CHAPTER VII

SUMMARY AND CONCLUSIONS
The age range of the sample is 16 to 47 with a mean age of 26.6 ± 9.9; 40 of them being males and 29 of them being females.

It was designed to repeat all the tests on all the patients at the end of three years, but some of them did not complete all the tests. Intelligence and attention have been taken by all; memory test has been taken by 45 patients and adjustment inventory has been taken by 54 patients.

Intelligence is measured by means of Bhatia's Performance test of intelligence. Attention is studied by using Knox Cube Imitation test. Wechsler memory scale is used to measure memory. Adjustment is assessed by using Bell's Adjustment Inventory - both adult form and student form.

Each patient is tested for intelligence, attention, memory and adjustment at the time of intake into the study. They are put on adequate anticonvulsant medication by the medical Officer in charge. All the patients are follow-up after three years of treatment and the tests are repeated.

A 't' test is done to find out the significance of difference between the scores on the two occasions. No significant difference is seen in the IQ of the two occasions. Attention and memory scores showed significant decreases at the end of three years of treatment as compared to the initial. When sub-tests scores of intelligence is analysed Koh's Block
design test score showed an insignificant decrease, while Passalong test score indicated an insignificant increase. Among the sub-tests scores of memory, visual memory score and verbal memory score are subjected to statistical analysis where visual memory score showed an insignificant increase whereas statistically significant decrease is observed in verbal memory score.

Attention, memory and verbal memory are subjected to further analysis in terms of clinical variables like type of epilepsy, age at onset of attacks, duration of illness, frequency of attacks and clinical improvement.

In attention focal epileptics showed statistically significant decrease while generalised epilepsy showed a minimal and insignificant decrease. Those patients whose age at onset of illness was 15 years but less than 20 years showed statistically significant decrease, whereas the decrease in those with earlier or later age at onset of illness has not been statistically significant. The decrease has been statistically significant in those with a duration of 5 or more years, but not in those with lesser duration of illness. Those patients with one attack in 15 days to one month showed statistically significant decrease while those with lesser of more frequency did not show significant decreases. Those patients who did not
have even a single attack for a period of 2 years or more showed a statistically significant decrease, whereas the decrease has not been significant in just improved patients. Those whose clinical condition did not change or worsened showed statistically significant decrease.

In the case of memory clinical variables like type of epilepsy and frequency of attacks did not show any significant changes. Those patients whose age at onset of epilepsy was 15 years but less than 20 years showed a statistically significant decrease, while those with earlier or later ages at onset the decrease have not been significant. Those patients with a duration of illness of less than one year showed a statistically significant decrease, whereas in the longer duration the decrease has not been significant. Those patients who did not have attacks for a period of 2 years or more as well as those whose clinical condition did not change or worsen showed similar and insignificant decrease; the decrease in the just improved group has been statistically significant.

In the case of verbal memory clinical variables like type of epilepsy and age at onset of epilepsy did not show any significant changes. Those patients with a duration of less than one year showed a statistically significant decrease while the decrease has not been significant in patients with longer duration of illness. Those patients with one attack in 15 days to one month showed a statistically significant decrease
whereas the decrease in the more frequent and less frequent groups has not been significant. Those patients who did not have attacks for two years or more as well as those whose clinical condition did not change or worsen showed no significant decrease, whereas the decrease in the group just improved has been statistically significant.

In addition to the initial and third year follow-up 27 patients took intelligence test and attention test at the end of two years, and 12 patients took memory test at the end of two years. A two-way analysis of variance for these groups is done for the functions studied. In all three functions a tendency for an initial decrease followed by an increase is noticed.

In the case of adjustment there have been a greater tendency for better adjustment in total adjustment as well as different areas of adjustment except in social and occupational areas of adjustment. The significance of the change is calculated by using a chi square test due to McNemar (1968). The change in the direction of better adjustment is statistically significant in area of home, whereas it has not been significant in total as well as health and emotional areas of adjustment. The change in the direction of poorer adjustment is statistically significant in the social area whereas it has not been significant in occupational area. A further analysis of the data in terms of clinical variables is done for the home and social areas of adjustment.
In generalised epilepsy and temporal lobe epilepsy there have been a greater change in the direction of better adjustment - statistically significant in the latter and not in the former. Epilepsy of other focal origin showed a greater change in the direction of poorer adjustment, but not statistically significant. The change in the direction of better adjusted is statistically significant in those whose age at onset of epilepsy was 15 years but less than 20 years, whereas in those with earlier or later onset the changes have not been significant. The changes in patients with different durations of illness did not show any statistical significance. Those patients with one attack in 15 days to one month show statistically significant change in the direction of better adjustment, whereas the changes in the more frequent attacks as well as less frequent attacks have not been significant. Changes in adjustment in patients with different clinical status at the end of three years of treatment did not show any statistical significance.

In social area the changes in adjustment have not been statistically significant in patients with different types of attacks, different durations of illness as well as in different frequencies of attacks. Those patients whose age at onset of epilepsy was 15 years but less than 20 years the change in the direction of poorer adjustment has been statistically significant. The changes have not been significant in those with earlier or later ages at onset of epilepsy. The changes in those who did
ATTENTION:

1. Attention of epileptics as measured by Knox Cube Imitation test is lower than would be expected in a normal population.

2. Attention of epileptics as measured by Knox Cube Imitation test decreases significantly after three years of anticonvulsant medication.

3. Different clinical variables like type of epilepsy, age at onset of epilepsy, duration of illness, frequency of attacks, and clinical status at the end of three years of treatment does not appear to be affecting attention directly and singly.

4. Adolescent group within the sample appear to have greater problem with attention at the end of three years of treatment.

5. Attention of epileptics as measured by Knox Cube Imitation tests shows a definite pattern of fluctuations - a decrease at the end of two years followed by an increase by the end of three years.

MEMORY:

1. Memory of epileptics as measured by Wechsler Memory Scale is found to be average.

2. Memory of epileptics as measured by Wechsler Memory Scale decreases significantly after three years of anticonvulsant medication.
3. Any single clinical variable like type of epilepsy, age at onset of attacks, duration of illness, frequency of attacks and the clinical status at the end of three years of treatment does not appear to have any direct effect on the decrease of memory.

4. Adolescent groups within the sample appear to have greater problem with memory after three years of treatment.

5. Memory of epileptics as measured by Wechsler memory scale shows a definite pattern of fluctuation - a decrease at the end of two years followed by an increase at the end of three years.

6. Verbal memory and visual memory in epileptics are within normal range.

7. Verbal memory of epileptics show a statistically significant decrease after three years of anticonvulsant medication.

8. Any single clinical variable like type of epilepsy, age at onset of epilepsy, duration of illness, frequency of attacks, and clinical status at the end of three years of treatment does not appear to have any direct effect on memory.

ADJUSTMENT:

1. The total adjustment of epileptics as assessed by Bell’s adjustment inventory is poorer than that would be expected in normal population.
subsequently show significant change in the direction of better home adjustment after three years of anticonvulsant medication.

9. Patients with one attack in 15 days to one month show greater adjustmental difficulty at home in the initial assessment and subsequently show significant change in the direction of better home adjustment after three years of anticonvulsant medication.

10. Patients who were in late adolescence show very good social adjustment in the initial assessment but show significant change in the direction of poorer social adjustment at the end of three years of anticonvulsant medication.

11. Patients who show improvement in the clinical condition, but yet continue to get occasional attacks show significant change in the direction of poorer social adjustment.

INTER-RELATIONSHIPS:

Cognitive functions and adjustment are not inter-related. The relatedness of cognitive functions among themselves appear to be disturbed due to onset of epilepsy. The relatedness of cognitive functions among themselves is stronger after three years of anticonvulsant medication. Adjustment, total as well as specific areas of adjustment are highly inter-related among themselves.
IMPLICATIONS OF THE PRESENT STUDY AND SUGGESTIONS FOR FURTHER RESEARCH.

The global intelligence of epileptics does not appear to change significantly. Intelligence consists of many smaller units of which two major components like attention and memory are measured in detail in the present study. Both these functions have shown significant decrease after three years of anticonvulsant medication. There are evidences in the present study itself about the possibility of smaller units of functions to improve, thereby the decrease in some of the other areas are compensated. For example, the practical ability (Passalong test score) and visual memory have shown improvement on their respective initial score when tested after three years of treatment. Hence a probe into areas not covered in this study like fluency, creativity and reasoning and other smaller units of primary abilities may be more illuminative in the study of cognitive functions of epileptics.

The specific physiological action of the anticonvulsants on cognitive functions are not clearly delineated, and hence the explanation of the action of anticonvulsant drugs on these functions are more or less conjunctures. An attempt to study the effect of the physiological substrate of cognitive functions and the effect of the changes brought about by the anticonvulsant drugs in the substrate of cognitive functions may be valuable.
The fluctuations noticed in the functions studied followed a pattern. In all the three functions there have been an initial decrease followed an increase. In the case of intelligence by the end of three years it comes back to the pre-medication level. In the cases of attention and memory, although a similar pattern is observed, the scores do not reach their respective initial scores. It may be worthwhile studying the sample for an extended period of time and find out the length of time required for these functions to come back to the pre-medication level.

No single clinical variable analysed seem to contribute to the changes in the cognitive functions. It appears that the variables analysed interact with each other. In further studies a multivariate approach may prove more fruitful than taking a single variable at a time.

Patients who were in their late adolescence at the time of age at onset of attack as well as at the time of initial testing are found to have greater changes in their cognitive functions and adjustment. Late adolescence, being a time of greater demands and responsibilities may bring about changes in their adjustment and cognitive functions. Whether the changes noticed in the epileptics are due to the onset of epilepsy or only an effect of this particular stage of development is a worthwhile study in itself. A detailed study of epileptics in adolescence/late adolescence in comparison with a non-epileptic adolescence/late adolescence group may throw more light on this problem.
Have adjustment and social adjustment in the sample studied are found to be subjected to significant changes. There appears to be factors other than epilepsy and the clinical variables associated with epilepsy affecting the initial poor adjustment at home, and poor social adjustment in society after three years of treatment. In future studies on adjustment of epileptics a detailed assessment of the attitude of parents, peer group and colleagues of the epileptic patients may give a fuller understanding to the maladjustment and/or changes in adjustment in epileptics.

Attention, although one of the basic cognitive function, has not been studied in epileptics in detail. The present study has indicated the attentional difficulty the epileptics encounter. Eventhough reticular activating system has been reported to be the custodian of attentional function, lesions in the cortical or subcortical areas appears to produce impairment in attention. Studies of attention in epileptics, including the measures of arousal and vigilence in patients with lesions in different areas of brain may open up new vistas of knowledge.