CHAPTER VII

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SUMMARY AND CONCLUSIONS

Memory is a comprehensive aspect where there are many facets and processes involved. Performance in each of these vary. Based on the review of studies on memory and aging, certain memory facets were selected in the present investigation. They were working memory, semantic memory, verbal memory, pictorial memory, and remote memory. It appears that these multiple factors interact to influence age-related differences in memory performance in various facets. Some of the factors like education, economic status, self-reported physical and psychological health, stressful life events, social supports, etc., may influence the memory performance of subjects with advanced age. Therefore, these factors were included in the present study as psychosocial correlates of memory. The study was undertaken with the following objectives.

7.1. Objectives


2. To compare different socio-demographic groups such as age, gender, locality, education, economic status and marital status with regard to memory performance among elderly men and women.

3. To examine the association of different facets of memory with psychological variables viz., self-rated memory, self-reported physical health, self-reported psychological health, self-perception of social supports, life stress, self-esteem and I-E locus of control among elderly men and women.
4. To test the efficacy of intervention in improving memory performance in a select sample of elderly.

7.2. Tools Employed:

To realise the objectives of the present study the sub tests of Wechsler Memory Scale (Form I) were employed to assess different facets of memory. Working memory was assessed through sub test 4 (Logical memory test, Immediate recall) and sub test 5 of WMS (digit span test).

Semantic memory was assessed through WMS sub tests 1, 2, 3. Pictorial memory was assessed through the WMS sub test 6. Verbal memory was assessed by using the WMS sub test 7. Apart from the above sub tests, some new tests were also employed viz., Letter Span Test (non sense syllables), Remote memory test (Autobiographical and Episodic memory) and Free Word Association test. All the sub tests of the original Wechsler memory scale (1945) were restandardized to suit the testing needs of elderly in Indian conditions.

In Detail:

(i) Working memory was assessed through sub facets like memory for digit span (Forward-backward), logical information and letter span (non sense syllables).

- Semantic memory was assessed through certain sub facets viz., memory for personal and current information, orientation, mental control and free word association.
- Verbal memory was assessed through Paired - Associates
- Pictorial memory was assessed by using two simple figures (suitable to Indian elderly)
(ii) The psychological variables were assessed through standardized tools. Self-rated memory was assessed by using a rating scale, self-reported physical and psychological health by using the adapted version of Cornell Medical indices (A & B), Perception of social supports through Social Supports Inventory; self-esteem through an adapted version of Rosenberg Self Esteem Scale, and I-E locus of control by employing Levenson’s I-E Scale.

(iii) A Personal Data Schedule was used to seek information on biographic details.

(iv) Intervention Module. To realise one of the objectives of the present study, a training module was prepared by including some sub-facets like memory for digit span (forward and backward) and paired associate test. These tests were selected from Form II of Wechsler Memory Scale.

7.3. Sample for the Study:

(i) Main Study Sample. The sample for the main study consisted of 300 elderly men and women belonging to various groups such as elderly with less education and more education, upper middle and middle, lower middle and low income groups, spouse living and spouse not living groups, rural and urban. The subjects were drawn from Chittoor and Cuddapah districts, using a multi-stage random sampling technique. The total sample was equally distributed across age groups, 60-69, 70-79 and 80-89 years. The subjects included in the study were community living, cognitively intact persons and had no marked disabilities.

(ii) Intervention Sample: The subjects for the intervention phase consisted of 60 elderly men and women (30 in Experimental group and 30 in Control group). They were selected from the main sample and their ability levels, education, age and gender were fairly matched.
7.4. How They Were Tested:

- The study was planned in three steps viz., screening stage, testing stage and intervention stage.

- The subjects in the main study were individually contacted and tests were administered in two sessions. In the intervention phase, intensive training was extended only to the subjects in the Experimental group and no intervention for the Control group subjects. The intervention session was extended over 8 sessions, each session lasted for one hour. The pre- and post-intervention performance of these two groups were compared to evaluate the efficacy of intervention.

7.5. Statistical Analyses:

The testing of the hypothesis was primarily based on the statistical treatment of the data obtained from the sample. Techniques like t-tests, analysis of variance (ANOVA), Correlations and Multiple Regression Analysis (MRA), were used to analyse the data.

7.6. Important Findings:

Section I: Performance in Different Sub facets of Working memory, Semantic memory, Verbal memory, Pictorial memory and Remote memory in terms of Socio Demographic Variables.

Working Memory:

(i) Memory for Logical Information

- Significant differences were noticed between age, gender, locality, educational status, marital status and economic groups in memory for logical information.
Memory for logical information has decreased with advancing age. Sexagenarians performed better than septuagenarians and octogenarians.

The male elderly, the urban residents, the more educated and the non-widowed elderly (spouse living) performed better than their counterparts viz., the male, the rural, the less educated and the elderly who lost their spouses.

Interaction effect of economic status and marital status was significant.

(ii) Memory for Digit Span (Forward-Backward).

Memory for forward digit span was better among the sexagenarians, the male, the urban, more educated and non-widowed elderly.

The memory for forward digit span was better than memory for backward digit span in all age groups.

Education and marital status interaction effects for forward digit span and backward digit span were significant.

(iii) Memory for Letter Span (Nonsense Syllables)

Age group differences were not significant in memory for letter span i.e. there is no difference between 60-69 and 70-79 and between 70-79 and 80-89 age group.

The male elderly, the urban residents, the more educated and the elderly whose spouses were alive have performed better than their counterparts viz., the rural, the female, the less educated and those who lost their spouses.

The interaction effect of educational and marital status was significant.
Semantic Memory

(iv) Memory for Personal and Current Information (PCI).

- No significant differences exist between 60-69 & 70-79 age groups and between 70-79 & 80-89 age groups. But sexagenarians and octogenarians differed significantly.

- Memory performance in PCI of females, the rural elderly, the less educated and those who lost their spouse, was not better compared to the males, the urban, more educated and the non widowed.

- Interaction effects of educational status and economic status, economic status and marital status and education x economic x marital status were significant.

(v) Memory for Orientation Tasks

- Age differences were significant, except between 60-69 and 70-79 age groups.

- The male elderly, the urban, the more educated and the non widowed elderly performed better on orientation tasks.

- The interaction effect of educational status and marital status was significant.

(vi) Memory for Mental Control Tasks

- Significant age differences existed between 70-79 & 80-89 and 60-69 & 80-89 age groups, but no difference was there between 60-69 & 70-79 age groups.

- Main effects of age, gender, locality, economic status, educational status and marital status were significant.
The interaction effect of economic status and marital status was significant.

(vii) Memory for Free Word Association

- Age differences were significant, (except between 70-79 and 80-89 age groups).
- No male - female differences were there in memory for free word association.
- The performance of the rural elderly, the less educated, and the elderly who lost their spouse was not good compared to the urban subjects, the more educated and the non widowed (spouse living) elderly.
- Interactions of age and locality and economic status and marital status were significant.

(viii) Verbal Memory Performance

- No significant difference was there between 60-69 and 70-79 age groups but it was significant between 60-69 and 80-89.
- Main effects of age, locality, education, economic status, and marital status were significant.
- The interaction effect of economic status and marital status was significant.

(ix) Memory for Pictures

- Age differences were significant except between 60-69 and 70-79 age groups.
- No gender differences were there in memory for pictures.
- The less educated and those who lost their spouses had poorer memory for pictures than their counterparts.
(x) Remote Memory

- Significant age differences existed between 70-79 & 80-89 age groups but not between 60-69 & 70-79 age groups in autobiographical memory.

- Septuagenarians had better autobiographical memory than octogenarians and sexagenarians.

- Episodic memory trends indicated better performance for the septuagenarian group (70-79) compared to the octogenarian (80-89).

Interaction effects of economic status x marital status and education x economic status x marital status were significant.

- The male, the more educated and those who have their spouses did better compared to their counterparts viz., women, the less educated and the widowed.

Section II: The Association of Different Sub Facets of Memory with Some Psychological Variables.

(i) Working Memory and Psychological Variables

- Memory for logical information had significant positive correlations with self-rated memory, self esteem and locus of control, but significant negative correlations were there with self reported physical health and psychological health. No significant association was there with self perception of social supports and memory for logical information.

- Memory for logical information tended to be good only when there was a positive self reported memory, favourable self perception of physical health and psychological health, high self esteem and internality.
Memory for forward digit span correlated positively with self rated memory, self esteem and locus of control and negatively with self reported physical distress, self reported psychological distress and life stress. No significant relationship obtained with self perception of social supports.

Self rated memory and self esteem were the significant predictors of better performance in memory for forward digit span.

Memory for backward digit span significantly correlated with self rated memory, self esteem, internal locus of control and negatively correlated with self reported physical and psychological health, but no significant correlation with social supports.

Memory for letter span (non-sense syllables) significantly correlated with self rated memory, self esteem and internal locus of control and negatively correlated with self reported physical and psychological health. No relationship existed with stressful life events and low correlation was there with self perception of social supports.

Elderly with positive favourable perception of one's own memory, with high esteem of one self and with internality tended to have better memory for logical ideas, digits and letter span.

(ii) Semantic Memory and Psychological Variables:

Psychological variables viz., self rated memory, self esteem, self perception of social supports, internal locus of control were positively correlated, but variables like self reported physical health, and psychological health, were significant but negatively correlated with the sub facet of semantic memory (viz., personal and current information, free word association tasks, memory for orientation tasks and mental control tasks). But self perception of social supports and life stress correlated low (not significant) with memory for personal and current information and mental control tasks.
(iii) Verbal Memory and Psychological Variables

- Verbal memory was significantly correlated with self rated memory, self esteem and internal locus of control
- The variables self reported physical health, and psychological health were negatively correlated with verbal memory and correlated low with life stress

(iv) Pictorial Memory and Psychological Variables

- Self rated memory, self esteem, and internal locus of control were significant and positively correlated with pictorial memory
- Self reported physical health and psychological health were moderate but negatively correlated with pictorial memory

(v) Remote Memory and Psychological Variables

- Significant correlation with self rated memory, self esteem, internal locus of control and negative correlations with self reported physical and psychological health but no significant relationship with social supports and life stress.

Section III: The Contribution of Socio Demographic and Psychological Variables to Performance in Various Facets of Memory

(i) Contribution of Demographic Variables to Memory.

- Education, age, locality and gender were the significant contributants to memory for logical information
- Education and age were the significant contributants to memory for forward digit span.
- Education, age, gender, and economic status contributed significantly to memory for back ward digit span.
Education, gender, age, economic status and locality contributed significantly to memory for mental control tasks.

Education, age, locality, and economic status were the significant contributors to verbal memory.

Education, gender, locality and economic status contributed significantly to remote memory.

(ii) Psychological Contributants to Memory

Self esteem and self rated memory were the significant determinants of memory for logical information.

Self rated memory, self esteem, locus of control and life stress contributed significantly to forward digit span and backward digit span.

Self rated memory, self esteem and social supports were the determinants of memory for mental control tasks.

Self esteem and self rated memory accounted for a major chunk of the variance in memory for verbal material.

For remote memory performance, self rated memory, physical health, social supports, self esteem, and locus of control contributed significantly.

Section IV: Findings Related to Intervention

Pre and post intervention scores differed significantly in forward digit span; backward digit span and paired associates.

Intervention in memory performance in a select sample was effective.
7.7. IMPLICATIONS OF THE STUDY:

The following are some of the significant implications of the study

1. This is perhaps the first study in India on different facets of memory and their associated factors in a community living elderly sample. Limitations of the study apart, the findings of the study are of significant import for Gerontology in India.

2. The study of the three age groups viz., 60-69, 70-79 and 80-89, while showing a general decremental difference with the higher age group compared to the young-old, the quantity of difference and the facets showing difference have varied to some extent.

3. The study has brought out clearly the role of certain demographic variables such as gender, education, locality, economic status and marital status on performance in different facets of memory.

4. Apart from these demographic variables, there were a set of psychological variables that have significantly contributed to the variance in performance in different facets of memory. In view of the fact that studies on the role of such psychological variables on different facets of memory are by themselves not many, and at any rate none in India, the findings assume significance.

5. The aforementioned observations have important policy implications, in that policy directives would need to focus on these aspects.

6. The small intervention experiment carried out as part of this study has clearly demonstrated that successful interventions in improving performance of even community living elderly are possible.
7. Memory, of all types, plays a significant role in one's lives. Its decline in the elderly who are already handicapped in several ways has special negative implications for them in going about their normal daily activities and compound their dependency. Therefore, the application of large scale interventions to improve the memory function in these elderly would go a long way in reducing their dependency. Thus, it has both practical as well as policy implications.

7.8. SOME LIMITATIONS OF THE STUDY:

1. This study being the first of its kind in India, the investigator had certain disadvantages both with regard to ground logistics, as well as some unforeseen problems in the field. Several initial trials in the field gave the much needed 'feel' of the problem and how they need to be encountered. Still there were certain drawbacks.

2. Being a community study, testing had to be done in different locations. It was practically impossible to move the elderly to a common ‘laboratory’ for the study, which would have been the ideal way of conducting it. Yet sincere efforts were made to provide comparable (not ideal) conditions for testing in different locations.

3. The fact that we were dealing with rural, not well educated men and women who were least sophisticated in many respects provided another dimension of problems where we had to familiarise the persons with regard to the tasks, the like of which many would not have experienced in their lives.

4. Some testing procedures had to be adapted, to suit local conditions and language and culture. Yet the essential features of the original tests as well as compatibility of testing conditions including instructions were
maintained to the extent possible. Care was also taken to reassess (temporal) reliability of the tests.

5. The study could not be a developmental one and it had to be cross sectional in view of time constraints for a doctoral dissertation. The observations cannot be generalised as changes with increasing age in the same individuals, the cross sectional observations may be later confirmed when prospective studies are made.