CHAPTER V

SUMMARY
Efforts are still in progress to understand the correlates of word association test responses. The present study was undertaken to investigate the diagnostic utility of word association emotional indicators.

The main objectives were:

**Phase-I**

Firstly, it intends to study the relationship between response entropy and emotional indicators so that if necessary the influence of response entropy is controlled;

Secondly, it intends to study the structural relationship between emotional indicators and psychometric measures of anxiety, psychoticism, neuroticism, psychopathic deviation, and creativity;

Thirdly, it proposes to study if the diagnostic utility of emotional indicators increases with the increase in the number of emotional indicators occurring together for the same stimulus word. More precisely speaking, it intends to study: (i) if the joint occurrence of two emotional indicators has more diagnostic utility than the consideration of single emotional indicator, and (ii) if three emotional indicators occurring together are distinctly more significant for revealing pathological characteristics than the single emotional indicator or two emotional indicators occurring together; and
Fourthly, it intends to verify which of the word association test responses (ranging from very common to unique on five point scale) are related to creativity and which of the word association test responses are related to psychoticism, neuroticism, psychopathic deviation and anxiety.

The hypotheses were:

(1) There is significant relationship between response entropy and word association emotional indicators;

(2)(a) Word association emotional indicators are positively and significantly related with psychometric measures of anxiety, neuroticism, psychoticism, extraversion, and psychopathic deviation.

(b) Different word association emotional indicators are differentially related to anxiety, neuroticism, psychoticism, extraversion and psychopathic deviation;

(3)(a) The joint occurrence of two word association emotional indicators provides better criteria for emotional disturbance and creativity than single indicators.

(b) The joint occurrence of three word association emotional indicators provides better criteria for emotional disturbance and creativity than single indicators or joint occurrence of two emotional indicators; and

(4) Different categories of word association test responses are differentially related to anxiety, psychoticism, neuroticism, psychopathic deviation and creativity.
Subjects

Subjects for this investigation were male students (N = 250) drawn from different senior secondary schools functioning under the Directorate of Delhi Administration, Delhi. The rationale for limiting the present study to males was mainly convenience, besides the need to control the sex variable. Only XI and XII grade students were selected to control the influence of educational level. The age of the subjects ranged from 16 to 19 years with a mean and standard deviation of 16.48 and 1.01 years, respectively.

Tests

The following tests were used:

(A) Word Association Test (Kent-Rosanoff, 1910);
(B) IPAT Anxiety Scale Questionnaire (Cattell and Scheier, 1963);
(C) Eysenck Personality Questionnaire (Eysenck and Eysenck, 1975);
(D) Torrance Test of Creative Thinking: Figural and Verbal Form A (Torrance, 1966); and
(E) Minnesota Multiphasic Personality Inventory: Psychopathic Deviate Scale (Hathaway and McKinley, 1967).

The following measures were obtained as a result of administering different tests:

(1) response entropy value of each stimulus word;
(ii) scores for each "stimulus word" of the Kent-Rosanoff word association test on seven categorized emotional indicators;

(iii) scores for each subject on different emotional indicators;

(iv) scores for each subject on thirteen different combinations of two emotional indicators occurring jointly;

(v) scores for each subject on seven different combinations of three emotional indicators occurring together for the same stimulus word; and

(vi) scores for each subject on psychometric measures of anxiety, neuroticism, psychoticism, extraversion, psychopathic deviation and verbal and figural creativity. The measure of second-order anxiety factor was scored for the total as well as five subtests.

Phase-II

The main objective of phase-II is to validate the findings obtained in phase-I on psychatically diagnosed patients. It is hoped that the validity of the findings of phase-I on psychatically diagnosed population, if established, would lend credence to the belief that the word association technique can provide valuable information concerning psychiatric disturbance.

In the second phase of the study, an effort has been made to validate on psychiatric patients the relevant findings of Phase I of the present study. The proposed diagnostic procedure in Phase I has been subjected to confirmation on psychiatric patient
This was done by administering Kent-Rosanoff word association test on psychiatric patients.

Subjects were 8 paranoid schizophrenics, 10 non-paranoid schizophrenics, and 10 non-psychotic psychiatric patients. Subjects of Phase I were used as normal controls. The psychiatric patients were obtained from department of psychiatry. Criteria for inclusion in the subject pool were less than 1 year of total hospitalization, no evidence of organicity or retardation, and no history of electroconvulsive therapy.

As a result of different analysis the study has revealed few significant aspects pertaining to word association test performance and several other measures of creativity and pathological characteristics. These are:

1. Cattell’s second-order anxiety measure clearly bears a distinctive relation to Eysenck’s N-scale measure. The two measures, however, are not identical;

2. There is slight overlap between Eysenck’s P and N scales;

3. L scale measures correlated negatively and significantly with psychoticism, psychopathic deviation and creativity;

4. Creativity is demonstrated to be multifactorial in nature: specific creative functions perhaps being tied to specific media of creative expression, say, verbal
or figural. However, popular notion of distinct sub-components of creativity, like, fluency, flexibility, originality and elaboration does not get strong support in this study. Within broad factor of creativity (verbal and figural), they seem to be closely inter-woven into a unified mode of expression;

5. Creativity measures in general have been found to be unrelated to psychometric measures of personality. The study, however, has revealed negative and significant correlations between L scale and creativity measures. Since it is conceivable that low L scores denote a degree of unconventionality, it is possible that the negative relationship between L scale and creativity is due to a willingness, by creative individuals, to be unconventional;

6. Response entropy, an index of response hierarchy in word association test, is positively and significant correlated with unique response, moderately infrequent response, long reaction time, repetition of stimulus before responding, misremembering and forgetting, while its correlation with response repetition though positive is statistically insignificant. The inference suggests that the genuineness of these emotional indicators as indices of pathological characteristics and creativity cannot be understood
adequately without due regard to their relationship with response entropy;

7. Misremembering and forgetting are not functionally equivalent. The lack of correlation between misremembering and forgetting justifies the separate use of misremembering and forgetting as indices of reproduction failure;

8. Word association emotional indicators are helpful in diagnosing some clinical aspects of human behaviour, especially suspiciousness, psychosis proneness and psychopathic deviation. The simultaneous occurrence of two or three emotional indicators is a more valid criterion than single emotional indicator for understanding several aspects of human behaviour. Particularly noteworthy are the simultaneous occurrence of:

i) long reaction time and repetition of stimulus before responding for diagnosing suspiciousness or paranoid type insecurity;

ii) unique response, long reaction time and response repetition (UR-LRT-RR) and unique response, long reaction time and misremembering (UR-LRT-W) for identifying psychosis proneness and psychopathic deviation. The simultaneous occurrence of these emotional indicators could be used for tapping a common factor associated with the willingness to
be unconventional or engage in mildly antisocial behaviour. More specifically, the study reveals that the joint occurrence of these emotional indicators could be used for identifying individuals who are "at risk with respect to adjustment problems later in life. The findings could be said to provide a base for exploration that psychoticism and psychopathic deviation have a common denominator. The finding is revealing and deserves attention. For those who are hopeful of a return of interest of the original "complex-diagnostic" function of word association testing (Jung, 1910), the present results are very encouraging.

9. For studying creativity, the results of the present study are encouraging. Extremely unique word associations have emerged as a complex measure. One component of extremely unique word associations associated with moderately infrequent word associations could be considered as major index of novelty type of creativity as defined by verbal indices of psychometric creativity. From a theoretical perspective, the finding that only some aspect of extremely unique word associations which is associated with moderately unusual replies is critical for defining verbal creativity is worthy of attention. Possibly, the associations that are less atypical seem to be indicative of the kind of new perspectives and original reactions that are part of verbal creativity. Interestingly enough, word associations have been found to be unrelated to figural creativity.
The second component of extremely unique word associations is associated positively with psychoticism and some aspect of psychopathic deviation. The nature of this component of extremely unique word associations refers to that aspect which is misremembered and repeated again and again for different stimulus words. More specifically, extremely unique word associations which are misremembered and repeated again and again over different stimuli are markedly associated with psychoticism and psychopathic deviation. This component of extremely unique word associations associated with psychoticism and psychopathic deviation might be representing associations that go more or less completely afield. As such this component of extremely unique word associations could be regarded as the best projective indicator of psychosis proneness. There is a strong justification for using word associations that go more or less completely afield as a marker of a predisposition to schizophrenia.

10. The findings on normal subjects have been confirmed to a great extent on psychiatrically diagnosed population.