The word *epilepsy* has been derived from the Greek verb *(epilamvanein)*, which means to be seized, to be taken hold of, or be attacked. In ancient time, the epilepsy was considered as a kind of witchcraft insanity, supernatural force, hysteria, madness or possession by the devil which has led to the stigmatization of the individuals with epilepsy (Vanzan & Paladin, 1992). It was, however, unsuccessfully challenged by Hippocrates in 5th-century BC, who first suggested that the brain was the seat of this disorder. The International League Against Epilepsy (ILAE) has proposed new definition for epileptic seizure and epilepsy. “*Epilepsy is defined as a condition characterized by recurrent seizures (two or more), a clinical manifestation presumed to result from an abnormal and excessive discharge of a set of neurons in the brain. The clinical manifestation consists of a sudden and transitory abnormal phenomenon which may include alterations of consciousness, motor, sensory, autonomic or psychic events, perceived by the patient or an observer*” (ILAE, 1993). Epilepsy affects 20 to 40 million people worldwide and has prevalence of at least 63% and on annual incidence of approximately 0.50% (Mario and Ashla, 2005). Nearly 90% of epilepsy occurs in developing countries (WHO, 1999). Epileptic seizures are usually brief, lasting from second to minutes, and they are marked by the sudden appearance of behavioural manifestation that may be purely motor or they may affect other brain functions. While most people will imagine the stereotypical falling to the ground, jerking, shaking and frothing at the mouth. Most seizure types do not involve convulsions. Some people experience an aura—partial seizure preceding a generalized seizure— which is often seen as a warning sign. An ‘aura’ may be emotional (fear, anxiety), physical
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(dizziness, nausea), or sensory (tingling or crawling sensation on the skin, spots or colures before the eyes, strange taste or smell). The period during which the seizure actually occurs is called the ictus or ictal period. The aura is the earliest portion of a seizure recognized, and this is the only part remembered by the patients that acts as a warning. The time immediately after a seizure is referred to as the ‘postictal’ period. The interval between seizures is the ‘interictal’ period. However, the new ILAE proposal (Fisher et al., 2005) offers a more fundamental definition of epilepsy as a chronic condition of the brain characterized by an enduring propensity to generate epileptic seizures, and by the neurobiological, cognitive, psychological, and social consequences of this condition. The new ILAE definition also acknowledges importantly the psychological and social consequences of epilepsy.

Etiology and risk factors for epilepsy vary with age and geographic location. Congenital, developmental, and genetic conditions are mostly associated with epilepsy in childhood, adolescence, and early adulthood. Head trauma, CNS infections, and tumors may occur at any age and may lead to epilepsy, although tumors are more likely over age 40. Head injury, development delay, and family history of epilepsy are significant risk factors.

Epilepsy can have far reaching psychological and social ramifications and for some individuals these can be more debilitating than the seizures (Thompson et al., 2003; and Hermann and Jacoby, 2009). Published literature covers variety of areas including psychiatric problems (e.g. mood disorders, anxiety, psychotic disorders); feeling of shame, fear, and worry; low self-esteem; problems related to education, employment, dating, marriage, child-bearing, poor quality of life, and stigma (Lai, 2007). Social problems are important because they reduce
quality of life and contribute to mental health problems such as depression, anxiety, and psychopathology in persons with epilepsy (Hermann, 1991). Several studies have established that there is a higher incidence of epilepsy (based on clinical or EEG evidences) in psychiatric hospitals (Court, 1965), in subnormality hospitals (Eyman et al., 1970), and in prison populations (Gunn and Fenton, 1969).

In many forms of epilepsy, cognitive functions are altered during the seizures itself, the postictal state and sometimes during what is thought to be the normal interictal period. However, the cognitive dysfunction is only one among other epileptic manifestation and is not recognized or considered the main symptoms.

Neuropsychological impairment consisting of memory disturbances, visuo-spatial and verbal deficits has been demonstrated in children even with very well controlled epilepsy (Pavone et al., 2001; and Deonna et al., 2000). Various studies have demonstrated that IQ levels of children with epilepsy tend to be below the population mean (Farwell et al., 1985; and Bourgeois et al., 1983). Memory impairments, mental slowing, and attentional deficits are the most frequently reported cognitive disorders (Aldenkemp et al.,1995; and Donati et al., 2006).

Epilepsy is one chronic condition for which it has been hypothesized that high levels of stress affect symptomatology by increasing the occurrence of seizures. Most persons develop a repertoire of mechanisms for coping with stressors they experience. Persons who are able to mobilize adequate and or appropriate coping strategies tend to have a higher level of health and well-being than those who lack adequate resources (Erickson and Swain, 1982; Parinka and Singh, 2012).
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Problem:
The present problem is stated as:

“PSYCHOPATHOLOGY, COGNITIVE FUNCTIONS, AND COPING AMONG EPILEPTIC PATIENTS.”

Objectives
Main objectives of the study are:
1. To examine the extent of psychopathology which comorbid with epilepsy.
2. To examine the cognitive functions among epileptic patients.
3. To examine the ways of coping, the epileptic patients use for coping with disease-specific and general life stress.
4. To compare the epileptic patients with normal subjects in terms of their mean scores on measures of psychopathology.
5. To compare the epileptic patients with normal matched subjects in terms of their mean scores on measures of cognitive functions.
6. To compare the epileptic patients with normal matched subjects in terms of their mean scores on measures of coping.
7. To examine the joint contribution of measures of psychopathology, cognitive functions and ways coping in discriminating the epileptic patients and normal subject’s group.
8. Discovering the overlapping factors among the measures of psychopathology, cognitive functions and coping in the data from epileptic patients.
9. To find out the clusters of epileptic patients on the basis of similarity on measured variables

Hypotheses:
Specific hypotheses are:
1. Epilepsy patients tend to score high on measures of neurotic spectrum disorders than their counterpart normal subjects.
2. Epilepsy patients tend to score high on measures of psychotic spectrum disorders than their counterpart normal subjects.
3. Epilepsy patients tend to score low on measures of cognitive functions than their counterpart normal subjects.
4. Epilepsy patients tend to score low on problem-focused coping and high on emotion-focused coping measures than their counterpart normal subjects.
5. Some measures of psychopathology, cognitive functions and coping are likely to contribute jointly in discriminating the epilepsy patients from their counterpart normal subjects.
6. Some measures of psychopathology, cognitive functions and coping are likely to yield some overlapping factors in epilepsy data.
7. It being an exploratory study, it was hypothesized how many clusters of epileptic patients will emerge.

**METHOD**

**Sample**

To realize the main objective of the study two groups of subjects i.e. epilepsy (N=200) and Normals (N=200) matched in terms of age, education and gender participated in the present study. The sample of epilepsy patients was drawn from the patients who were attending to the OPD of psychiatry department at Lady Harding Medical College and Hospital Delhi, Ram Manohar Lohiya Hospital, Delhi, Lok Nayak Jai Prakash Civil Hospital, Kurukshetra, and Aggarwal Nursing Hospital, Kurukshetra. For the identification of patients, the consulting psychiatrists and physicians in respective OPDs were initially apprised of the present research project and then were requested to cooperate and collaborate. Consequently, the consulting doctors referred the diagnosed patients to the investigator for the psychological testing with
measures used in the present study. The inclusion criteria for the patients were that they had all received their diagnosis from the consulting doctors and had continuous contact with them in follow up visits, older than 18 years, and education (minimum of primary school completion). The diagnosis of epilepsy was based on the clinical presentation of the symptoms and EEG testing according to ILAE, 1990. The epilepsy patients ranged in age from 18 to 40 years with mean age of 30 years. The duration of illness in the included patients ranged from 1 to 28 years with the mean duration of 14 years. Only those patients were included in the sample who volunteered to participate and being referred to by the consulting doctors. The exclusion criteria were progressive neurological disorders, head injury, mental retardation, severe psychiatric problems, and ongoing use of any centrally acting medication or other severe medical disorders. The clinical sample consisted of hundred male and hundred female patients. Though epilepsy is classified in various types, yet the present study is not confined to a particular type of epilepsy rather included the epilepsy of any type in the sample with a view to explore the common psychopathology, cognitive functions, and coping among patients of epilepsy. Most of the patients were on pharmaceutical treatment. Most of the patients were married and living in home setting with their family members i.e. spouse, sons, daughters, and parents.

A normal group consisting of 200 subjects (100 males and 100 females) matched for age and education was drawn from the general population residing in the areas to which the patients belonged. The normal subjects included in the same sample were also free from any psychopathological, medical problems (ascertained on the basis of medical and psychiatric / clinical history), and with no family history of seizures, of medication for illness, which can confound the results.
Tests/Measures

Following tests were used to collect the data.

(1) Personality Assessment Inventory-PAI (Leslic C. Morey, 1991)
(2) PGI-Memory Scale-PGIMS (Pershad and Verma, 1990)
(3) Nahor Benson Test-NBT (Nahor and Benson, 1970), and
(4) Ways of Coping Questionnaire (Folkman and Lazarus, 1988).

Personality Assessment Inventory (PAI) consists of four type of subscales- validity, clinical, treatment consideration, and interpersonal behavior which index the appropriate responding, psychopathology, motivation to treatment and interpersonal behaviour. The measures at serial no. 2, and 3 were mainly used to assess the cognitive functions. Ways of Coping Questionnaire has been used to tap both the problem-focused coping and emotion-focused coping process. All the measures were administered individually in different sessions according to convenience of patients, and subjects. Scoring of tests provided scores for 39 variables (i.e. 20 of PAI, 11 of cognitive functions and 8 of coping).

Statistical Analyses:

Obtained data for 39 variables were subjected to various statistical analyses e.g. Descriptive Statistics, t-test, Discriminant Function Analysis, Product Moment Correlations, Principal Component Factor Analysis, and Cluster Analysis.

Main Findings:

Main findings of the study are:

1. Obtained data were analyzed to compare the epilepsy patients with their counterpart normal subjects in terms of their mean scores of
PAI scales (psychopathology), cognitive functions, and coping processes. The significance of difference in the mean scores of two groups for different variables was tested by t-ratios.

a. Among three validity scales of PAI, the epilepsy patients have scored significantly high on Infrequency. They have also scored high on Negative Impression. It posits that the epilepsy patients tend to be careless & non-conscientious respondents having negative impression of themselves as compared to normal subjects.

b. In case of 10 clinical scales of PAI, epileptic patients have scored significantly high on Somatic Complaints, Anxiety, Anxiety Related Disorders, Depression, Mania, Paranoia, Schizophrenia, Borderline Features, Antisocial Features and Drug Problems as compared to normal subjects depicting them to be more prone to develop neurotic-spectrum, psychotic-spectrum and behavioural disorders as comorbid problems to epilepsy. It supports Hypotheses No. 1 and 2 that epilepsy patients tend to score high on the measures of neurotic-spectrum and psychotic spectrum disorders than their counterpart normal subjects.

c. In case of five treatment consideration scales of PAI, epilepsy patients have scored significantly high on Suicidal Ideation, Non-support, Treatment Rejection, and Stress than their counterpart normal subjects. It posits that epileptic patients tend to be high on aggressiveness, suicidal tendencies, stress, lack of perceived social support, and treatment motivation and compliance.

d. Epileptic patients have scored significantly high on two interpersonal scales viz. Dominance and Warmth depicting them having domineering and affiliative interpersonal style.

e. In case of eleven variables of cognitive functions (memory /attention), the epileptic patients have scored significantly low on
all the ten measures of memory viz. Remote Memory, Recent Memory, Mental Balance, Attention Concentration, Delayed Recall, Immediate Recall Verbal Retention for Similar Pairs, Verbal Retention for Dissimilar Pairs, Visual Retention, Recognition and Visuomotor Coordination (NBT) depicting them having more cognitive dysfunctions than the normal subjects. They also tend to have problems in visuomotor coordination function of left and right hemispheres. It supports Hypothesis No. 3 positing that epileptic patients tend to score low on measures of cognitive functions.

f. In case of measures of ways of coping, epileptic patients have scored significantly high on Distancing, Seeking Social Support, Escape/Avoidance; and low on Confrontive Coping, Self-controlling, Accepting Responsibility, Planful Problem Solving, and Positive Reappraisal than normal subjects. It posits that epileptic patients, in general, tend to use more emotion-focused coping processes and less problem-focused coping processes to deal with their illness-specific and general life stressors than their counterpart normal subjects. It supports Hypothesis No. 4 that epilepsy patients tend to score low on problem-focused coping and high on emotion-focused coping processes than their counterpart normal subjects.

2. The variable-wise differentiation of epileptic patients and normal subjects by t-test, though provided important information, yet the issue which of these variables jointly differentiated the two groups remained silent. So, to resolve this issue and to examine the extent to which all the 39 variables jointly differentiated successfully the epileptic group from normal group, Discriminant Function Analysis was applied. This analysis provides various statistical values for estimating discriminative effectiveness of predictor variables.
One of these statistics is Wilks’ Lambda or U statistics that indicates the extent to which a variable differentiates between the groups. In the present study, 9 of 39 variables have contributed significantly to the discrimination between the two groups (Epilepsy and Normal). Wilks’ Lambda values for these 9 discriminators are .366 for Stress, .259 for Depression, .219 for Attention-Concentration, .196 for Confrontive Coping, .174 for Seeking Social Support, .155 for Antisocial Features, .144 for Schizophrenia, .136 for Somatic Complaints, and .129 for Borderline Features. Wilks’ Lambda lower than 1.00 suggests much variability between groups and small variability within group.

In order to examine the tenability of null hypothesis that in the populations from which samples are drawn, there is no difference between the group means, Chi-square ($X^2$) test was applied. Obtained $X^2$ equals to 805.100, (df being 9) significant beyond .0001 probability level. Thus, it shows that epileptic patients and those normal controls cannot have the same means on the discriminant function.

Another indicator of effectiveness of discriminant function is the actual discriminant score in the groups. The Eigen value obtained for all the variance between groups equals to 6.737, significantly large in size. Large eigen value is considered to be associated with good discriminant functions.

Discriminant Function Analysis has generated a Canonical Correlation Coefficient of .933 depicting the degree to which discriminant scores correlated with the groups. It provides an index of overall model fit which is interpreted as being the proportion of variance explained. Here, in this study the coefficient of .933 suggests that model explains 87.04% ($0.933^2$) of the variation in the grouping variables.
Joint Wilk’s Lambda of .129 in the present study provides the proportion of total variance not explained i.e. converse of squared Canonical Correlation Coefficient. So, here we have 12.96% (100-87.4) variance unexplained.

The Standardized Canonical Discriminant Function Coefficients are used to compare the relative importance of the independent variables. The standardized discriminant coefficients arranged in rank order regardless of their signs reveals that Stress (.472) has contributed maximum to the membership of group, followed by Seeking Social Support (.440), Depression (.438), Confrontive Coping (.422), Antisocial Features (.339), Attention-Concentration (.288), Somatic Complaints (.281), Borderline Features (.251), and Schizophrenia (.205). The sign of these coefficients provide direction of contribution. It can be inferred from the finding that epileptic patients discriminated from normal subjects tend to be, in general, low on confrontive coping and attention-concentration. Their epilepsy comorbid psychopathology includes stress, depression, antisocial features, somatic complaints, borderline features, and schizophrenia.

Another important question regarding Discriminant Function is the classification accuracy based on identified set of discriminators. Klecka (1985) recommends that classification accuracy can be used alongwith F-to Enter, Lambda, and Standardized Discriminant Function Coefficient to indicate the amount of discrimination contained in selective variables. However, he has pointed out that if chance accuracy is 50% (as in case of two groups of equal size) the classification accuracy should be at least 62.5% (25% greater than that is achieved by chance). Here, based on identified 9 discriminators as mentioned above, the correct classification rate for epileptic patients (Group 1) has been found to be 99%. The corresponding classification
accuracy for normal subjects (Group 2) has been found to be 99.5%. The overall classification accuracy of known cases to be 397 (99.3%), a percentage significantly higher than 62.5%. Thus, it can be inferred that results of this analysis are fairly satisfactory and reflect that some psychopathological, cognitive, and coping processes successfully differentiate the epileptic patients from normal subjects. These variables (Stress, Seeking Social Support, Depression, Confrontive Coping, Antisocial Features, Attention Concentration, Somatic Complaints, Borderline Features, and Schizophrenia) should be taken into account during diagnosis and therapeutic process of epilepsy. Thus, the present findings support Hypothesis No. 5 positing that some measures of psychopathology, cognitive functions, and coping are likely to contribute jointly in discriminating the epileptic patients from normals.

3. Pearson’s correlations were computed among all the 39 variables used in the study from the raw scores in both data. The obtained correlations are reported as under:

(a). Intercorrelations among 20 variables of PAI (Clinical Data) are ranging from .878 to -.557. 152 of 190 correlations are significant, of which 88 are positive and 64 are negative. Some significant correlations may be because of their association with factors of psychopathology at second order level.

Intercorrelations among 20 variables of PAI in normal group data are, in general, low ranging from .284 to -.198. Only 33 of 190 correlations are significant, of which 29 are positive and 4 are negative depicting small amount of variance sharing among them in normal data. Thus, two types of patterns of obtained correlations here also differentiate the two groups of subjects.
(b). Correlations between 20 subscales of PAI and 11 measures of cognitive functions (Clinical Data) are, in general, low ranging from .337 to -.299. Out of total 220, only 31 correlations are significant at or above .05 levels, of which 20 are positive and 11 are negative depicting small amount of variance sharing between them.

In case of normal data, correlations between two types of measures are, in general, low ranging between .214 and -.242. Only 19 of total 220 correlations are significant, of which 7 are positive and 12 are negative. Two types of patterns of correlations also differentiate the two types of groups of subjects (Epilepsy and Normal).

(c). Correlations between 20 subscales of PAI and eight indices of Coping (Clinical Data) are, in general, low ranging from .356 to -.314. Only 35 of 160 correlations are significant, of which 21 are positive and 14 are negative.

In normal group data, the correlations between two types of measures are, in general, low ranging between .239 and -.349. Only 33 of total 160 correlations are significant, of which 29 are negative and 4 are positive. Obtained patterns of correlations in terms of range, magnitude and direction also depict the differentiation between the two groups of subjects.

(d) Intercorrelations among 12 measures of cognitive functions are, in general, low ranging from .385 to -.077. 39 out of 66 correlations are significant, all of which are positive. Significant correlations among some of the measures may be because of their association with some factors of cognition at higher order level. Those significant correlations among some of measures may be because of their association with factors of higher order level.

In the data from normal subjects, intercorrelations among the measures of cognitive functions are ranging from .685 to -.131. 56 of
66 correlations are significant, all of which are positive. It depicts that measures have shared much of variance among them. Obtained correlations also depict the differentiation of normal subjects and epilepsy subjects in terms of cognitive functions.

(e) Correlations between 12 measures of cognitive functions and eight of Ways of Coping are, in general, low ranging between .257 and -.152. Only 10 of 96 correlations are significant, of which 8 are positive and 2 are negative. Obtained correlations hereby depict that two types of measures have shared small amount of variance between them.

In case of data from normal subjects correlations between two types of measures are also in general low ranging from .208 to -.914. Only 11 of 96 correlations are significant, of which 5 are positive and 6 are negative depicting small amount of variance sharing between them.

(f) Intercorrelations among 8 measures of coping processes in clinical data are ranging from .413 to -.071. Eleven of 28 correlations are significant, all of which are positive. Obtained correlations depict some amount of variance sharing among them. Some significant correlations among some measures may be because of their association with factors of coping at higher order level.

Intercorrelations in data from normal subjects range from .534 to -.102. Twenty five of 28 correlations are significant, all of which are positive, depicting much of variance sharing among them and construct validity of the scale. Patterns of correlations in normal data also depict the differentiation between normal and epileptic subject’s in terms of their Ways of Coping.

4. **Factor Analysis:**

39x39 intercorrelations matrices (Epilepsy Data and Normal Data) were processed by the Principal Component Method of Factor
Analysis. 10 factors were extracted (Epilepsy Group Data) and interpreted after varimax rotation. 11 factors were extracted from Normal Group Data and interpreted after varimax rotation.

Ten factors extracted from epilepsy data have been identified as **Subjective Distress and Affective Disruption** (Factor-1), **Memory** (Factor-11), **Problem-Focused Coping** (Factor-111), **Stress** (Factor-IV), **Resentment and Impulsivity** (Factor-V), **Antisocial Personality and Psychopathy** (Factor-VI), **Visual Retention** (Factor-VII), **Need for Social Support** (Factor-VIII), **Cognitive Denial** (Factor-IX) and **Emotion Focused Coping** (Factor-X). All the ten factors have accounted for 63.119% of total variance. With this finding Hypothesis No. 6 is supported, positing that measures of psychopathology, cognitive functions and coping are likely to yield some overlapping factors in epilepsy data.

Eleven factors extracted from the normal data have been identified as **Memory** (Factor I), **Coping** (Factor II), **Subjective Distress** (Factor III), **Affective Stability** (Factor IV), **Emotion Focused Coping** (Factor-V), **Anxiety** (Factor-VI), **Hypochondriasis** (Factor-VII), **Stress** (Factor-VIII), **Treatment Non-compliance** (IX), **Social Detachment** (Factor-X), and **Unnamed** (Factor-XI). All these have explained 63.512% of total variance. Obtained two factors solutions have some common and some distinct factors that again differentiate the two groups of subjects.

Factors from Clinical Data are:

(a). Factor 1 named as **Subjective Distress and Affective Disruption** characterizing the epileptic patients to be high on anxiety, somatic complaints, depression, anxiety-related disorders, schizophrenia, borderline features, suicidal ideation, stress, aggressiveness; and low on dominance, treatment compliance, and mania. Such patients
tend to cope by seeking social support. It has accounted for 17.534% of total variance.

(b). Factor II labeled as **Memory** loads positively on all the measures of memory/attention and visuomotor coordination. It depicts the positive association among all the measures of cognitive functions and visuomotor coordination. It has accounted for 7.311% of total variance.

(c). Factor III identified as **Problem Focused Coping** characterizes the epileptic patients who tend to cope with their illness specific and other life stressor by using ways of coping such as planful problem solving, positive reappraisal, accepting responsibility, self-controlling, and confrontive coping. Such individuals also tend to have intact recent and remote memory functions. It has accounted for 6.764% of total variance.

(d). Factor IV named as a factor of **Stress** as it loads on measures of stress, warmth, mania, drug problems, and borderline features with positive loadings and on attention-concentration with negative loading. It depicts that epileptic patients having stress, orientation to rely on drugs of abuse, hypervigilance, and impulsivity. They are unable to pay attention and concentration to the cognitive tasks in hand. It has accounted for 5.811% of total variance.

(e). Factor V named as **Resentment and Impulsivity** portrays the epileptic patients having hypervigilance, poor control on emotions, confusion about self identity, aggressiveness and low level of treatment motivation. It has accounted for 5.240% of total variance.

(f). Factor VI labeled as **Antisocial Personality and Psychopathy** as it depicts positive association among the measures of antisocial features, aggression, stress, mania and non-support; and describes
the epileptic patients who tend to be having behavioural problems characterized by impulsivity, aggression and elated affect. It accounts for 4.796% of total variance.

(g). Factor VII identified as **Visual Retention** depicts the positive association among visual retention, visuomotor coordination, recognition; and their inverse association with mental balance. It has accounted for 4.279% of total variance.

(h). Factor VIII named as **Need For Social Support** depicts the positive association between seeking social support, drug problems; and their inverse relationship with remote memory, mania, and immediate recall. It describes the person who tends to cope with his problems by seeking social support and using drugs of abuse. It has accounted for 4.051% of the total variance.

(i). Factor IX named as **Cognitive Denial** describes a person who attempts to cope with problematic situation by detaching oneself mentally from the problems. Such individuals tend to be low on attention-concentration, mental balance, visuomotor coordination but high on immediate recall. It has accounted for 3.832% of total variance.

(j). Factor X is of **Emotion Focused Coping** as it loads highly on escape-avoidance depicting its negative association with confrontive coping, mental balance, delayed recall; and positive with aggression. It has accounted for 3.502% of total variance.

**Factors extracted from Normal Data are:**

(a). Factor 1 is a general factor of **Memory** which depicts the positive association among nine measures of cognitive functions. It describes an individual having cognitive functions (memory/attention) and visuomotor coordination intact. It has accounted for 14.333% of total variance.
(b). Factor II is of **Coping** as it has brought together all the measures of coping except escape-avoidance. It has accounted for 9.906% of total variance.

(c) Factor III is of **Subjective Distress** and partially resembles with one of the exploratory factors reported by Morey (1991) in PAI standardization studies. It has accounted for 9.383 % of total variance.

(d). Factor IV is named as **Affective Stability** and portrays an individual who tends to be low on stress & depression. It has accounted for 4.436% of total variance.

(e). Factor V is identified as **Emotion Focused Coping** and portrays an individual who tends to cope by using distancing & escape-avoidance. It has accounted for 4.093 % of total variance.

(f). Factor VI is of **Anxiety** and describes the person having generalized anxiousness worries, and phobias. It has accounted for 3.793% of total variance.

(g). Factor VII depicts the **Hypochondriatic** tendency and over concern with health. It has accounted for 3.709% of total variance.

(h). Factor VIII has been identified as **Stress** depicting positive association between measures of suicide and stress & their inverse relationship with paranoia. It has accounted for 3.476 % of total variance.

(i). Factor IX has been labeled as **Treatment Non-compliance** that depicts the positive association among treatment rejection, warmth, borderline features & dominance. It has accounted for 3.449% of total variance.

(j). Factor X is labeled as **Social Detachment** on the basis of high loading of non-support and it describes a person having lack of
Summary

perceived social support, and hypomanic tendencies. It has accounted for 3.442% of total variance.

(k). Factor XI has not been named & interpreted.

(l). PAI subscales are factorially complex as have scattered over various factors in both solutions.

(m). Measures of cognitive functions are factorially simple measures as those have appeared on the same factor in both solutions

(n). Measures of coping are factorially complex as have scattered on two separate factors in both solutions.

5. Cluster Analysis was used to classify the epileptic sample into clusters to understand the similarity within cluster and dissimilarity between clusters in terms of the measures used in the study. Hierarchical cluster analysis was carried out using between-group-linkage clustering method applying Squared Euclidean Distance as the distance or similarity measure. In terms of agglomeration Schedule and dendrogram 4 clusters were suggested. After getting the Nos. of clusters, clustering was rerun by K-means method which distributed 200 cases of epilepsy in four clusters in 7 iterations. ANOVA table was used to explore the variables which contributed significantly in differentiating the four clusters.

(a). Seven variables were found not contributing significantly in differentiating the clusters whereas 32 variables contributed significantly. These seven variables are Anxiety Related Disorders, Antisocial Features, Suicidal Ideation, Non-support, Dominance, Remote Memory and Escape-Avoidance. It implies that above mentioned behavioural manifestations are common across the epileptic patients and across the type of epilepsies.
(b). Cluster Analysis provided casewise membership to the clusters and distance of each case from the centre of cluster. The distance coefficient reveals how typical a person is to the cluster in which its membership falls. The No. of cases found falling in four clusters is 34, 54, 45, and 67 respectively in Cluster No. 1, 2, 3, and 4.

(c). Cluster 1 consists of 17% (34) members of the total sample having 13 males and 21 females. Cluster 1 profile is characterized by lack of prominent elevations. The patients included in this cluster are typically average with respect to most of the 39 variables as their final cluster centre is within range of 47.35 to 60.48 on T-Scale. Most elevated scales for mean cluster 1 profile at or above 60T are Planful Problem Solving and Accepting Responsibility. Thus, obtained pattern of cluster depicts average magnitude of psychopathology except borderline features and mania, above average cognitive functions, and moderately above average coping processes. Hence, this cluster can be termed as simple epilepsy type.

(d). Cluster 2 is having 27% (N=54) of total sample having 49 females and 5 males. Since it consists of more female members, so it is a feminine type. The profile is characterized by low level of psychopathology, intact cognitive functions but low coping. So, this cluster can be named as epilepsy with intact cognitive functions and deficient coping.

(e) Cluster 3 included 22.5% (N=45) of total epileptic sample (N=200) having 18 males and 27 females depicting it to be a mixed type cluster. It’s profile represents average magnitude of psychopathology, low level of cognitive functions & visuomotor coordination, and slightly high level of emotion focused coping &
low of problem focused coping. Hence, this cluster can be termed as *epilepsy with cognitive dysfunctions*.

(f) *Cluster 4* emerged as the largest consisting of 33.5% (N=67) of the total epileptic sample having 64 males and 3 females depicting to be a musculine type. The profile of this cluster represents those having above average psychopathology, average cognitive functions and low level of coping. Hence, it can be termed as *epilepsy with severe psychopathology*.

*Cluster analysis* was also carried out in a normal data which led to the extraction of two clusters of normal subjects assigning 147 to cluster 1 and 53 to cluster 2. It has been found 13 of 39 variables contributed significantly in differentiating the two clusters and 26 variables have not contributed significantly. (a) Cluster 1 consisted of 73.50% (N=147) of total sample (N=200) having 74 males and 73 females. Profile of this cluster depicts low psychopathology, average cognitive functions, and average coping. (b) Cluster 2 consisted of 26.5% (53) of total sample (n=200) having 26 males & 27 females. Profile characteristics of this cluster are having slightly below average psychopathology, low cognitive functions, and average coping.

Hence, comparative analysis of clusters from two types of data also gives differential picture of psychopathology, cognitive functions, and coping in epileptic patients.