Chapter 6

Summary and Conclusion

The present study was aimed at investigating the discourse abilities in monolingual and bilingual persons with dementia (PWD) as compared to healthy elderly (HE). There were certain objectives considered for the present study.

1. To study the discourse abilities in persons with dementia as compared to healthy elderly.

   a) The performance of persons with dementia and healthy elderly on quantitative analysis of picture description using measures of lexical richness.
   b) The performance of persons with dementia and healthy elderly on quantitative measures of conversation using T-unit based analysis.
   c) The performance of persons with dementia and healthy elderly on qualitative measures of picture description and conversation using Discourse Assessment Scale.

2. To study the cognitive linguistic abilities in persons with dementia as compared to healthy elderly.

   a) The performance of persons with dementia as compared to healthy elderly on Addenbrooke's Cognitive Examination Revised.
   b) The performance of persons with dementia as compared to healthy elderly on Cognitive Linguistic Assessment Protocol.

Studies related to dementia in Indian scenario concentrated on measuring specific symptoms and characteristics in the same. There are very few studies which profiled the discourse abilities in persons with dementia. And importantly, studying bilingualism and its effects on discourse abilities in persons with dementia as against to monolingual persons with dementia is a first attempt in Indian context. Understanding the functional communication abilities in persons with dementia is necessary to develop new
approaches and plan appropriate management strategies to help persons with dementia to maintain their communicative abilities despite the progressive nature of the disease. Current study focused on the profiling the discourse and cognitive abilities in monolingual and bilingual persons with dementia as compared to healthy elderly.

A cross sectional population of Kannada and Kannada-English bilingual elderly (70-85 years) participated in the present study. A total of 80 individuals participated in the study which comprised of 60 healthy elderly and 20 persons with mild dementia (PWD). Among the 20 persons with dementia (PWD), 10 were predominantly monolinguals (Kannada) and the remaining 10 were predominantly bilingual speakers (Kannada-English). Out of 60 healthy elderly (HE), 30 were monolinguals and 30 were bilingual speakers. All the participants had minimum of 12 years of formal education. They also had vision and hearing acuity corrected to normal/ near normal limits. The clinical and non-clinical participants were separated based on a set of criteria. General histories with demographic details were taken from all the participants along with the consent for agreeing to participate in the study. The Mini Mental Status Examination (MMSE, Folstein et al., 1975) and Clinical Dementia Rating scale (Hughes et al., 1982) were used to decide the stage of the disease of the persons with dementia.

Data collection involved two phases. The first phase was testing for cognitive linguistic abilities and language proficiency of the participants. This was carried out using Cognitive linguistic assessment protocol (CLAP; Rajasudhakar & Shyamala, 2005), Addenbrooke’s Cognitive Examination Revised (ACE-R, Indian adaptation by Krishnan & Lokesh, 2010) and International Second Language Proficiency Rating Scales (ISLPR) by Wylie & Ingram (2006). The second phase of the data collection involved gathering of discourse genre from the participants. Discourse samples were gathered for picture description and conversation tasks. A cross sectional standard group comparison research design was used for the study.

Video recorded discourse genres were transcribed using IPA (International Phonetic Alphabets) rules. Initial stage of analysis included tabulation of the scores obtained from cognitive linguistic tests, and language proficiency scale. The results
obtained for ACE-R, CLAP and discourse samples were alone subjected to the statistical analysis. The discourse samples were analyzed both quantitatively and qualitatively. Quantitative analysis of picture description was performed using three measures of lexical richness viz, type token ratio (TTR), Brunet’s index (W) and Honore’s Statistic (R). Conversation samples were quantified using T-unit based analysis. Qualitative analyses of the picture description and conversation samples were performed using Discourse Assessment Scale developed by Hema and Shyamala (2009). Each sample was rated by three judges including the experimenter. Inter-judge reliability was measured for qualitative and quantitative analysis using Cronbach’s Alpha co-efficient. An experienced statistician conducted the analysis using SPSS 18 (Statistical Package for Social Science, 18th version).

The salient findings of the present study are discussed under two sections (A & B). Section A includes the performance of PWD and HE on discourse tasks which are measured quantitatively and qualitatively using measures of lexical richness, T-unit based analysis and discourse assessment scale. Section B includes the performance of PWD as compared to HE on Addenbrooke’s Cognitive Examination Revised and Cognitive Linguistic Assessment Protocol.

To summarize the findings of the present study, the section A of the results provided information on the performance of persons with dementia on discourse related tasks. The quantitative analysis of discourse genres detected subtle changes in communicative abilities between the groups in terms of complexity. The sparseness in the description by the group with PWD reflected their inability to retrieve words and provide a detailed discourse genre. Differential performance of monolinguals and bilinguals indicated that monolingual PWD exhibited more number of incomplete and inaccurate clauses, more perseverations and less number of responses which expand the topics than bilinguals. The qualitative analysis of discourse suggested that the monolingual and bilingual PWD differed from each other on topic management, coherence, use of non-specific vocabulary, use of inappropriate speech styles, use of inappropriate intonation contour and repair strategies. The PWD introduced many irrelevant topics in their discourse. There were few instances of extra elaborations but
many instances of minimal elaborations of the topics in their discourse. PWD failed to describe pictures in a single stretch. Their discourse also contained non-meaningful and little information content. It was clearly observed from the discourse of PWD, that it lacked the connection between the sentences and also the discourse lacked meaningfulness.

Thus, the present study assessed cognitive-linguistic abilities in the participants and detected possible cognitive decline which might have influenced the discourse abilities in persons with dementia. It was the empirical evidence that cognitive impairment is the hallmark of dementia.

The conclusions which were made from the present research were,

- The discourse abilities in health elderly qualitatively showed an age related decline.
- The quantitative aspects of discourse related to picture description as well as conversation were adequate in healthy elderly irrespective of the category (monolingual and bilingual).
- On the qualitative analysis of discourse, the comparison between the monolingual and bilingual HE adults indicated that the latter were superior in the areas of topic management, coherence, use of non-specific vocabulary, use of inappropriate speech styles, use of inappropriate intonation contour and repair strategies.
- The better organization and planning skills in HE bilinguals as compared to monolinguals attributes that bilingual HE probably had better forethoughts in describing pictures as compared to monolinguals thus reflecting their good discourse structure.
- There was no significant category effect for the group of health elderly in their performance on cognitive tasks as measured using Addenbrooke’s Cognitive examination revised.
• There was significant difference however, between the categories within healthy elderly for the tasks related to attention, perception & discrimination, memory, problem solving and organization as measured using Cognitive Linguistic Assessment Protocol. The picture description task of discourse and the measurement of lexical richness, detected subtle changes in communicative abilities between the groups (HE and PWD) in terms of complexity. That is, type token ratio (TTR) and Brunet’s index (BI) showed significant difference whereas Honore’s statistic did not differ between the groups. In case of monolingual and bilingual PWD there was significant difference for TTR and BI and not for the HS probably because they considered vocabulary more than the length of utterances. The sparseness in the descriptions of the PWD seems to reflect their inability to retrieve words along with decreased planning and organization skills in PWD.

• The conversation abilities of the participants using T-unit based measures suggested that PWD made significantly more discourse deficits than HE. Number of words per clause and number of words per T-unit was significantly lesser in PWD suggesting the inadequate representation of discourse in the PWD. The reduction in the number of T-units in the utterances of PWD reflected their inability to convey the information in their speech. But this feature along with the number of words per T-unit did not differ between monolingual and bilingual PWD indicating that both the groups of participants were able to convey information equally but complexity in the utterances was higher for bilinguals than monolingual PWD.

• During the qualitative analysis of the discourse it was observed that the bilingual PWD could provide adequate information as compared to monolinguals. The bilingual PWD reacted faster as compared to monolinguals indicating that the monolingual PWD responded with a longer delay. However, none of the PWD from both the categories was able to describe the pictures in a single stretch. Both the categories of PWD had failure in the discourse structures as compared to their typically aging counterpart.
During the analysis related to the cognitive functioning in the participants, the overall result related to ACE-R suggested that there was a significant difference between monolingual and bilingual participants in the clinical group except for verbal fluency tasks. The better performance on verbal fluency may have partially contributed to similar discourse profile irrespective of the differences in the other cognitive tasks. The discussions based on the subtests and the totals of ACE-R showed that the persons with dementia had relatively distinct profiles of neuropsychological impairment.

The overall result of the analysis related to CLAP suggested that there was a high significant difference between the healthy elderly and persons with dementia. The bilinguals performed better as compared to monolinguals in both clinical and non-clinical groups. The results obtained through the analyses of the subtest of CLAP revealed that there was a significant difference between monolinguals and bilinguals in clinical group except for attention, perception and discrimination. This suggested that attention, perception and discrimination abilities are equally impaired in both these groups.

Overall it was found that bilinguals performed better than monolinguals both in clinical participants indicating the important role played by language flexibility during the pathological conditions (dementia in the present study). If there is cognitive advantage for the bilingual persons with dementia, it must also show difference in normal group. On the other hand it may also imply that the utility of bilingualism becomes evident in circumstances that limit the use of reserved resources due to pathology, which otherwise remains unseen on tasks such as the ones used in the present study, as these tasks may be considered relatively simple for the normal population, thereby not requiring to pullout the reserved resources of bilingualism.

To conclude, discourse production distinguishes persons with healthy aging from those with dementia as well as the monolingual and bilingual participants in the clinical group. Another important observation is the differential performance of monolinguals and bilinguals in the clinical group which was not seen in the typical group. Although the
participants in the clinical groups were matched for the diagnosis of the dementia, the bilingual group performed better on all the subtests used to assess cognitive functioning. It is hypothesized that the cognitive functioning is a product of brain structure and physiology which are assumed not to vary among typical individuals. However cognitive abilities and the language use can vary due to the pathology such as dementia which was observed in the present study. The cognitive difficulties experienced by persons with dementia have influenced their discourse production skills which were reflected in their discourse genre. The present study revealed that it is always necessary to include both quantitative and qualitative analysis of discourse genre for the better profiling of the linguistic deficits in dementia.

5.1 Implications of the study.

- The present study demonstrated research and clinical implications of using discourse analysis in the field of rehabilitation of dementia.

- The study employed three measures of lexical richness. These measures helped in gathering a final index as an outcome of extraction of the vocabulary in the spontaneous discourse genre. This index helps one to measure pre and post therapy improvements, for semantic training for the persons with dementia.

- The conversation discourse genre was quantified using T-unit based measures. This method helps to divide the huge discourse sample into different chunks in terms of clauses. This helps the clinician or the researcher to identify the linguistic errors in the discourse and helps in tagging the same. The same can be used to obtain a real time index using the software available for language analysis. This can also be clinically used for assessment and rehabilitation of persons with dementia. It also helps in profiling the linguistic errors in the discourse of persons with dementia.

- The qualitative analysis of the discourse genre identifies the role of speech-language pathologists in the identification, diagnosis, and treatment of measures in the field of dementia are well documented in the present study.
Summary and Conclusion

- The study has provided examples at several instances for providing a better picture of the language or communicative difficulties which are experienced by the persons with dementia and the role of speech-language pathologist to plan for the rehabilitation in an effective manner.

- A very important highlight from the present study is that bilingualism has its advantage right from the cognitive competence till the linguistic coping abilities.

- The study has identified the relative importance of linguistic variables in discriminating persons with dementia from healthy elderly. The outcome thus contributes to the knowledge of changes in persons with mild dementia by providing a database consisting of empirical data regarding subtle cognitive-linguistic changes in them. Further work however, is necessary to explore specific type of deficits among various types of dementia using other methods of discourse analysis.

5.2 Limitations and Future Recommendations.

- The present study was limited to a small number (20 persons with dementia) of clinical participants which restricts the generalization of the findings.

- The participants could not be matched for gender and type of the dementia causing conditions so that the sensitivity of the study would have been enhanced.

- The study incorporated only spontaneous speech sample and hence further studies focusing on lexical related tasks with the restricted language environment are necessary.

- The study could be replicated using other methods of discourse analysis such as cohesion analysis, critical discourse analysis, socio-cognitive discourse analysis, etc.

- Further research investigating the way bilingualism affects cognitive and linguistic performance across the life span will help in evidence based conclusion of the research findings.