphasic ; An Investigation based on the hierarchical models and prototypicality; Proceeding of International symposium on Bilingual Aphasia (ISBA), 2010, AIISH, Mysore jshanbal@yahoo.co.in

Abstract : Such experimental data needs to be collected further in order to infer conclusive remarks. Present authors would like to continue enquiry by adding more phonological and categorization tasks. The experience of the present paper suggests that bilingual aphasia inparticular, dissociated performances are fertile experimental areas

J48. Hegde, M., Subbarao TA, Bhat, S., Phonological Deficits in a Kannada-English bilingual Aphasic - A Case exhibiting double disassociation; Proceeding of Internatinal symposium on Bilingual Aphasia (ISBA), 2010, AIISH, Mysore medhaslp@gmail.com

J49. Chengappa S, Bhat S & Damle M, Paraphasias in multilingual aphasia - A single case study of Wernicke's Aphasia; Journal of Indian Speech and Hearing Association, 17, 66-70

J50. Hegde, M., Bhat S, Paraphasia in multilingual conduction Aphasia - A Single case study; Indian journal of applied Linguistics, 33 (2) 45-52

J51. Bhat, S, Chengappa S, Code switching in normal and aphasic Kannada English bilinguals. Proceedings of 4th International symposium on bilingualism J. 306-316, Somerville, MA : Cascadilla Press

J52. Bhat, S., Effects of conversational contexts on Language mixing in Kannada-English Bilingual Aphasics; Scientific paper presented at the International symposium on Bilingual Aphasia, Mysore, India

J53. Cherian,M.E., Karanth, P., Action naming in Malayalam-English bilinguals; Unpublished, 2008 All India Institute of Speech and Hearing, Mysore

J54. Vaid, J. (2008). Neural substrates of language processing in bilinguals : Imagi(ni)ng the possibilities. In Srinivasan N. Gupta, A.K. & Pandey J. (eds) Advances in cognitive science (pp. 122-136) Sage Press, New Delhi

J55. Narang, V., 2010. *Assamese- English Bilingual aphasia: L1 – L2 deficit and Translation Ability in 25 cases of stroke,* jointly with Asmita Laskar, in Chengappa, Shyamala K. (ed) *Bilingual Aphasia,* Proceedings of The International Symposium on Bilingual Aphasia held in January, 2010, AIISH, Mysore, *India. Pp 211-223.*

J56. Bhan S.R., Impact of Biligualism on Language Acquisition among children and Language recovery among Aphasics. Research cum seminar on Sociolinguistics in India: Retrospect and Prospect. Shimla: Indian Institute of Advance Study.7-12 October 1996.

J57. Bhat, S. (Author), Shyamala, K.C. (Guide). Code switching and code mixing in persons with bilingual Aphasia, AIISH, Mysore

J58. Bhan, S., Chitnis, S., Lexical errors in narrative discourse of a bilingual subcortical aphasic; Proceeding of International symposium on Bilingual Aphasia (ISBA), 2010, AIISH, Mysore bsudheer2@rediffmail.com

Abstract : Semantic and phonemic paraphasias were frequently observed in present study. The patient is a typical subcortical aphasic, reflecting both nonfluent and fluent characteristics of aphasia. In naming verbs of motion , patient had dynamic misnaming. Patients speech also shows empty speech, circumlocutions, and semantic confusion. These are reflective of word

finding difficulty in her speech. The patient deleted initial subject of the sentence, while repeating longer sentences.

J59. Krishnan G, Mathew RE. Short version of the bilingual aphasia test in Malayalam. Annals of Indian Academy of Neurology. 2017 Jul;20(3):217. (*See the abstract in 'Section - B')*

J60. Bhatnagar SC. 1994, July: Methodological issues in cross linguistic studies of aphasia. Cross Language Aphasia Study II, Montreal, CA.

J61. Bhatnagar SC. 1984, December: Objective evaluation of aphasia in bilingual and multilingual patients Indian Society of Neurology Meeting, Banaras, India

J62. Prema, K. S.; Prarthana, S.; Abhishek, B. P. Bilingual lexical decision: effect of language proficiency and primes. Journal of the All India Institute of Speech & Hearing . 2013, Vol. 32, p73-81. 9p

Abstract: Bilinguals may have varying degrees of proficiency over their two languages. Assessment of bilingual proficiency by employing tools developed for non-Indian population is not suitable to the bilingual population in India. Tools developed indigenously for quick and objective assessment of language proficiency is warranted. Therefore, the present study assessed performance of 30 Kannada-English bilinguals in primed lexical decision task (LDT) with three different prime types- translation equivalent, semantically related and semantically unrelated primes along with self-rating questionnaire, LEAP-Q. Good correlation of scores on questionnaires and reaction time for LDT suggest that primed LDT serves as a test for bilingual proficiency. Among the prime types, the translation equivalent prime indicated proficiency better than the semantically related and semantically unrelated stimuli. Results of the study suggest that primed lexical decision task can be used as a tool for assessing proficiency based on the performance of individuals as against only competence assessed through questionnaires

J63. Shyamala K.C. & Prema K.S.Rao (2011). 'Language processing in bilinguals and biliterates'. In P.N.Tandon, R.C.Tripathi & N.Srinivasan (eds.) Expanding Horizons of the Mind Science, Special volume for 'Cognitive initiatives' by DST, India, Nova Science Publishers Inc., NY, pp. 205-238

J64. Prema K.S. Rao. (2014). Language, literacy and cognition issues for research in bilingual-biliterate context . Journal of Child Language Acquisition and Development – JCLAD Vol: 2 Issue: 4 25-41, 2014, August

J65. Abhishek BP. Lexical semantic processing in persons with bilingual aphasia. 2014. shodhganga.inflibnet.ac.in
http://hdl.handle.net/10603/109770

[K]

Other cognitive deficits associated with aphasia

K1. Mani, B. Non-verbal Sequential Memory in Broca's Aphasia. Unpublished Dissertation (Guide : Goswami, S.P.), AIISH, Mysore

Abstract : This study investigated the non-verbal sequential memory in people with Broca's aphasia. Additionally, it also investigated the effects of stimulus characteristics on quantitative and qualitative aspects of sequential memory. The memory span was calculated in nine people with Broca's aphasia and in a control group using three sets of (i.e., digits, meaningful, & non-meaningful) stimuli. The results revealed performance deterioration in both normal and Broca's aphasic participants as the complexity of the task increased. However, the rate of deterioration as greater in the aphasic group. While the two groups showed significant difference on meaningful stimuli, they failed to such difference on non-meaningful stimuli. Thus, the author conclude that the nature of stimuli employed in memory assessment had an effect on the performance of people with Broca's aphasia.

Keywords : Memory, Non-verbal, sequential memory, Broca's aphasia.

K2. Padakannaya, P., Devi, M.K., Zaveria, B., Chengappa, S.K. & Vaid, J. (2002). Directional Scanning effect and strength of reading habit in picture naming and recall. Brain and cognition 48, 484-490.

Abstract : This study examined directional scanning effects (DSE) as a function of reading habit strength among right handers. A picture array naming and recall task was administered to three groups of child readers – unidirectional right to left readers of Arabic, unidirectional left-to-right readers of Kannada, and bidirectional readers of Urdu and English and one group of urdu illiterate adults. The results showed a right to left DSE in the Arabic and Urdu readers. In the latter group the strength of the scanning effect decreased with greater schooling in English. No. R-L effect was observed in the Kannada readers or in the Urdu illiterates. The results extend prior research in documenting an "invasion" of culturally acquired, reading scan habits onto a nonlinguistic domain. It is suggested that directional scanning effects be controlled or else directly examined in future laterality research involving nonlinguistic stimuli.

Keywords : Directional scanning , Reading, Bidirectional.

K3. Ruchi. A, Verbal sequential Memory in Aphasia. Unpublished Dissertation (Guide : Goswami, S.P.). AIISH, Mysore.

Abstract : This study investigated the verbal sequential memory in aphasics. Nine persons with aphasia (6 anomic & 3 conduction) and nine normal participants were selected for this purpose. The stimuli consisted of two tasks : a digit task and a meaningful word task. Each task consisted of six trials and the number of items in each trial was increased by one. The

participants were required to name the items in the same order as presented. The results showed an obvious memory deficit in persons with aphasia. Although there is deterioration in normal participants, the clinical group exhibited deficits to a greater extend in both the task. Yet, the performance showed variations as a function of the type of aphasia.

Keywords : Verbal memory, aphasia, digit task.

K4. Ganguli M, Ratcliff G, Chandra V, Sharma S, Gilby J, Pandav R, Belle S, Ryan C, Baker C, Seaberg E, Dekosky S. A Hindi version of the MMSE: the development of a cognitive screening instrument for a largely illiterate rural elderly population in India. International Journal of Geriatric Psychiatry. 1995 May;10(5):367-77.

Abstract : The Indo-US Cross-National Dementia Epidemiology Study seeks to compare two rural populations, in the US and India: the Monongahela Valley, a rural community of relatively low socioeconomic status in southwestern Pennsylvania (USA), and Ballabgarh, a rural community near New Delhi in North India. Of Particular interest is the fact that the Ballabgarh elderly population is exclusively Hindi-speaking, has little or no education and is largely illiterate, rendering its cognitive screening a particular challenge. In this article we report methods and preliminary data on the development of a Hindi cognitive screening instrument suitable for the Ballabgarh elderly population. We use as an example our Hindi adaptation of the Mini-Mental State Examination (MMSE), a widely used global cognitive screening scale. Systematic, item-by-item, empirically based test development has shown that effective modifications can be made to existing tests that require reading and writing; and that culturally sensitive modifications can be made to render the test meaningful and relevant while still tapping the appropriate cognitive domains. Certain cognitive functions, particularly orientation to time, remain difficult to test adequately in this type of population. In Ballabgarh, as in the Monongahela Valley, educated individuals obtain higher test scores. Implications for dementia screening are discussed, including those relevant to the hypothesis that low education predisposes to dementia.

K5. Porrselvi AP, Shankar V. Status of cognitive testing of adults in India. Annals of Indian Academy of Neurology. 2017 Oct;20(4):334.

Abstract : The assessment of cognitive function is a challenging yet an integral component of psychological, psychiatric, and neurological evaluation. Cognitive assessment tools either can be administered quickly for screening for neurocognitive disorders or can be comprehensive and detailed to identify cognitive deficits for the purpose of localization, diagnosis, and rehabilitation. This article is a comprehensive review of published research that discusses the current challenges for cognitive testing in India, available tools used for the assessment of cognitive function in India, and future directions for cognitive testing in India.

Keywords: Cognition, cognitive testing, India, neuropsychology

K6. A Usharani, Substitution Errors by Aphasics In Osmania Papers in Linguistics (OPiL) Vol.9,10. (1983,1984).Pp.140-152

Abstract : This paper presents an analysis of substitution errors by Aphasics whose native language is Telugu. The aim is to describe the types of substitution errors found, and to test the hypothesis that phoneme substitution errors are more likely to occur between phonemes separated by a single feature difference than between phonemes separated by multiple feature differences. It also attempts to study to what extent the substitutions of aphasics are similar to those found in child language.

K7. Nehra A, Pershad D, Sreenivas V. Indian Aphasia battery: Tool for specific diagnosis of language disorder post stroke. Journal of the Neurological Sciences. 2013 Oct 15;333:e165.

Abstract :Background & aims: Aphasia is a language disorder which may disrupt an individual's functioning. To plan a mode of therapeutic/rehabilitative work, it is important to assess problems from neuropsychological perspective focussed on remediation of the impaired processes or compensation via the intact processes or both (Hillis AE, /INS;2001). It targets sequence set of representations (stored visual, orthographic, semantic, phonological information) for solving particular task (e.g. naming). Since no test available to assess north Indian population with specific colloquial expression thus, need was felt to assess these patients

K8. Nagendar K, Ravindra S. ADAPTATION OF MISSISSIPPI APHASIA SCREENING TEST TO TELUGU LANGUAGE. Journal of the All India Institute of Speech & Hearing. 2012 Jan 1;31.

Abstract : Abstract: Aphasia is an acquired language disorder seen in adults which results from stroke or cerebral injury. Most of these patients with severe language disabilities are difficult to assess and may not also be cooperative for lengthy aphasia test batteries like WAB, BDAE etc., hence the need to develop a screening test. Mississippi Aphasia Screening Test is one such instrument developed by Nakase-Thompson (2005) for this purpose. Very few aphasia screening tests have been developed in the Indian context and none for Telugu. Therefore the present study aimed at adaptation of Mississippi Aphasia Screening Test to Telugu (MAST--T). MAST--T consists of Expressive and Receptive indices, under 9 subtests, with a total of 46 items. It was administered on three groups--Neuro-typical group (NT, n=50), Left Hemisphere Damage group (LHD; n=25) and Right Hemisphere Damage group (RHD; n=05). The test displayed good construct, very good criterion validity (r =0.84), and high inter-rater reliability (r=0.993). Overall, LHD group showed more impairment than RHD group on both the subtests. Also the results showed that neuro-typical performed better than both the groups on all the 46 items, except object recognition task which had almost same score for all three groups. Thus, MAST-T is a reliable and valid screening tool for the detection of aphasia for Telugu speaking persons with aphasia.

K9. Pooja V, Shilpashri HN, Ananya Ajay P. Working Memory in Monolingual Broca's Aphasia. Language in India. 2016 Oct 1;16(10).

Abstract : A preserved working memory system is crucial for language processing and complex cognitive activities. Working memory ability of adults with aphasia has received a lot of attention in the literature in recent years. The purpose of this study was to measure the performance of adults with Broca's aphasia on listening span test in comparison with healthy elderly individuals. Ten (5 Male; 5 Female) monolingual (Kannada speakers) adults with

Broca's aphasia and ten (5 Male; 5 Female) monolingual (Kannada speakers) healthy elderly individuals participated in this study. Participants completed the test tapping linguistic information measuring working memory ability. The findings highlighted the working memory in adults with Broca's aphasia.

Keywords: Broca's aphasia, monolingual, Kannada speakers, working memory

K10. Chengappa SK, Kumar R. Normative & Clinical Data on the Kannada Version of Western Aphasia Battery (WAB-K). Language in India. 2008 Jun 1;8(6).

Abstract : The present study aimed to standardize the Kannada version of Western Aphasia Battery (hereinafter K-WAB) and to present the normative data of normal individuals and patients with aphasia. The K-WAB contains the same test contents and structure as the original WAB (Kertesz and Poole, 1974) which is a commonly used assessment tool by Speech Language Pathologists (SLP) for aphasia. The test is modified with the cultural and linguistic adaptations and the general test administration method was maintained. The K-WAB was administered on 22 normal (16 males and 6 females) and 90 aphasics in the age range of 30 - 70 years. The Aphasia Quotient (AQ) was evaluated for different ages and gender groups. Based on the AQ., cut-off scores to optimally differentiate between the normal and aphasic individuals were provided. The present study revealed that there was no significant effect with respect to age and gender. But significant variation was found in normal and different categories of aphasics within themselves in all parameters of WAB (AQ, Spont.speech, repetition, comprehension, and naming). It is proved beyond doubt that WAB differentiates normal and aphasic performance, finding support from the well established trend in literature. Finer details however need to be studied in depth with larger data from our sample

K11. Keshree NK, Kumar S, Basu S, Chakrabarty M, Kishore T. Adaptation of the western aphasia battery in Bangla. Psychology of Language and Communication. 2013 Sep 1;17(2):189-201.

Abstract : Aphasia following an acquired neurological insult necessitates an in-depth evaluation of the primary and secondary language symptoms. Of all the tools available for aphasia diagnosis, the Western Aphasia Battery (WAB; Kertesz, 1982) has proved to be one of the most comprehensive test batteries for describing the aphasia symptom complex. Several authors have pointed out the need for language-specific tools for the assessment of aphasia. But in Bengali, the most prevalent language in eastern India, no formal language assessment tool was available to date. The present study adapted the original WAB in Bengali to give the Bengali WAB (B-WAB). The study was completed in three phases: development, standardization and validation of the B-WAB. The test material was developed preserving the total number of items, however minor changes were made wherever necessary so that it matched the sociolinguistic norms in this part of the country. It was standardized in a group of 150 normal individuals in five different age groups ranging from 18-70 years, and normative values were provided for each subtest for each group. For establishing validity, it was administered to 30 aphasic subjects and the results indicated that the B-WAB was a valid tool for testing individuals with aphasia.

Keywords: Aphasia; Bengali; WAB

K12. Nehru R, Garg A. A study of bilingual autistic hyperlexia. Part 1. Clinical report of four cases. Annals of Indian Academy of Neurology. 1998;1(2):113.

K13. Rikhye K, Nehru R, Garg A. A study of bilingual autistic hyperlexia. Part 2. Organisation of the semantic lexicon. Annals of Indian Academy of Neurology. 1998;1(2):97.

K14. Garg A, Nehru R. A study of bilingual autistic hyperlexia. Part 3. Bilingual phonology and orthography. Annals of Indian Academy of Neurology. 1998;1(2):98.

K15. Rikhye K, Nehru R, Garg A. A study of bilingual autistic hyperlexia. Part 4. Bilingual orthography and the graphemic output buffer: additional evidence from a dyslexic child. Annals of Indian Academy of Neurology. 1998;1(2):98.

K16. Nehru R, Garg A. A study of bilingual autistic hyperlexia. Part 5. Functional architecture of the bilingual mental lexicon. Annals of Indian Academy of Neurology. 1998;1(2):98.

K17. Shyamala KC (PI). Cognitive Deficits in Aphasia

K18. Vaid J & Singh M (1989). Assymetries in the perception of facial affect : Is there an influence of reading habits ? Neuropsychologia, 27, 1277-1287

K19. Sakhuja T, Gupta GC, Singh M & Vaid J (1996). Reading habits affect asymmetries in facial affect judgements : A replication. Brain and Cognition, 32, 162-165.

K20. Singh M, Vaid J, Sakhuja T (2000). Reading/writing vs. handedness influences on line length estimation. Brain and cognition 43, 398-402.

K21. Nehru R, Ranjan NK. Selective lower case orthographic Agnosia. Annals Ind Acad Neurol 2004 (accepted).

K22. Nehru R, Garg A. Autistic hypergraphia without mental retardation. Annals Ind Acad Neurol 2004 (accepted).

K23. Vaid J & Menon R (2000). Correlates of bilinguals preferred language for mental computations. Spanish Applied linguistics, 4, 325-342.

K24. Nehru R, Garg A. Autistic hyperlexia without mental retardation. Annals Ind Acad Neurol 2001;4(3):163.

K25. Nehru R, Mahendru R. A linguistic analysis of mirror writing in a case of non-remittent mania: implications for cognitive-linguistic strategies and hemispheric dysfunction. Ind J Psychiat 1995;37(2):17-18.

K26. Nehru R. Progressive word deafness with amusia: a psychophysiological and neurolinguistic study. Neurology India 1995;43(3):27.

K27. Garg A, Nehru R. Lexical phonological activation of semantic stores: efficacy in treatment of post-traumatic amnesia and implications for models of lexical semantics and long term storage of episodic memory. Neurology India 1995;43(3):27.

K28. Vaid J, Singh M, Sakhuja T & Gupta GC (2002) Stroke direction asymmetryin figure drawing: Influence of handedness and reading/writing habits. Brain and Cognition, 48, 597-602.

[L]

Speech and Language function in neuro-degenerative disorders

L1. Achala, C. (2005). Code mixing and code switching in bilingual dementia. Unpublished Dissertation (Guide: Karanth, P.). MVST College of Speech and Hearing, Mangalore

Abstract : The present study investigated the code switching and code mixing in bilingual (Kannada-English) persons with dementia of Alzheimer's type (DAT). The author used the conversational speech sample as well as the obtained from the spontaneous speech sample as well as that obtained from the spontaneous speech section of western Aphasia Battery for this purpose. Two groups of participants were selected from this study. The experimental (i.e., clinical) group included three persons with DAT and the control group included three matched normal participants. The speech samples were analyzed in terms of matrix language islands, embedded language islands, matrix + embedded constituents and borrowing and revisions. The results of this investigation showed comparable performance in the both groups. Although there were subtle differences, the two groups showed similarity in code-switching patterns. Thus, this study argued that code switching in bilingual persons with DAT is not pathological.

Keywords : Alzheimer's disease, DAT, Code switching, Matrix language island, Embedded language islands.

L2. Arora, A., Sawhney, I.M., Verma, S.K., Lal, V., Prabhakar, S. (1999) Primary progressive aphasia : a case report. Neurology India, 47, 139.

Abstract : Primary progressive aphasia is due to focal left perisylvian degeneration and manifests with progressive decline in language function for two or more years. There is preservation of cognitive functions and activities of daily living continue to be normal. The authors report a case of progressive aphasia in a 65 year old lady.

Keywords : Primary progressive Aphasia, Cognitive function.

L3. Arora A, Sharma CM, Kumawat BL, Khandelwal D. (2011) Posterior cortical atrophy : A rare visual variant of Alzheimer's disease. Neurology India, 59, 482-484.

Abstract : A 55-year-male, right handed and high school educated, was admitted for insidious-onset reading and writing difficulty of 5 years duration. He used to read letter by letter rather than whole words and had difficulty focusing at a single line while reading. He had noticed change in size, shape and configuration of individual letters while writing, forcing him to change his bank security signature to a thumb impression. He had difficulty in reaching out to touch or pick up an object, mislocating them even though he claimed that he could clearly see the object. He also had difficulty in recognizing faces and could do so only after hearing the

person's voice. Highe mental function evaluation revealed affection of parietal and occipital lobes with optic ataxia, visual inattention, alexia, dysgraphia and prosopagnosia. This patient had few features of both Balint syndrome and Gerstmann syndrome.

Keywords : Gerstmann's syndrome, Balint syndrome, prospagnosis, Alexia, Agraphia.

L4. Chitnis S., Chaudhary J.R., Bhan. S., Suverna A., Vani, R. (2010) Verb Naming in Telugu-English bilinguals with semantic Dementia; Proceedings of International symposium on bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : This study included three Telugu-English bilingual persons with semantic dementia. A 'verb naming test' was administered on all participants in Telugu and English. Person with SD named fewer verbs correctly when compared to control participants. The study also revealed that persons with SD do not show any differences in performances between transitive and intransitive verbs. Repetition and semantic cues were not very effective in eliciting names of verbs in Telugu and English. We also conclude that person with SD have more difficulty in verb naming L2 (English) than in L1 (Telugu). Lexical semantic errors were seen in both Telugu and English among persons with SD. However code switching was observed only in response to English verbal stimuli and code mixing in response to Telugu verbal stimuli.

Keywords : Semantic Dementia, Bilingual, Verb naming, Telugu.

L5. Deepa M.S., Bhan S., Suvarna A., (2009) Qualitative differences in language in a spectrum of elderly people with mild Cognitive Impairment. Journal of the Indian Speech and Hearing Association, Vol. 12 pp 62-69

Abstract : The aim of the present study was to describe the ability of 5 types of dementia patients with mild cognitive impairment on narrative discourse. Selected for investigation were 5 dementia patients all males and 5 healthy elderly males. Language screening, cognitive assessment along with discourse data were collected on picture description and narration tasks. Results showed various types of language deficits n the patient population in terms of mean length of utterance, sentence complexity through a number of clauses and number of T-units. There was quantitative reduction in the amount and complexity of language produces by the dementia patients relative to normal, primarily because they used less embeddings in their sentences than controls. This study presents a feasible means of describing one facet of conversation despite certain limitations.

Keywords : Dementia, narrative discourse.

L6. Gafoor VA, Jose J, Saifuddheen K, & Musthafa M. (2011). Posterior cortical atrophy : A rare visual variant of Alzheimer's disease . Neurol India. 59;297-299.

Abstract : A 56-year-old female presented with a 5-year history of insidious onset of difficulty in recognizing familiar faces including that of her family members. However, she could identify them by their voices. Subsequently she developed difficulty in identifying some common objects like household articles. Her speech and writing were normal but she was unable to

read. Later, three years into her illness, her family members noticed that she had disregard to objects in the left half of her visual field and for the last 6 months she had difficulty in dressing up by herself. Elements of Gerstmann's syndrome (i.e. acalculia, alexia and finger agnosia.) were also observed in this lady.

L7. George A., Mathuranath P.S., PPA in Malayalam-English Bilinguals - Language profile and pattern of decline; Proceedings of International symposium on bilingual Aphasia (ISBA), 2010, AIISH, Mysore, george.annamma@gmail.com

Abstract : The aim of the present study was to study the language profile and pattern of decline in bilinguals with PPA both in the native language Malayalam (L1) and in English (L2). Two subjects (Subject 1 and Subject 2) who attended a Memory clinic in South India and were diagnosed with PPA were administered the Western Aphasia Battery (WAB) and its Malayalam adaptation. They were reassessed on the same tests after a year. Early in the course of PPA, language abilities in Malayalam-English bilinguals are relatively better preserved in the native language. In both language expression abilities show earlier decline than repetition and comprehension as disease progresses. These findings need to be replicated in a larger group of subjects with PPA.

L8. George A., Mathuranath P.S., (2010) Progressive Non-Fluent Aphasia in Malayalam: A Case Study. Indian journal of Applied Linguistics, 36(1-2) 123-131.

Abstract : Primary Progressive Aphasia (PPA) is a degenerative condition characterized by deterioration in language for at least two year without deterioration in other cognitive domains. This report highlights the language profile in a 79 year old male with progressive non-fluent Aphasia (PNFA) who was assessed using the Western Aphasia Battery and the Semantic Battery. Initial assessment revealed that the subject had non-fluent speech with relatively preserved comprehension and significant difficulty with naming. The subject's performance on the picture-pointing task was superior to the confrontation-naming task and strengthened the diagnosis of PNFA. On follow-up evaluation after a year his language abilities across tasks showed significant deterioration.

Keywords : Progressive aphasia, naming, semantic battery.

L9. Mahesh P., (2008) . Norms for geriatric population on Boston naming test in Kannada. Unpublished Dissertation (Karanth, P.). MVST College of Speech and Hearing, Mangalore

Abstract : In order to develop the normative data for Boston Naming Test in Kannada-speaking elderly population (i.e., > 65 years of age), as a function of literacy, this study selected 80 participants (40 males & females each). They were further divided into three groups based on their literacy levels (i.e., N = 30: 0-3 year, N =30: 4-10 years, & N-20:>10 years of education) having equal number of males and females in each group. All participants were native speakers of Kannada. The results, in general, showed that the participants with education more than 4th grade had higher scores compared to those with less than 4th grade education.

Keywords ; Boston Naming Test, Kannada, geriatric, literacy

L10. Mathuranath P.S., George A., Mathew R., Cherian P.J. (2006). Profiles of language impairment in progressive nonfluent aphasia. Annals of Indian Academy of Neurology, 2006;9:25-31.

Abstract : Objective: To study language in noncaucasian patients with progressive nonfluent aphasia (PNA). To determine differences in the language impairment in PNA patients with and without early onset behavioral changes. Materials and Methods: Based on clinical evaluation, six PNA patients were divided into those *with* (*EB* , *n* =2) and *without* (*NB* , *n* =4) *early* onset (i.e., within 24 months from onset) *behavioural* symptoms of frontotemporal dementia (FTD). *NB* was sub-grouped as *Moderate* (language plus subtle cognitive dysfunction; *n* =2) and Mild (isolated language dysfunction; *n* =2). Language on the western aphasia battery (WAB) of *NB* was compared with that of *EB* and of the three groups were compared with that of controls. Clinical follow-up ranged between 24 and 60 months from onset. Results: Three categories were matched for the disease duration. Compared to controls, significantly *(P* <0.05) lower scores were seen for all three groups on WAB fluency, repetition and writing; for the *Moderate* and *EB* on reading, naming and comprehension; and for the *EB* alone on information content. Information content and comprehension were significantly lower for the *EB* when compared to the *NB.* Over comparable periods, the aphasia quotient of patients in *EB* declined by more than 30 points and in the *Moderate* by 3 points. Conclusions: PNA frequently shows behavioral features suggestive of FTD early in the course of the illness. Poor information content on WAB differentiates patients with early behavioral dysfunction from those without. The extent of language impairment is a function of the disease stage rather than of disease duration, suggesting thereby that the "initial 2 years of relatively isolated language disorder" criteria, while useful, may exclude some patients with PNA.

L11. Nehru R, Parhee R, Dewan R, Gupta P, Goyal V, Singh V. (2002). Semantic generation tasks in the differential diagnosis of age associated cognitive decline and Alzheimer's disease. J Assoc Physicians Ind. 50:76.

Abstract : Semantic memory loss is a well-known feature of Alzheimer's disease (AD). In the elderly, semantic memory is believed to be intact. It is not been investigated whether clinical assessment on semantic generation tasks would be useful in the differential diagnosis of age associated cognitive decline (AACD) and early AD. This study aimed to assess the clinical usefulness of semantic generation tasks in the differential diagnosis of AACD and AD. A group of 30 early individuals with AACD above the age of 60 years and 10 patients of early probable AD were evaluated on tasks of semantic generation and compared the performance with that of young healthy individuals. The 30 early individuals were categorized as 'age associated cognitive decline' on the basis of their performance on a battery of tests addressing working memory, complex cognitive functions and visuospatial tasks. Subjects were required to produce names items in different semantic categories. The number of corrects items produced in one minute was recorded. The mean performance of the AACD group was within one SD of that of young healthy individuals. The mean performance of AD patients was uniformly inferior to that of subjects with AACD. In addition to being statistically inferior, the mean performance of AD patients was strikingly evident clinically, in contrast to subjects with AACD. Thus, the semantic generation task is a quick and simple test for discriminating between AACD and AD.

Keywords : Semantic memory, Alzheimer's disease, cognitive decline.

L12. Ratnavalli,E. (2010). Progress in the last decade in our understanding of primary progressive aphasia, Annals of Indian Academy of Neurology; 13:S109-15.

Abstract : Primary progressive aphasia (PPA) is a focal neurodegeneration of the brain affecting the language network. Patients can have isolated language impairment for years without impairment in other areas. PPA is classified as primary progressive nonfluent aphasia (PNFA), semantic dementia (SD), and logopenic aphasia, which have distinct patterns of atrophy on neuroimaging. PNFA and SD are included under frontotemporal lobar degenerations. PNFA patients have effortful speech with agrammatism, which is frequently associated with apraxia of speech and demonstrate atrophy in the left Broca's area and surrounding region on neuroimaging. Patients with SD have dysnomia with loss of word and object (or face) meaning with asymmetric anterior temporal lobe atrophy. Logopenic aphasics have word finding difficulties with frequent pauses in conversation, intact grammar, and word comprehension but impaired repetition for sentences. The atrophy is predominantly in the left posterior temporal and inferior parietal regions. Recent studies have described several progranulin mutations on chromosome 17 in PNFA. The three clinical syndromes have a less robust relationship to the underlying pathology, which is heterogeneous and includes tauopathy, ubiquitinopathy, Pick's disease, corticobasal degeneration, progressive supranuclear palsy, and Alzheimer's disease. Recent studies, however, seem to indicate that a better characterization of the clinical phenotype (apraxic, agrammatic, semantic, logopenic, jargon) increases the predictive value of the underlying pathology. Substantial advances have been made in our understanding of PPAs but developing new biomarkers is essential in making accurate causative diagnoses in individual patients. This is critically important in the development and evaluation of disease-modifying drugs.

L13. Shanbhogue, K.R., Menon, B.K., Suresh, C.T. (2006). Primary progressive aphasia. Annals of Indian Academy Neurology, 9, 126.

Annotation : In response to an earlier article by Mathuranath and colleagues, Shanbhogue and colleagues raise a question the ‘poor information content’. Specifically, the latter group of authors question if the ‘poor information content’ is an early behavioral manifestation or a co-existent of PPA. Further, they argued that a decision on this can be drawn only with extensive follow up investigations in PPA. Finally, the authors highlight on the lack of awareness in the society as well as among the referring physicians on PPA as the turnout of people with this debilitating disorder is extremely low.

Kewords : PPA, Dementia, Alzheimer’s disease

L14. Sindhu, G. (2002). Boston Naming Test in Malayallam. Unpublished Dissertation (Guide ; Karanth P.). MVST College of Speech and Hearing, Mangalore

Abstract : This study aimed at developing the normative data for Boston Naming Test (BNT) in Malayalam-speaking geriatric population of different literacy levels. A group of 80 elderly participants (40 males & 40 females) aged 65 years and above were selected for this study. They were grouped into three categories based on the literacy levels (1-3 years : 15 males & females each; 4-10 years: 15 males & females each; & > 10 years: 10 males & females each). All participants were native speakers of Malayalam. The mean and SD of each age group are

provided. Further, the results of this study showed that the literacy has an apparent influence on naming skills.

Keywords : Naming, Geriatric, Boston Naming Test, Malayalam.

L15. Vani, R., Suvarna, A, Santhoshi C.H., Sireesha, J, Shailaja M, & Kaul S. (2010). Verbal Fluencies in bilingual persons with Dementia. Paper presented at the International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : Two verbal fluency tasks (i.e. semantic & phoneme based) were administered on 10 bilingual persons with Alzheimer's disease were included. Ten neurologically normal Hindi-English and Telugu-English bilingual adults were included. A language proficiency questionnaire (Salvatierra et al, 2007) was administered on all participants. The result showed a decline in the fluencies in persons with AD when compared to normal participants. Based on their observations, the authors recommended more careful selection phoneme specifically for the verbal fluency task.

Keywords : Bilingual, Alzheimer's disease, Dementia, Phoneme fluency, Semantic fluency.

L16. Chakraborty N, Roy T, Hazra A, Biswas A, Bhattacharya K. Dysarthric Bengali speech: A neurolinguistic study. Journal of Postgraduate Medicine. 2008 Oct 1;54(4):268.

Abstract :**Background and Aims**: Dysarthria affects linguistic domains such as respiration, phonation, articulation, resonance and prosody due to upper motor neuron, lower motor neuron, cerebellar or extrapyramidal tract lesions. Although Bengali is one of the major languages globally, dysarthric Bengali speech has not been subjected to neurolinguistic analysis. We attempted such an analysis with the goal of identifying the speech defects in native Bengali speakers in various types of dysarthria encountered in neurological disorders. **Settings and Design:** A cross-sectional observational study was conducted with 66 dysarthric subjects, predominantly middle-aged males, attending the Neuromedicine OPD of a tertiary care teaching hospital in Kolkata. **Materials and Methods**: After neurological examination, an instrument comprising commonly used Bengali words and a text block covering all Bengali vowels and consonants were used to carry out perceptual analysis of dysarthric speech. From recorded speech, 24 parameters pertaining to five linguistic domains were assessed. The Kruskal-Wallis analysis of variance, Chi-square test and Fisher's exact test were used for analysis. **Results**: The dysarthria types were spastic (15 subjects), flaccid (10), mixed (12), hypokinetic (12), hyperkinetic (9) and ataxic (8). Of the 24 parameters assessed, 15 were found to occur in one or more types with a prevalence of at least 25%. Imprecise consonant was the most frequently occurring defect in most dysarthrias. The spectrum of defects in each type was identified. Some parameters were capable of distinguishing between types. **Conclusions**: This perceptual analysis has defined linguistic defects likely to be encountered in dysarthric Bengali speech in neurological disorders. The speech distortion can be described and distinguished by a limited number of parameters. This may be of importance to the speech therapist and neurologist in planning rehabilitation and further management.

Keywords: Bengali, dysarthria, neurolinguistic study, speech defect.

L17. Bhat C, Vachhani B, Kopparapu SK. Automatic assessment of dysarthria severity level using audio descriptors. In2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2017 Mar 5 (pp. 5070-5074). IEEE.

Abstract: Dysarthria is a motor speech impairment, often characterized by speech that is generally indiscernible by human listeners. Assessment of the severity level of dysarthria provides an understanding of the patient's progression in the underlying cause and is essential for planning therapy, as well as improving automatic dysarthric speech recognition. In this paper, we propose a non-linguistic manner of automatic assessment of severity levels using audio descriptors or a set of features traditionally used to define timbre of musical instruments and have been modified to suit this purpose. Multitapered spectral estimation based features were computed and used for classification, in addition to the audio descriptors for timbre. An Artificial Neural Network (ANN) was trained to classify speech into various severity levels within Universal Access dysarthric speech corpus and the TORGO database. An average classification accuracy of 96.44% and 98.7% was obtained for UA speech corpus and TORGO database respectively.

L18. Giri MP, Rayavarapu N. Assessment on impact of various types of dysarthria on acoustic parameters of speech. International Journal of Speech Technology. 2018 Sep 1;21(3):705-14.

Abstract :Dysarthria is one of the major speech impairments that makes speech unintelligible and inaudible. It is a motor speech disorder which occurs due to neurological injury to the motor-speech system and an indication of this is a poor articulation of phonemes. Dysarthria can be of different types: spastic, flaccid, hypokinetic, hyperkinetic, ataxia, mixed etc. Studying the effect of different types of dysarthria on speech, using signal processing techniques is a largely unexplored area. The fundamental frequency, formant frequency and energy of the speech signal are information bearing acoustic parameters of speech. This paper summarizes the impact of spastic, flaccid and hypokinetic types of dysarthria on the above listed acoustic parameters of speech. These parameters are compared with similar parameters for normal speech. A comparison shows that the acoustic parameters of normal speech and impaired speech are very different. By modifying these parameters of impaired speech, the researchers hope to enhance dysarthria affected speech, to make it resemble normal speech as closely as possible

L19. Bhatoe HS. Mutism, oropharyngeal apraxia and dysarthria after posterior fossa tumour excision. British journal of neurosurgery. 1997 Jan 1;11(4):341-3

Abstract :Mutism and oropharyngeal apraxia are unusual complications of surgery on the cerebellum. They usually occur in children undergoing surgery for midline cerebellar tumours. Adults are rarely affected. The pathophysiology of the syndrome, which is reversible, is uncertain with possible involvement of vermian and paravermian structures. Two patients-one child and one adult-who developed mutism after cerebellar surgery are presented.

Keywords: Key Words: Apraxia, Brain Tumour, Cerebellar Tumour, Mutism, Posterior Fossa Tumour.

L20. Rahul DR, Ponniah RJ. Language impairment in primary progressive aphasia and other neurodegenerative diseases. Journal of genetics. 2019 Sep 1;98(4):95.

Abstract ; Primary progressive aphasia (PPA) is a progressive neurodegenerative disease that disrupts the language capacity of an individual by selectively affecting the language network of brain. Although aphasic literature is replete with reports of brain damage responsible for various types of PPA, it does not provide a comprehensive understanding of whether PPA is an independent pathological condition or an atypical syndrome of neurodegenerative diseases (NDD). To address this ambiguity, we provide a detailed description of PPA, its variants and their brain anatomy. Subsequently, we unravel the relationship between PPA and NDDs like Alzheimer's, Parkinson's and Dyslexia. To substantiate the relationship further, we also provide a brief account of their genetic aetiology. In the final section, we offer an exhaustive approach towards the treatment of PPA by combining the existing language therapies with clinical and pharmacological interventions.

L21. George A, Mathuranath PS. Primary progressive aphasia: A comparative study of progressive nonfluent aphasia and semantic dementia. Neurology India. 2005 Apr 1;53(2):162.

Abstract : Primary progressive aphasia (PPA), a degenerative disorder, is often misdiagnosed as Alzheimer's disease. Its subtypes, semantic dementia (SD), and progressive nonfluent aphasia (PNFA), are often difficult to differentiate from each other. Our objective was to highlight the differences in the language profiles of patients with SD and PNFA. To bring out these differences, we report two patients with PPA, one with SD and the other with PNFA. They were administered the Western aphasia battery (WAB) and a semantic battery, which assesses semantic memory. The profiles of language impairment on the WAB indicated that the patient with PNFA had syntactic errors in expressive speech but relatively preserved semantics and comprehension, whereas the patient with SD had preserved syntax but made semantic errors in expressive speech, and had impaired comprehension. There were differences in their performance on the semantic battery too. The patient with SD made relatively less errors on confrontation naming, although on the pointing task he failed to point to those line drawings, which he was unable to name on confrontation. In contrast, the finding of the PNFA patient was the reverse of this. Supplementing conventional neuropsychological tests with formal tests for assessment of language functions is useful in the early diagnosis of PPA. The performance of PPA patients on a detailed assessment of language that includes use of formal tests such as the semantic battery helps to differentiate PNFA from SD.

Keywords: Dementia, language, neuropsychology, primary progressive aphasia, semantic

L22. Gupta P, Nehru R, Dewan R, Goyal V, Zachariah S, Anand R. Token Test in the Assessment of Age Associated Cognitive Decline. Ind J Psychiat 2003;45 (suppl April) (accepted)

L23. Nehru R, Gupta P, Dewan R, Mehta P, Gulati S, Zachariah S. The Stroop Test for Assessment of Age Associated Cognitive Decline in Healthy Elderly Individuals. J Assoc Physicians Ind 2003 (accepted).

L24. Nehru R, Gupta P, Dewan R. Token Test as a Test for Assessment of Age Associated Cognitive decline in Healthy Elderly Individuals. Annals Ind Acad Neurol 2004 (accepted).

L25. Gupta P, Nehru R, Dewan R. Digit Symbol Test in the Assessment of Age Associated Cognitive Decline in healthy elderly individuals. Annals Ind Acad Neurol 2004 (accepted).

L26. Chandralekha C,. Prema KS, Verbal perseveration in normal geriatrics : A study on Tamil speakers, Unpublished Master's Dissertation, University of Mysore, Mysore India (2002)

L27. Arora A, Sawhney IM, Verma SK, Lal V, Prabhakar S. Primary progressive aphasia : a case report. Neurol India 1999;47:139

Abstract : Primary progressive aphasia is due to focal left perisylvian degeneration and manifests with progressive decline in language function for two or more years. There is preservation of cognitive functions and activities of daily living continue to be normal. We report a case of progressive aphasia in a 65 year old lady.

L28. Prema K.S.Rao (2015). Cognitive-communicative Decline with Aging: Do Speech-Language Pathologists Contribute to Clinical Decisions? Indian Journal of Gerontology, 29(1), pp. 1-22 http://www.gerontologyindia.com/pdf/Vol-29-1.pdf

L29. Vijaykumar & K.S.Prema (2006). Cognitive-Linguistic flexibility and aging. In Student Research at AIISH, Vol-V:2006-2007, Part-B, Speech-Language Pathology, Compiled by Dr. Vijayalakshmi Basavaraj & Dr. Y.V.Geetha, AIISH Mysore, pp.246-257.

L30. Prema K.S.Rao (2015). Cognitive-communicative Decline with Aging: Do Speech-Language Pathologists Contribute to Clinical Decisions? Indian Journal of Gerontology, 29(1), pp. 1-22 http://www.gerontologyindia.com/pdf/Vol-29-1.

L31. Alladi S, Bak TH, Duggirala V, Surampudi B, Shailaja M, Shukla AK, Chaudhuri JR, Kaul S. Bilingualism delays age at onset of dementia, independent of education and immigration status. Neurology. 2013 Nov 26;81(22):1938-44.

Abstract : **Objectives:** The purpose of the study was to determine the association between bilingualism and age at onset of dementia and its subtypes, taking into account potential confounding factors. **Methods:** Case records of 648 patients with dementia (391 of them bilingual) diagnosed in a specialist clinic were reviewed. The age at onset of first symptoms was compared between monolingual and bilingual groups. The influence of number of languages spoken, education, occupation, and other potentially interacting variables was examined. **Results:** Overall, bilingual patients developed dementia 4.5 years later than the monolingual ones. A significant difference in age at onset was found across Alzheimer disease dementia as well as frontotemporal dementia and vascular dementia, and was also observed in illiterate patients. There was no additional benefit to speaking more than 2 languages. The bilingual effect on age at dementia onset was shown independently of other potential confounding factors such as education, sex, occupation, and urban vs rural dwelling of subjects. **Conclusions:** This is the largest study so far documenting a delayed onset of dementia in bilingual patients and the first one to show it separately in different dementia subtypes. It is the first study reporting a bilingual advantage in those who are illiterate, suggesting that

education is not a sufficient explanation for the observed difference. The findings are interpreted in the context of the bilingual advantages in attention and executive functions.

[M]

Quality of Life, Rehabilitation, Therapy

M1. Chaitra, S. Manual for Adult Fluent Aphasia therapy in Kannada. Unpublished Dissertation (Guide : Goswami, S.P.), AIISH, Mysore

Abstract : The study aimed to develop a manual for treatment for adults with fluent aphasia in Kannada. It is based on the linguistic characteristic of fluent aphasics. It consists of six domains : Functional communication (FC), auditory comprehension (AC), repetition (R), expression (E), Naming (N), reading and writing (R&W). the sub sections under each domains focuses on improving overall communication abilities of persons with aphasia.

Keywords: Aphasia, Treatment, Communication.

M2. Kiran, S., & Krishnan, G. (2012). Validation and preliminary standardization of stroke and Aphasia Quality of life scale in Kannada. Paper presented at the Annual Conference of Indian Speech and Hearing Association, Hyderabad.

Abstract : The English version of SAQOL-39 was culturally adapted to the Indian context and later translated to kannada language. This translation version was validated through a forward-backward translation scheme. This version was administered on a group of 32 people with aphasia. The psychometric properties of the kannada version of SAQOL-39 showed good test-retest reliability and internal consistency. Further, the instrument also showed good acceptability as most of the participants answered all the items. With respect to the quality of life, people with aphasia exhibited overall poor ratings, especially on communication domain.

Keywords : Aphasia, Quality of Life, SAQOL-39, Kannada.

M3. Krishnan, G., Tiwari, S., (2010) Rehabilitation of Bilingual Aphasia in India : An SLP Survey; Paper presented at International symposium on Bilingual Aphasia (ISBA), AIISH, Mysore.

Abstract : The present study surveyed a group of practicing SLPs in India on the issues they faced in the rehabilitation of people with bilingual aphasia. The survey reflected several issues such as lack of standardized assessment instruments, adequate time for detailed assessment and the clinicians lack of proficiency in the language the subjects use for communication. Majority of the responses were observed to make adequate as well as logical decisions while assessing people with bilingual aphasia as evidenced by gathering information on the premobid proficiency levels in each language, deciding upon the language selection for rehabilitation, encouraging language switching and mixing etc. However, we observed poor consensus on the treatment approaches selected for a given linguistic disturbances and lack of up-to-date knowledge on latest experimental evidences on rehabilitation.

Keywords : Rehabilitation, bilingual aphasia, India.

M4. Malathy, S. Aphasia therapy – Guidelines for Home Training . Unpublished Dissertation (Guide : Karanth, P.), AIISH, Mysore

Abstract : This is a home training program for persons with different severities of aphasia to caste their linguistic demands during the recovery period.

Keywords : Aphasia, Home Training, Recovery.

M5. Prafull. Word Retrieval Manual for Hindi Aphasics. Unpublished Dissertation (Guide : Goswami, S.P.), AIISH, Mysore

Abstract : This study aimed at developing a treatment manual for word retrieval deficits in Hindi speaking aphasics. This manual is based on general principles and guidelines reported in the literature. The treatment tasks were divided under two broad categories. Level I (Task of maximal performance) and Level II (Speed task). Under these tasks various naming categories were designed.

Keywords : Aphasia, treatment, Naming, Hindi.

M6. Ramya (2008). Quality of life in individual with aphasia. Unpublished Dissertation (Guide : Veena, K.D.). Manipal University, Manipal.

M7. Richa, N.D. (2004). Manual for adult non-fluent aphasia therapy in Hindi. Unpublished Dissertation (Guide : Goswami, S.P.), AIISH, Mysore.

Abstract : This study aimed at developing a manual for treatment of non-fluent aphasia in Hindi for adults. This manual is based on general principles and guidelines prescribed in literature. This manual consists of five major domains such as Functional communication (FC), Repetiton (R), Comprehension and Expression (C & E), Naming (N), Independent series (I). The various subsections deal with major linguistic parameters under each of the domain. Familiar training material is used in this manual.

Keywords : Aphasia, Treatment, Hindi, Communication.

M8. Singh, K. Comparative study of lexical training in normal and aphasics. Unpublished Dissertation (Guide : Shyamala, K.C.). AIISH, Mysore

Abstract : This study aimed at identify the most successful technique in lexical training and its effectiveness in aphasics. Thirty English-Speaking, normal participants in the age range of 18 to 30 years were selected and randomly grouped into three categories. The training methods used for each group were repetition, reading aloud, orthographic cues, respectively. Additionall, four participants with aphasia (2 Broca's & 2 Anomic's) were trained in similar

way. Orthograhic cueing proved to be the best of all the three in both groups. The author thus argued the aphasia therapy should be directed at the functional damage.

Keywords : Aphasia, Lexical training, Orthography, Reading.

M9. Kasturi VJ, Goswami S. Task Compliance to App-based Rehabilitation in Persons with Aphasia in India. International Journal of Mind, Brain and Cognition 2019, V.10(1-2) 96-108

Abstract : In an attempt to study the usage of an app-based therapy in the Indian scenario, the association between task compliance and personal factors like age, if any intervention was sought previously, caregiver support; environmental factors like if the therapy was guided or remotely administered was explored. Task compliance was studied in 18 Persons with Aphasia (PWA) using Hindi version of Constant Therapy (CT) an iPad (Apple Inc., Cupertino, CA) software platform on a set of 20 tasks spread across a span of three to five sessions. The study yielded certain pertinent findings highlighting the importance of knowledge of benefits of aphasia therapy in rehabilitation, family support and assistance by the therapist in order to maintain a good compliance to therapy. The study thereby intends to highlight the applicability of principles of Life Participation Approach to Aphasia (LPAA) in the purview of tele-rehabilitation

M10. Tiwari S, Krishnan G. Aphasia rehabilitation in india: a preliminary survey of speech-language pathologists. Journal of the All India Institute of Speech & Hearing. 2011 Jan 1;30.

Abstract : This study aimed to investigate the issues speech-language pathologists (SLPs) face in the rehabilitation of people with aphasia (PwA) in India. A survey questionnaire was distributed to 540 SLPs through e-mail. Among 437 survey recipients, 61 SLPs participated in the study. The questionnaire explored various 'client-related' and 'clinician-related' issues in the rehabilitation of PwA in addition to the sections that gleaned into the clinician and therapy characteristics, and finally the SLPs' concerns toward aphasia rehabilitation. The major 'client-related' issues highlighted were: poor economic status, distant therapy centres, poor family support and subjects' motivation, associated problems (e.g. hemiplegia), acute stage, lack of awareness about aphasia and its management in the common public. The main 'clinician-related' issues were the lack of adequate time for rehabilitation and the general inefficiency of the therapy techniques. More importantly, the survey stressed on the lack of basic epidemiological research on aphasia in India. Being a preliminary survey of first in its kind, the study revealed several basic issues in the rehabilitation of PwA confronted by SLPs in India.

M11. Goswami SP, Rachel V. Manual for Adult Aphasia Therapy. InHandbook of Research on Psychosocial Perspectives of Human Communication Disorders 2018 (pp. 345-362). IGI Global.

Abstract : His chapter is a treatment manual developed to aid professionals working in the field of rehabilitation of persons with aphasia in India. It is clinically field tested and has proved to be effective in the treatment of persons with fluent and non-fluent aphasia. This chapter provides a brief and comprehensive overview of the manual, information on its contents, and an outline about its use in clinical settings. The reader can also develop an understanding of how to assess baseline, document progress, and systematically record the outcomes of therapy.

This chapter is a clinically invaluable therapy material for speech-language pathologists working in the country.

M12. Goswami SP, Shanbal JC, Samasthitha S, Navitha U. Field testing of manual for adult: non-fluent aphasia therapy in Kannada (Manat-k). Journal of the All India Institute of Speech & Hearing. 2012 Jan 1;31.

Abstract : Abstract: The treatment of people with aphasia requires systematic approach for facilitation of recovery. Persons with aphasia exhibit divergent symptoms which vary according to the type and severity of aphasia. Use of culturally relevant material plays a vital role for bringing about heightened progress which results in effective generalization. It is also important to chart the progress in a systematic manner to contribute towards evidence based practice. Hence, there is a need to develop a manual which provides structured activities for persons with various types of aphasia. This manual is an outcome of the field tested project MANAT-K. The results of the study have shown that the performance of the ten participants with non-fluent aphasia using MANAT-K improved in its various domains i.e. functional communication, repetition, comprehension and expression, naming and reading and writing.

M13. Patra C, Sarkar S, Guha D, Dasgupta MK. Clinico-etiological profile of childhood stroke in a Tertiary Care Hospital in Eastern India. Journal of neurosciences in rural practice. 2015 Oct;6(4):515.

Abstract :Background: The clinical pattern and etiology of stroke may vary over time or with geographical location. In Asian countries, specific etiology and outcome of childhood stroke have been rarely reported. **Objective:** To determine the clinical and etiological pattern of childhood stroke and their outcome in a Tertiary Care Center. **Materials and Methods:** This study was conducted in a Tertiary Care Hospital of Kolkata over a period of 3 years. All children from 6 months to 12 years, diagnosed as childhood stroke by radio-imaging were included in our study. Children presenting with paraplegia/paraparesis were excluded. Etiologies were determined on the basis of clinical examination, related blood investigations and radio-imaging findings. Data gathered from the stroke patients were entered into a preformed proforma and appropriate statistical analyses were done. **Result:** Most commonly found clinical presentation was hemiparesis (70.6%). Next in place was a seizure (61.8%) and alteration of consciousness (58.8%). The most common etiology of childhood stroke in our hospital was found to be an intracranial infection (41.2%), followed by vascular etiology. Stroke was ischemic in nature in 91.2% of cases. Among the clinical features, vomiting, alteration of sensorium, and fever were significantly ($P < 0.01$) more in infectious cases of stroke, but hemiparesis was significantly ($P < 0.05$) more common in noninfectious etiology. Most of the cases of noninfectious etiology (95%) completely recovered without any persistent neurodeficit or mortality. **Conclusion:** Intracranial infection is the commonest etiology of stroke in pediatric patients presenting at our hospital. Commonest type is an ischemic stroke. The most of the patients completely recovered from the acute neurological insult after proper and timely management.

Keywords: Hemiplegia, infections, outcome, stroke

M14. Navya A, Swetha G, Gupta P, Gopikishore P. Telepractice in speech-Language Pathology in india. Telerehabilitation in Communication Disorders and Mental Health. 2020:17.

Abstract : Technological advancements have made life easier and more comfortable. Especially the various forms of 'tele'communications have reached greater heights with the advent of the audio and video transmissions in real-time. The Greek word tele means remote or distant (Darkins and Cary 2000) and this is used to transfer information over a distance through telegraph, telephone and television (Book)

M15. Rao PK, Yashaswini R. Telepractice in speech-language pathology and audiology: Prospects and challenges. Journal of Indian Speech Language & Hearing Association. 2018 Jul 1;32(2):67.

Abstract : With the advancement in science and technology, the information and communication technology (ICT) mode has been put to best use in the health-care sectors. Unlike health, communication disorders pose special challenges to service delivery. The Discipline of Speech-Language Pathology and Audiology is an integrated health-care profession which is only about half-a-century old in India. The disproportion in the ratio of qualified service providers to service receivers is highly prevalent. In view of this, "Telepractice" (The term telepractice is used in this article to mean tele-rehabilitation for persons with communication disorders since the service comprises of multifaceted objectives such as rehabilitation in the Discipline of Speech-Language Pathology and Audiology) as a means of "reaching the unreached" fits well when the service delivery is provided across geographic, time, social, and cultural barriers using ICT mode. Telepractice is generally provided from a remote site using store-and-forward as well as real-time technology using ICT platforms. The platform for telepractice in India is well set, with a considerable number of people being "digitally literate." Yet, there are several concerns such as development of professional skills for telepractice; development and validation of digital resources; empirical studies on face-to-face, virtual, or hybrid service delivery; revision of code of ethics for telepractice; and mechanism to protect client's privacy on e-platforms that need to be addressed if telepractice has to be launched on a large scale in India. Insights gained from the work carried out at the Telecenter for Persons with Communication Disorders highlight on the advantages of telepractice from client/caregiver's perspective besides reflections on the prospects and challenges of telepractice in India. Keywords: Audiology, India, prospects and challenges, speech-language pathology, telepractice

M16. Srinivasan S, Mathew SN, Lloyd LL. Insights into communication intervention and AAC in South India: A mixed-methods study. Communication Disorders Quarterly. 2011 Aug;32(4):232-46.

Abstract : This study investigated current trends in communication intervention and augmentative and alternative communication (AAC) in southern India through a mixed-methods design. Study participants (N = 18) were special educators, speech-language pathologists, and behavior therapists. Responses from the questionnaire were quantitatively analyzed. Open-ended interview questions were recorded and qualitatively analyzed for emergent themes. The results are presented as descriptive statistics and insights. Some prevalent perspectives conveyed by the participants include that (a) communication intervention should be a structured, child-centric process, using a collaborative team model; (b) parents play an integral role in decision making and intervention; (c) because of the diversity that exists in India, cultural and linguistic issues are imperative in decision making and intervention; (d) use of better materials and technology can improve intervention; (e) better training programs are needed; and (f) more conference, workshops, seminars are required as a common platform for professionals to learn and interact.

Keywords : communication intervention, AAC, augmented and alternative communication, India, service delivery

M17. Thomas RM, Kaipa R. The use of non-speech oral-motor exercises among Indian speech-language pathologists to treat speech disorders: An online survey. South African Journal of Communication Disorders. 2015;62(1):1-2.

Abstract : OBJECTIVE: Previous surveys in the United States of America (USA), the United Kingdom (UK), and Canada have indicated that most of the speech-language pathologists (SLPs) tend to use non-speech oral-motor exercises (NSOMEs) on a regular basis to treat speech disorders. At present, there is considerable debate regarding the clinical effectiveness of NSOMEs. The current study aimed to investigate the pattern and extent of usage of NSOMEs among Indian SLPs. **METHOD:** An online survey intended to elicit information regarding the use of NSOMEs was sent to 505 members of the Indian Speech and Hearing Association. The questionnaire consisted of three sections. The first section solicited demographic information, the second and third sections solicited information from participants who did and did not prefer to use NSOMEs, respectively. Descriptive statistics were employed to analyse the responses that were clinically relevant **RESULTS:** A total of 127 participants responded to the survey. Ninety-one percent of the participants who responded to the survey indicated that they used NSOMEs **CONCLUSION:** The results suggested that the percentage of SLPs preferring to use NSOMEs is similar to the findings of surveys conducted in the USA, the UK, and Canada. The Indian SLPs continue to use NSOMEs based on a multitude of beliefs. It is important for SLPs to incorporate the principles of evidence-based practice while using NSOMEs to provide high quality clinical care

M18. Bhattacharya S, Sarkar S, Basu A. Sanyog: A speech enabled communication system for the speech impaired and people with multiple disorders. Journal of Technology in Human Services. 2007 May 7;25(1-2):177-80.

Abstract : The paper presents a multilingual communication tool that has been designed for helping in the communication needs of people with severe speech and multiple disorders. The system accepts icons, selected through special access switches, as input and can form natural language sentences, which can be spoken out using in-built text-to-speech synthesizer. The system has been deployed and is being field tested at the schools for the children with cerebral palsy in India.

KEYWORDS: Augmentative communication, iconic communication, natural language generation, Indian languages, text-to-speech

M19. Mohan HS, Anjum A, Rao PK. A survey of telepractice in speech-language pathology and audiology in India. International journal of telerehabilitation. 2017;9(2):69.

Abstract : Telepractice has emerged as a form of service delivery to assess and treat individuals with communication disorders. The present study surveyed speech-language pathologists and audiologists in India about the use of telepractice. Two hundred and five (N=205) speech-language pathologists and audiologists responded to a questionnaire, with 12.19% reporting their use of telepractice to deliver clinical services. Respondents also

indicated an urgent shortage of professionals in India to deliver clinical services in speech-language pathology and audiology, and opined that these needs can be met via the use of telepractice. India is well known throughout the world for the advanced application of Information and Communication Technology (ICT), with 931.95 million telephone subscribers, over 900 million mobile phone users, and the second-largest mobile phone usage in the world. India has also experienced a tremendous rise in the number of internet users. Therefore, India is well poised to fully develop telepractice to overcome the barriers of distance and amplify the availability of speech-language pathology, audiology and other healthcare services. But first, the widespread use of telepractice throughout the nation will require an improved infrastructure (e.g., to uphold privacy and security); training for professionals; and telepractice policies. While very promising, the deployment of telepractice throughout India will require the attention of policy makers and government organizations.

Keywords: Audiology, India, Speech Language Pathology, Telehealth, Telepractice

M20. Mitra IH, Krishnan G. Adaptation and validation of stroke-aphasia quality of life (SAQOL-39) scale to Hindi. Annals of Indian Academy of Neurology. 2015 Jan;18(1):29

Abstract : Background: Stroke is a major detriment to the quality of life (QOL) in its victims. Several functional limitations following stroke contribute to the denigrated QOL in this population. Aphasia, a disturbance in the comprehension, processing, and/or expression of language, is a common consequence of stroke. Yet, in most Indian languages, including the national language (Hindi), there are no published tools to measure the QOL of persons with stroke-aphasia. Objective: The current study was carried out to adapt and validate a well-known tool to measure the QOL (i.e., Stroke-Aphasia Quality of Life-39; SAQOL-39) to Hindi. **Materials and Methods:** We presented the original (English) version of the SAQOL-39 to a group of six Hindi-speaking Speech Language Pathologists hailing from the central and northern regions of India to examine the sociocultural suitability of items and indicate modifications, if any. The linguistic adaptation was performed through a forward-backward translation scheme. The socioculturally and linguistically adapted (to Hindi) version was then administered on a group of 84 Hindi-speaking persons with aphasia to examine the acceptability, test-retest reliability as well as the internal consistency of the instrument. **Results:** The SAQOL-39 in Hindi exhibited high test-retest reliability (ICC = 0.9) as well as acceptability with minimal missing data. This instrument exhibited high internal consistency (Chronbach's $\propto$ = 0.98) as well as the both item-to-total and inter-domain correlations. **Conclusions:** The socioculturally and linguistically adapted Hindi version of SAQOL-39 is a robust tool to measure the QOL of persons with stroke-aphasia. It may serve as an essential tool to measure the QOL in this population for both clinical and research purposes.

Keywords: Aphasia, Hindi, India, stroke, quality of life

M21. Raju R, Krishnan G. Adaptation and validation of stroke-aphasia quality of life (SAQOL-39) scale to Malayalam. Annals of Indian Academy of Neurology. 2015 Oct;18(4):441.

Abstract : Background: Aphasia, an acquired inability to understand and/or speak language, is a common repercussion of stroke that denigrates the quality of life (QOL) in the affected persons. Several languages in India experience the dearth of instruments to measure the QOL

of persons with aphasia. Malayalam, the language spoken by more than 33 million people in Kerala, the southern state of India, is not an exception to this. Objective: This study aimed to adapt and validate the widely-used stroke-aphasia quality of life (SAQOL-39) scale to Malayalam. **Materials and Methods:** We required seven Malayalam-speaking Speech Language Pathologists (SLPs), hailing from different regions of Kerala, to examine the socio-cultural suitability of the original items in SAQOL-39 and indicate modifications, wherever necessary. Subsequently, the linguistic adaptation was performed through a forward-backward translation scheme. The socio-culturally and linguistically adapted Malayalam version was then administered on a group of 48 Malayalam-speaking persons with aphasia to examine the test-retest reliability, acceptability, as well as the internal consistency of the instrument. **Results:** The Malayalam SAQOL-39 scale showed high test-retest reliability (intraclass correlation coefficient, ICC = 0.91) as well as acceptability with minimal missing data (0.52%). Further, it yielded high internal consistency (Chronbach's $\propto$ = 0.98) as well as item-to-total and inter-domain correlations. **Conclusions**: The Malayalam version of SAQOL-39 is the first socio-culturally and linguistically adapted tool to measure the QOL of persons with stroke-aphasia speaking this language. It may serve as a potential tool to measure the QOL of this population in both clinical practice and future research endeavors.

Keywords: Aphasia, India, Malayalam, quality of life, stroke

M22. Swati B. Burden of Persons with Aphasia on the caregivers. Unpublished Dissertation (Guide L Goswami, S.P.), AIISH, Mysore

Abstract : this study aimed at develoing and administering a questionnaire to asses the burden among care givers of persons with aphasia. Thirty adults caregivers (7 for fluent type & 23 for non-fluent type) of persons with aphasia were taken for the study. The questionnaire consisted of 40 items distributed under seven domains: psychosocial, emotional, personal relationship, care responsibility, caregiver health-related problems, communication expectation, and caregiver's communication style. The study showed that the burden of caregivers was more in three domains: care responsibility, communication expectation and caregiver's communication style.

Keywords : Caregivers, Burden, Aphasia, Psychosocial, emotional communication.

M23. Bhatnagar SC, Silverman F. Communicating with nonverbal patients in India: inexpensive augmentative communication devices. Asia Pacific Disability Rehabilitation Journal. 1999;10:52-8.

Abstract : Various communication prostheses have been developed to augment the limited communication abilities in children and adults who are speechless because of developmental disabilities or neurological diseases. Communication boards remain the most economical of such communicative prostheses. Five communication boards in Hindi containing alphabet, words, and pictures are discussed, which were developed to assist non-verbal persons in northern India, and which have been used to promote communication with adults with stroke. These communication boards can equally be used with minimum modification by both developmentally disabled children and neurologically impaired adults.

M24. Krishnan G, Tiwari S, Kiran S, Chengappa S. Crosslinguistic generalization of semantic treatment in aphasia: Evidence from the Indian context. Clinical Aphasiology Conference > Clinical Aphasiology Conference (2014 : 44th : St. Simons Island, GA : May 27-June 1, 2014

Abstract: The last two decades witnessed several novel treatment approaches to aphasia therapy. Semantic feature-based therapy is one of such treatment approaches that gained considerable research attention (Boyle & Coelho, 1995). More importantly, this treatment approach has been found effective in bilingual persons with aphasia. For instance, Edmonds and Kiran (2006) administered semantic feature based therapy in Spanish-English bilingual persons with aphasia and reported of crosslinguistic generalization of treatment effect to untreated language. This promising research, however, needs to be replicated and extended to novel language pairs. Research on crosslinguistic generalization of treatment effects is of paramount importance to multilingual countries like India. For instance, with several hundreds of languages and dialects spoken across India and with the pervasive use of English as second language, speech language pathologists (SLPs) in the country are often baffled on the selection of language for treatment in bilingual persons with aphasia. Empirical evidence from Indian languages would add confidence to the SLPs while selecting language for treatment in person with aphasia. In this context, the current study aimed to replicate and extend the earlier findings on crosslinguistic generalization of treatment effects in bilingual persons with aphasia to the Indian context.

M25. Krishnan G, Tiwari S, Kiran S and Chengappa SK (2014). CROSSLINGUISTIC GENERALIZATION OF SEMANTIC TREATMENT IN APHASIA: EVIDENCE FROM THE INDIAN CONTEXT. *Front. Psychol. Conference Abstract: Academy of Aphasia -- 52nd Annual Meeting.* doi: 10.3389/conf.fpsyg.2014.64.00059

Abstract : In the current study, we examined the nature of crosslinguistic generalization of treatment for Indian bilinguals with aphasia. We recruited three bilingual (Kannada-English) persons with aphasia and used the treatment protocol described by Edmonds and Kiran (2006). Our findings showed a striking similarity with the previous study, thus providing further empirical evidence for crosslinguistic generalization of semantic treatment in aphasia, especially from an unexplored language pair.

M26. Kaur H, Bajpai S, Pershad D, Sreenivas V, Nehra A. Development and standardization of Indian aphasia battery. Journal of Mental Health and Human Behaviour. 2017 Jul 1;22(2):116.

Abstract ; **Background:** Aphasia is a language disorder which may disrupt an individual's functioning. To plan a mode of therapeutic/rehabilitative work, it is important to assess problems from a neuropsychological perspective focused on remediation of the impaired processes or compensation through the intact processes or both. **Aim:** Due to the paucity of tests available for the assessment of aphasia in the Indian population with specific colloquial expression, the aim of the present study was to develop an aphasia test for Hindi-speaking population and to provide evidence with its reliability and validity. **Methods:** The conception of the test took place in two phases: Phase 1 was the development of Indian Aphasia Battery (IAB) and Phase 2 was its standardization. IAB was administered along the Hindi adaptation of the Western Aphasia Battery (WAB-H) on participants with aphasia, probable aphasia, and healthy volunteers. **Outcomes and Results:** Based on the results of this study, IAB has a high concurrent validity and test–retest reliability in comparison to WAB-H. The subtests are

sensitive enough to contribute to global aphasia quotient as a functional measure of aphasia in Indian brain-damaged patients. **Conclusion:** IAB is a quick and easy to administer measure for assessment of aphasia in Hindi-speaking population with high reliability and validity.

Keywords: Aphasia, aphasia quotient, India, language, neuropsychology

M27. Shenoy R, Nayak S, Hegde MK, Kini N, Kundapur PP, Krishnan G. Development of an android application in kannada to enhance picture naming skills in persons with aphasia. In2017 International Conference on Advances in Computing, Communications and Informatics (ICACCI) 2017 Sep 13 (pp. 2134-2140). IEEE.

Abstract : Stroke is one of the leading causes of death and disability in India, and the prevalence of this disorder shows a steep rise in the recent decades. Among the many consequences of stroke, the loss of the ability to use language - i.e., aphasia - is a major detriment to the quality of life of the affected individuals. In the recent past, the rise of model-driven treatment approaches has shown promising effects in persons with aphasia. Two such techniques to enhance naming are the Semantic Feature Analysis and Phonological Component Analysis techniques. These two techniques focus on entirely different constructs in language. The first one focuses on the semantic or conceptual training, whereas, the second focuses on the sound-based training in patients with naming difficulties after stroke-aphasia. Despite the availability of such effective techniques, a major constraint is the availability of trained personnel to provide such training to the needy persons who reside far from the clinical facilities. Present day technological advances may fill this lacuna. Method: Preparation of training set by using phonological component analysis technique for naming considering psycholinguistic properties such as familiarity and imagibility of words was done. A set of 150 words was subjected for rating by nine individuals. Considering the best rating among these raters, the final 100 set was selected for training items in android platform. The android application was developed (MAT-APP naming module one) using Android Studio for designing the user interface. MySQL is used as the backend database. To ensure monitoring of patient performance the MAT-APP has an interface with a web application. Results: We expect that android application considering theoretical aspects of language processing can provide a potential value in distant rehabilitation and also better service delivery in various problems mentioned in literature

M28. Pallavi J, Perumal RC, Krupa M. Quality of Communication Life in Individuals with Broca's Aphasia and Normal Individuals: A Comparative Study. Annals of Indian Academy of Neurology. 2018 Oct-Dec;21(4):285-289.

Abstract ; Background: Aphasia is a neurogenic communication disorder with significant deficits in various domains of language and communication. One such type of aphasia, which impacts the quality of life significantly is Broca's aphasia, where the individual is aware of the communication difficulty. **Objective**: To compare the Quality of Communication Life (QoCL) between individuals with Broca's aphasia and normal individuals. **Methods**: The first phase of the study translated and validated QCL scale in Tamil. The second phase involved administration of the Tamil QCL scale on 12 individuals with Broca's aphasia and 12 age matched normal adults. The marked responses were analysed on a visual analogue scale independently. Statistical Analysis: Three domains of QoCL were compared between the two groups using Mann–Whitney U-test. **Results**: The QoCL scores across three domains were

observed to be lower in individuals with Broca's aphasia, when compared to normal adults. Individuals with Broca's aphasia expressed greater challenges in socialization/activities domain of QoCL than confidence/self-concept and roles and responsibilities domains. **Conclusions**: Information obtained on self-reported QCL scale in familiar or native language will facilitate in planning client-oriented management of aphasia.

Keywords: Broca's aphasia, quality of communication life, Tamil

M29. Deepak P, Goswami S. P. Effectiveness of Semantic-based Treatment in Persons with Aphasia. Annals of Indian Academy of Neurology, 2020 Aug;23(2):120

Abstract : Background: Semantic-based treatment is the salient approach used to remediate word retrieval deficits in persons with aphasia (PWAs). It is deemed to improve semantic attributes around the target word, thus aids in restoring word retrieval abilities. Hence, the present study has developed a semantic-based therapy named semantic cueing of verbs and its thematic role (SCVTr). Also, this therapy uses verbs as a core element accompanied by graded levels of semantic cues. Aim: The current study Semantic Cueing of Verbs and its Thematic role (SCVTr) aimed to evaluate the effect of word retrieval abilities in PWAs. **Methods and Procedure:** Three participants (*n* = 3) with aphasia were recruited for the study. All the participants in the study received SCVTr therapy, and the responses were analyzed at three distinct time points. That is pre-therapy assessment (before initiation of therapy), mid-therapy assessment (10th session), and post-therapy assessment (20th session). Nouns, verbs, and discourse abilities of PWAs were evaluated using standardized test batteries. Outcomes and **Results**: The study results have discerned positive gains across trained conditions and discourse genres across all the participants. However, participants exhibited marginal gains with untrained stimuli. In addition, SCVTr therapy aids in modifying the error pattern exhibited by PWAs. Concurrently, researchers noted that all participants showed ameliorated performance on the standardized language test batteries during post-therapy evaluation. **Conclusions**: SCVTr therapy has found to be effective in remediating word retrieval deficits in PWAs. This study extends the knowledge about strengthening the semantic network associated with the target word and its effect on generalization.

Keywords: CVA, discourse, nouns, verbs, word retrieval

M30. Kuo JY, Hu X. Counseling Asian American adults with speech, language, and swallowing disorders. Contemporary Issues in Communication Science and Disorders. 2002 Mar 1;29(Spring):35-42.

Abstract : The population of Asian Americans has increased dramatically during the past two decades. Today, speech-language pathologists are much more likely than 20 years ago to encounter Asian adults with speech, language, or swallowing deficits. Due to the limited number of Asian speech-language pathologists in this country, treatment is usually provided by non-Asian speech-language pathologists. Therefore, all speech language pathologists should know the characteristics of Asian individuals. The purpose of this article is to discuss the prevalence of speech, language, and swallowing disorders among Asian American adults and show how speech-language pathologists can collaborate with Asian communities and better

understand the Asian culture in order to facilitate the process of counseling during interventions.

Keywords : Asian, Asian American, Asian cultural values, counseling

M31. Mohapatra B, Shisler Marshall R, Laures-Gore J. Yogic breathing and ayurveda in aphasia: a case study. Topics in stroke rehabilitation. 2014 May 1;21(3):272-80.

Abstract : Purpose: We present a case study of a woman who used yogic breathing as Ayurvedic medicine in her recovery from poststroke aphasia. Ayurvedic medicine is one of the most ancient medicines of the world, but it is not widely used for aphasia rehabilitation in many Western countries. The description of this case aims to further the understanding of the benefits that this type of medicine may provide to poststroke patients living with aphasia. Method: After her stroke, the patient received brief conventional language therapy for her aphasia. At 5 weeks post stroke, she received no further conventional rehabilitation; instead, she consulted with a Vedic priest. She followed a regimen of different body manipulations, yogic breathing techniques, and ingestion of coconut oil. Cognitive and language testing was performed throughout a 3-month period while she was involved in this therapy. Results: Overall, improvement was noted in language, visual attention, and some mood measures. Conclusion: Although case studies lead to limited conclusions, changes were observed for this individual using Ayurvedic medicine. Given the changes in language and some aspects of cognition seen in this patient, further exploration of the effectiveness of yogic breathing and Ayurvedic medicine in the treatment of poststroke aphasia is warranted.

Keywords: Aphasia, attention, Ayurveda, language, mood, yoga

M32. Bonner B, Pillai R, Sarma PS, Lipska KJ, Pandian J, Sylaja PN. Factors predictive of return to work after stroke in patients with mild– moderate disability in India. European journal of neurology. 2016 Mar;23(3):548-53.

Abstract : Background : Successful return to work after stroke may improve economic circumstances, quality of life and overall life satisfaction, but not all stroke survivors are able to return to work. **Aim :** Our aim was to determine what proportion of previously employed patients return to work after an acute stroke resulting in mild to moderate disability and to examine factors associated with a successful return to work. **Methods :** Patients 18–60 years of age who were previously employed and who had a first-ever stroke 3 months to 2 years previously resulting in mild to moderate disability (modified Rankin score ≤3) were recruited. Socio-demographic and clinical information was collected and anxiety, depression and social support were assessed using previously validated instruments. Multivariate logistic regression was used to assess factors associated with a successful return to work. **Results :** Of 141 patients (mean age ± SD 48 ± 8.8 years), 74 (52.5%) returned to work after stroke. Multivariate analysis demonstrated that a lower modified Rankin scale at 3 months [odds ratio (OR) 3.70, 95% confidence interval (CI) 1.77–7.76], younger age (OR 2.24, 95% CI 1.07–4.67) and a professional or business job (OR 3.02, 95% CI 1.44–6.34) were significantly associated with successful return to work and revealed that anxiety, depression and social support score did not affect patients' decision to return to work (P = 0.17, 0.61 and 0.27, respectively). **Conclusions :**Amongst patients with mild to moderate disability after stroke, almost half do

not return to work, and this is determined by functional disability and type of job rather than psychosocial factors such as anxiety and depression.

M33. Bhatnagar SC, Silverman F. Communicating with nonverbal patients in India: inexpensive augmentative communication devices. Asia Pacific Disability Rehabilitation Journal. 1999;10:52-8.

Abstract : Various communication prostheses have been developed to augment the limited communication abilities in children and adults who are speechless because of developmental disabilities or neurological diseases. Communication boards remain the most economical of such communicative prostheses. Five communication boards in Hindi containing alphabet, words, and pictures are discussed, which were developed to assist non-verbal persons in northern India, and which have been used to promote communication with adults with stroke. These communication boards can equally be used with minimum modification by both developmentally disabled children and neurologically impaired adults.

M34. Kesav P, Vrinda SL, Sukumaran S, Sarma PS, Sylaja PN. Effectiveness of speech language therapy either alone or with add-on computer-based language therapy software (Malayalam version) for early post stroke aphasia: A feasibility study. Journal of the neurological sciences. 2017 Sep 15;380:137-41.

Abstract : Context and aims : This study aimed to assess the feasibility of professional based conventional speech language therapy (SLT) either alone (Group A/less intensive) or assisted by novel computer based local language software (Group B/more intensive) for rehabilitation in early post stroke aphasia. **Settings and design :** Comprehensive Stroke Care Center of a tertiary health care institute situated in South India, with the study design being prospective open randomised controlled trial with blinded endpoint evaluation. : **Material and methods :** This study recruited 24 right handed first ever acute ischemic stroke patients above 15 years of age affecting middle cerebral artery territory within 90 days of stroke onset with baseline Western Aphasia Battery (WAB) Aphasia Quotient (AQ) score of < 93.8 between September 2013 and January 2016.The recruited subjects were block randomised into either Group A/less intensive or Group B/more intensive therapy arms, in order to receive 12 therapy sessions of conventional professional based SLT of 1 h each in both groups, with an additional 12 h of computer based language therapy in Group B over 4 weeks on a thrice weekly basis, with a follow up WAB performed at four and twelve weeks after baseline assessment. The trial was registered with Clinical trials registry India [2016/08/0120121]. **Statistical analysis :** All the statistical analysis was carried out with IBM SPSS Statistics for Windows version 21. **Result :** 20 subjects [14 (70%) Males; Mean age: 52.8 years ± SD12.04] completed the study (9 in the less intensive and 11 in the more intensive arm). The mean four weeks follow up AQ showed a significant improvement from the baseline in the total group (p value: 0.01). The rate of rise of AQ from the baseline to four weeks follow up (ΔAQ %) showed a significantly greater value for the less intensive treatment group as against the more intensive treatment group [155% (SD: 150; 95% CI: 34–275) versus 52% (SD: 42%; 95% CI: 24–80) respectively: p value: 0.053]. **Conclusions :** Even though the more intensive treatment arm incorporating combined professional based SLT and computer software based training fared poorer than the less intensive therapy group, this study nevertheless reinforces the feasibility of SLT in augmenting recovery of early post stroke aphasia.

Keywords : Aphasia, Speech therapy, Outcome, Computer therapy

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M38. Maya. S, Suresh. P.A., Rehabilitation of Communicative Disorders: Experience outcome and newer perspectives "Brain and Language", Seminar Proceedings, 210; 1994, ISDL Publications, Thiruvananthapuram.

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M42. Venugopal, MB (Author), Goswami SP (Guide). Manual for Adult non Fluent Aphasia therapy in Kannada. Dissertation Number.- D544, AIISH, Mysore

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M48. Ramakrishna, B.S., Nair, K.K., Chiplunkar, V.N., Atal, B.S., Ramachandran, V. & Subramanian, R. Some aspects of relative efficiencies of Indian Language; prA study from information theory point of view. Ranch ; Catholic Press

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Keywords : Aphasia, recovery, prospectiv

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Language Acquisition Normal children Developmental disorders of speech and communication

N1. Karanth, P. (1997). Developmental language disorders South Asian Languages. Paper presented at the South Asian Langauge. Analysis XVIII Roundtable, New Delhi

Abstract : Over the last couple of decades, the developmental language disorders have been increasingly investigated employing linguistics methodology. Much of the current literature in the area however, is based on Western Languages and their alphabetic scripts. Occasional reports from the non-Western hemispheres have raised the possibility that the manifestation of these developmental disorders may be qualitatively different in non-western language and users of non-alphabetic scripts . This paper presents an overview of the work that is being carried out in this area in the Indian context highlighting their significance.

Keywords : Developmental language Disorder, orthography, Alphabetic script.

N2. Sakhuja S. Education for all and learning disabilities in India. Retrieved July. 2004;1:2009.

Abstract : The LD movement in India is of a recent origin and is today comparable with that of its Western counterpart. Reports of lower incidences of LD in the Eastern world were attributed by western scholars to the general lack of awareness and sensitivity among educationists to the specific difficulties faced by children learning to read in overcrowded classrooms. The Nalanda Institute report has highlighted that in India during the last two-decade or so, there has been an increasing awareness and identification of children with LD. Despite this growing interest India still does not have a clear idea about the incidence and prevalence of LD. Unfortunately, epidemiological studies of LD are fraught with difficulties ranging from the very definition of LD, identification, assessment, to socio-cultural factors unique to India. In India, around 13-14% of all school children suffer from learning disorders. Unfortunately, most schools fail to lend a sympathetic ear to their problems. As a result, these children are branded as failures. Samir Parikh, a child psychiatrist opines that dyslexia is not a disease, but it's a lifelong problem and presents challenges that need to be overcome daily. He is however optimistic and argues that with proper diagnosis, appropriate education, hardwork and support from family, friends, teachers and others, a dyslexic can lead a successful and productive life.

What should then be the future strategy to cope and overcome the problem of dyslexia? The first step in this strategy should be early detection, acceptance by parents and broad awareness among the academic community and above all a mature handling of the problem. At the government level, there is a need to formulate a constructive policy in this regard. To see that these steps are implemented, school vigilance and parental awareness are equally essential.

Keywords : Education, Learning Disability, India, Employment

N3. Madhok, P., Praveen HR, R. Manjula (2008). Relational Timing in the Speech of spastic Cerebral Palsy : Base Word context. The Journal of the Indian speech and hearing Association, 12, 89-94

Abstract : Temporal regulation in the speech of spastic is been well illustrated in the present study using a task like Relational Speech Timing (RST) in CP. The study aimed to study relational speech timing in persons with spastic cerebral palsy and normal controls using word sets which are sensitive to the measure of RST and two measures were carried out : Syllabic duration and intersyllabic duration (except for monosyllabic words). 8 sets of words with varying length were selected as stimuli. Each set consisted of Base Word (BW) with two derivational suffix condition. The results indicated longer overall BW syllable duration and suffixed condition in both monosyllatic and bisyllabic structures in spastic revealing an invariant RST. There was reduction in intersyllabic duration in CP group suggesting well preserved RST as that of normal group.

Keywords : Relational Speech Timing, Cerebral Palsy, Syllable Duration, Intersyllabic.

N4. Prema, K.S., Prasitha, P., Savitha, S., Purushothaman, P., Chitra, R. , Balaji,R. (2010). Clinical Markers for Identification of Children with Specific Language Impairment (SLI); Indian journal of applied linguistics, 36, (1-2), 181-198.

Abstract : The condition of Specific Language Impairment (SLI) has aroused immense interest among researchers and practitioner owing to its unique characteristics and clinical manifestations. Children with SLI have offered rich data for understanding of language processing with reference to cognitive functions as well as structural aspects of a given language. Due to the subtlety of its manifestations, attempts have been made to evolve specific clinical markers for SLI. This paper reviews five case studies to examine the significance of clinical (linguistic structural and processing) markers in the identification of children with SLI in the Indian context.

Keywords : Specific language Impairment, cognitive skills, clinical marker.

N5. Shyamala, K.C., Syntactic profiles in Kannada Speaking cerebral palsied children. Paper presented at the Language development and language disorders : Perspective from Indian Languages.

Annotation : In her paper, Shyamala describes the syntactic functions signaled by the single and multiple word utterances of two different clinical categorises of cerebral palsied children, viz. Spastics and Athetoids. Shyamala relies on spontaneously elicited speech samples and descriptive analysis instead of administering a formal language test. She notes that, on the whole, cerebral palsied children seem to response to other's prompts with little, if any self initiated communication. In terms of number of different grammatical functions conveyed as well as total number of single/multiple word utterances produced. Shyamala argues that in studies dealing with the language of the cerebral palsied, it is important to treat short utterances as sentences in order to arrive at meaningful conclusions.

N6. Singh, L., & Singh, N.C. (2008). The development of articulatory signatures in children, Developmental Science 11 (4) 467-473.

Abstract : The ability to perceive and produce sounds at multiple time scales is a skill necessary for the acquisition of language. Unlike speech perception, which develops early in life, the production of speech sounds starts at a few months and continues into late childhood with the development of speech-motor skills. Though there is detailed information available on early phonological development, there is very little information on when various articulatory features achieve adult-like maturity. We use modern spectral analysis to investigate the development of three language features associated with three different timescales in vocal utterances from typically developing children between 4 and 8 years. We make comparisons with adult speech and find age dependence in the appearance of these features. Results suggest that as children get older they exhibit increasingly more power in features associated with shorter time scales, thereby indicating the maturation of fine motor control in speech. Such data from typically developing children could provide milestones of speech production at different timescales. Since impairments in spoken language often provide the first warning signs of a language disorder we suggest that speech production could also be used to probe language disorders.

Keywords : Articulation, spectral Analysis, Motor control.

N7. Subbarao, T.A. (1997). Language analysis of Kannada-speaking children with mental retardation. Paper presented at the South Asian Language Analysis XVIII Roundtable. New Delhi.

Abstract : The normal conversational samples of 60 kannada speaking mentally retarded children with a mental age of 4 to 6 years and 20 normal children in the same age range are compared. A total of 17 scans with in the framework of LARSP, including both quantitative and qualitative measures covering the phonological, syntactic and semantic aspects were are carried out. The findings of the study and its possible application top language intervention programs are highlighted.

Keywords : Mental retardation, conversational analysis, LARSP.

N8. Suresh, P.A. Maya, S,. Praleema, L., Varghese, N., Kumar, B.S., & Radhakrishnan, K., (1997). Heterogenous vs Unifying hypothesis for language, cognition and behavior development: observations from developmental language disorders. Paper presented at the south Asian Language Analysis XVIII Roundtable, New Delhi

Abstract : A pertinent questions often raided in the context of development language disorders is whether they are 'deviant' from normal language performance or distinct language 'disorders'. Leonard (1991) hypothesized that specific language impaired children probably from the lower spectrum of the normal distribution curve of language performances. Tomblin (1991) contrasts this view by substantiating the fact that the regression line correlate only with the mildy affected individuals to normal rather than with the severely affected ones. He also proposed that the 'deviance' vs. 'disorder' approach should consider the type of population that are surveyed. Aram (1991) categorized specific language disorders as a heterogeneous

clinical entity owing to the uneven impairment of language components, making them clinically distinct syndromes 'Difference' vs. 'Deficiency' is often addressed in social linguistic studies of large populations.

Disorders of language and cognitive development invoke two major questions in clinical settings: 'Pervasive' or 'delayed'. A comprehensive approach to child language disorders needs to consider several issues like neurological abnormalities, cognitive dysfunction, behavioural abnormalities, disordered speech, linguistic abnormalities and the structural , neurophysiological or biochemical correlate of these abnormalities. Observations from a comprehensive evaluation carried out on 75 children with different type of developmental language disorders on the above-mentioned strategies revealed several behavior, their plausible neurological bases and developmental relations. A theoretical model for language performance, derived from such observations, is discussed.

Keywords : Developmental language disorder, cognition, behavior.

N9. Swapna, N. (2000). Speech perception abilities in children with specific learning disability. Paper presented at the 1st International Conference 'Neurology, Language and Cognition-2000' Thiruvananthapuram.

Abstract : To objectives of the study is to investigate the performance of children with specific learning disability with respect to the temporal cue VOT. Three syllables (voiced stop consonants (Velar/g/, dental/d/, & Bilabial/b/)} and vowel /a/ were synthesized using a Klatt synthesizer and edited to form a VOT continuum from -50 to+40 msecs. These computer edited tokens were paired using A-B design and iterated three times and audio recorded on a metallic cassette. Ten learning disabled children and ten normal age matched children were tested individually in a school environment. These children were audio-presented with token through headphones and were instructed to judge the pair of tokens as same as different. Each child was initially conditioned to the stimulus by presenting practice tokens. The child's response was recorded on a binary choice response sheet and the percent same different response was recorded on a binary choice response sheet and the percent same different response for each stimulus for each child was calculated. The result indicated that there was a significant difference between learning disabled and normal children for VOT in all the three places of articulation. The learning disabled children changed their percept from voiced to unvoiced at longer VOT's. It could be concluded that fine level discrimination of speech stimuli makes a major contribution in the mastery of the academic skills which is lacking in children with specific learning disability and that this aspect of speech perception should be a part of the rehabilitation process.

N10. Jocine G, Bose C, Subbarao TA, Analysis of narrative skills in 5-6 year old typically developing children; Unpublished, 2009, All India Institute of Speech and Hearing, Mysore

N11. Manju N., Subbarao TA, Comparison of pragmatic skills in high functioning and low functioning typically developing Kinder Gartens; Unpublished, 2009. AIISH, Mysore

N12. Suresh, P.A., Maya, S., Praleema, L., Varghese, N., Kumar, B.S., Radhakrishnan. Hetrogenous vs Unifying hypothesis for language, cognition and behavior development: observations from developmental language disorders. South Asian Language Analysis XVIII Roundtable. Jan 1997.

Abstract : A pertinent question often raised in the context of developmental language disorders is whether they are 'deviant' from normal language performance or distinct language 'disorders'. Leonard (1991) hypothesized that specific language impaired children probably from the lower spectrum of the normal distribution curve of language performances. Tomblin (1991) contrast this view by substantiating the fact that the regression line correlate only with the mildly affected individuals to normal rather than with the severely affected ones. He also proposed that the 'deviance' vs 'disorder' approach should consider the type of population that surveyed Aram (1991) categorized specific language disorders as a hetrogenous clinical entity where uneven impairment of language component, making clinically distinct syndromes. 'Differences' vs 'Deficiency' is often addressed in social linguistic studies of large populations.

Disorders of language and cognitive development invokes two major questions in clinical settings ..; Pervasive' or 'delayed'. A comprehensive approach to child language disorders need to consider several issues like neurological abnormalities, cognitive dysfunction, behavioural abnormalities, speech pathological aspects, linguistic abnormalities and the structural, neurophysiological or biochemical correlate for these abnormalities. Observations on 75 children with different type of developmental language disorders and a comprehensive evaluation of them on the above mentioned strategies revealed several interesting aspects of the interactions of cognitions, language, behavior, their plausible neurological basis and developmental relations. A theoretical mode for language performance is derived from such observations and is discussed.

N13. Subbarao, TA, Language analysis of Kannada-speaking children with Mental retardation. South Asian Langauge Analysis XVIII Roundtable (1997) New Delhi

Abstract : The findings on a comparative analysis of the normal conversational samples of 60 Kannada-speaking mentally retarded children with a mental age of 4 to 6years and 20 normal children in the same age range are presented in the paper. A total of 17 scans within the framework of LARSP, including both quantitative and qualitative measures and covering the phonological, syntactic and semantic aspects were carried out. The findings of the study and its possible application to language intervention programs are highlighted.

N14. Suresh PA, Sebastian, S., Epidemiological and neurological aspects of learning disabilities. Learning Disabilities in India-Willing the mind to learn, edited by Prathibha Karanth and Joe Rozario, SAGE Publications 2003-30-43.

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