

DIFFERENCES IN FORMAL THINKING DISORDERS BETWEEN
PROCESS AND REACTIVE SCHIZOPHRENICS
AS MEASURED BY PROVERBS

by Aldo Santorum

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CURRICULUM STUDIORUM

Aldo Santorum, born in Varone, Italy, on January 9, 1923. Obtained A.B. degree from St. Francis College, Loretto, Pennsylvania in 1949. An M.A. degree in clinical psychology from the Catholic University of America, Washington, D.C. in 1952. The thesis written for the latter degree was titled, "A STUDY OF THE PERSONALITY TRAITS OF TWO CRIMINAL GROUPS". Clinical Internship was served at Massillon State Hospital, Massillon, Ohio in 1953.

TABLE OF CONTENTS

Chapter	Page
INTRODUCTION	vi
I.- HISTORICAL BACKGROUND	1
A. The Reactive-Process Dichotomy in Schizophrenia	1
1. The Concept of Reactive Schizophrenia	2
2. The Concept of Process Schizophrenia	5
3. Commentary on Process-Reactive Dichotomy	7
B. Thought-Language Studies in Schizophrenia	10
1. The Conceptual Studies and Methods of Study	11
2. Studies on Boundaries and Internal Organization	14
3. Studies of Schizophrenic Logic	16
II.- EXPERIMENTAL PROCEDURE	18
A. The Tool: Ebaugh's Proverbs	18
B. The Population: 60 Schizophrenics	24
C. Methods Used for Statistical Analysis of Data	31
III.- PRESENTATION AND DISCUSSION OF RESULTS	33
A. Overall Response Differences Between the Two Groups	37
B. Response Differences in Each Proverb Between Two Groups	48
C. Response Type Difference on Phrase Thirteen	51
SUMMARY AND CONCLUSIONS.	55
BIBLIOGRAPHY	59
Appendix	
1. ELGIN PROGNOSTIC SCALE	70
<u>ABSTRACT OF Differences in Formal Thinking Disorders Between Process and Reactive Schizophrenics as Measured by Proverbs.</u>	75

LIST OF TABLES

Table	Page
I.- Response Differences Between Process and Reactive Groups	36
II.- Response Differences on Each Proverb Between Process and Reactive Groups	49
III.- Analysis of Differences Between Process and Reactive Groups of Replies to Saying Thirteen	52

INTRODUCTION

Schizophrenia, once only a label for a group of syndromes and a term commonly synonymous with Kraepelin's dementia praecox, has, since its introduction in 1911, become a much investigated disease, and consequently a better conceptualized reaction. Though there has been an increase in the knowledge and understanding of schizophrenia in general, there has also been a variety of opinions and facts tendered concerning the tenability of the process-reactive dichotomy in this disorder. It may be stated that until recently this concept of schizophrenia has been more widely known, accepted, and applied in Europe than in North America. In recent years, however, the works of Wittman¹, and Kantor² et al., suggest that this dichotomy is warranted.

In the present study the interest of the experimenter centers around testing for differences in formal thought disturbances of the process and reactive groups, as a method of determining the degree of reality testing present in each.

¹ P. Wittman, "Diagnostic and Prognostic Significance of the 'shut-in personality' as a Prodromal Factor in Schizophrenia", Journal of Clinical Psychology, Vol. 4, 1948, p. 211-214.

² R.C. Kantor, et al., "Process and Reactive Schizophrenia", Journal of Consulting Psychology, Vol. 17, 1953, p. 157-162.

It was the studies of Langfeldt³, Wittman⁴, Meduna⁵ and Kantor and his associates⁶ which suggested that these two groups are essentially different though having the same diagnostic label. Bearing this factor in mind it was felt that knowledge of obtained differences in formal thinking disorders between the two groups would be of diagnostic, therapeutic, and prognostic significance.

The findings of Kantor and his associates⁶, which show that the process group tends to have psychotic Rorschachs while the reactive group tended to have non-psychotic Rorschachs, led to the following hypothesis: the process group should exhibit a significantly greater degree of reality distortion than the reactive group, as measured by the amount of formal thought disorder present.

There are two necessary conditions which seem of utmost importance in this study. One of these being the use of an instrument that would result in an operational definition of the dichotomy: and secondly, the utilization of a testing tool which would be short, effective, and easily scored. To

3 Gabriel Langfeldt, "The Diagnosis of Schizophrenia", American Journal of Psychiatry, Vol. 88, 1931, p. 493-503.

4 P. Wittman, Ibid., p. 211-214.

5 L.J. Meduna, Oneirophrenia: The Confused State, Urbana, University Press of Illinois, 1950, xi-100 p.

6 R.C. Kantor, et al., Ibid., p. 157-162.

fulfill the former requirement, the Elgin Prognostic Scale was chosen; to meet the second condition Ebaugh's List of Proverbs, was used, and the scoring system devised by Benjamin⁷ was adopted to evaluate formal thinking disorders on the given responses.

The choice of the population and the methods used in statistical analysis will be described in the chapter on the Experimental Procedure.

The results will be presented and discussed in the key chapter of this report; they will be followed by a summary and a few suggestions for further research.

The first appendix will carry a sample of the Elgin Prognostic Scale.

Now that perspective has been given to the study, the chapter to follow will amplify some of the views presented and also demonstrate more fully the timeliness of this experiment.

*Formal Thinking
not defined.*

*DIAGNOSIS?
What kind?
Read a
statement of
The question mark:
Is there a
disturbance?
nature
both?*

7 John D. Benjamin, "A Method for Distinguishing and Evaluating Formal Thinking Disorders in Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 65-90.

*BY SAYING
could be
served as
a model
for this unit.*

CHAPTER I

HISTORICAL BACKGROUND

In order to deal with the survey of the literature in a systematic and clear manner, the writer felt that the breakdown to be presented would fulfill these requirements.

A. The Reactive-Process Dichotomy in Schizophrenia.

As one reviews the literature dealing with the dichotomy of process and reactive schizophrenia, it soon becomes apparent that many terms have been used to express these two classes. Clinical psychologists, acquainted with European and especially German psychiatry, will already be familiar with the two terms, as Benjamin¹ has pointed out.

That the reactive and process concepts have suffered greatly by much confused and unwarranted labeling, and that they have been used too little in the clinic, or even in research projects, will be evident from some of the studies reviewed.

¹ John D. Benjamin, "A Method for Distinguishing and Evaluating Formal Thinking Disorders in Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 65-90.

1.- The Concept of Reactive Schizophrenia.

The reactive type of schizophrenia was discussed by Meyer^{2,3,4} using such titles as hysterical, obsessive compulsive, paranoid or psychasthenic-like mechanisms, in his clinical picture of schizophrenia. Zilboorg⁵ only referred to this type as a schizophrenic reaction. In the late thirties Langfeldt⁶ coined the term 'schizophreniform' or doubtful schizophrenia; this same term was repeated in a later article by Wittman⁷. Milici^{8,9} referred to it as a hysteric-like

2 Adolf Meyer, "Fundamental Conceptions of Dementia Praecox", Journal of Nervous and Mental Disease, Vol. 34, 1906, p. 331-336.

3 -----, "Substitutive Activity and Reaction-Types", in A. Lief, Editor, The Commonsense Psychiatry of Adolf Meyer, New York, McGraw-Hill, 1948, p. 193-210.

4 -----, "The Dynamic Interpretation of Dementia Praecox", American Journal of Psychiatry, Vol. 21, 1910, p. 385-403.

5 Gregory Zilboorg, "Deeper Layers of Schizophrenic Psychosis", American Journal of Psychiatry, Vol. 88, 1931, p. 493-511.

6 Gabriel Langfeldt, "The Diagnosis of Schizophrenia", American Journal of Psychiatry, Vol. 108, 1951, p. 123-125.

7 P. Wittman, "Diagnostic and Prognostic Significance of the 'shut-in personality' as a Prodromal Factor in Schizophrenia", Journal of Clinical Psychology, Vol. 4, 1948, p. 211-214.

8 P. Milici, "Dementia Praecox: Preventable", Psychiatric Quarterly, Vol. 11, 1937, p. 552-560.

9 ----- and C. Salzen, "Situational Schizophrenia", Psychiatric Quarterly, Vol. 12, 1938, p. 650-688.

reaction. Boisen¹⁰ labeled it acute reaction, ascribing various precipitating factors as responsible for the condition. Gladstone¹¹ called it benign schizophrenia, while Nielsen¹² labeled it apsychotic schizophrenia. Bellak¹³ and Darrah¹⁴ merely referred to it as schizophrenia, differentiating it from dementia praecox. Taylor¹⁵ calls reactive schizophrenia a type that is socially non-malignant in nature. Bullock¹⁶ labels it idiopathic or reactive, while Meduna¹⁷ coined the term oneirophrenia. Ripley¹⁸ designates this type

10 A.T. Boisen, "Onset in Acute Schizophrenia", Psychiatry, Vol. 10, 1947, p. 157-166.

11 I. Gladstone, "On the Etiology of Depersonalization", Journal of Nervous and Mental Disease, Vol. 105, 1947, p. 25-39.

12 J.M. Nielsen, "The Basic Pathology of Schizophrenia", Journal of Nervous and Mental Disease, Vol. 107, 1948, p. 340-347.

13 Leopold Bellak, Dementia Praecox, The Past Decade's Work and Present Status: A Review and Evaluation, New York, Grune and Stratton, 1947, xv-456 p.

14 L. Darrah, "Shall We Differentiate Between Schizophrenia and Dementia Praecox", Journal of Nervous Mental Disease, Vol. 9, 1940, p. 323-328.

15 G.J. Taylor, "A Consideration of the Acute Schizophrenic Episode", Psychiatric Quarterly, Vol. 23, 1949, p. 530-538.

16 N.F. Bullock, et al., "Studies in Schizophrenia", Journal of Mental Science, Vol. 97, 1951, p. 197-208.

17 L.J. Meduna, Oneirophrenia: The Confused State, Urbana, University of Illinois Press, 1950, xi-100 p.

18 H.S. Ripley and Steward Wolf, "Long-Term Study of Combat Area Schizophrenic Reaction", American Journal of Psychiatry, Vol. 108, 1951, p. 409-416.

as episodic, while Benjamin¹⁹ speaks of "schizophrenic reaction," "schizophrenic state", and "schizoid reaction". Bleuler²⁰ discusses acute psychogenic reaction and Ausubel²¹ and Kantor²² simply refer to it as reactive schizophrenia, which is the concept that will be used in this study.

19 Benjamin, ibid., see ref. 1.

20 Eugen Bleuler, "Physiogenic and Psychogenic Reactions in Schizophrenia", American Journal of Psychiatry, Vol. 10, 1930, p. 203-211.

21 David P. Ausubel, "A Psychopathologica Classification of Schizophrenia", Psychiatric Quarterly, Vol. 23, 1949, p. 127-144.

22 R.C. Kantor, et al., "Process and Reactive Schizophrenia", Journal of Consulting Psychology, Vol. 17, 1953, p. 157-162.

2.- The Concept of Process Schizophrenia.

Process schizophrenia is the term which best fits the dementia praecox concept of Kraepelin²³. Bleuler²⁴, Bellak²⁵, Meyer²⁶, and Darrah²⁷ also speak of dementia praecox with its implications, as differentiated from schizophrenia. Benjamin²⁸ states that process schizophrenia is often thought of as being organic or endogenous, but he feels that this assumption is somewhat premature. Langfeldt²⁹ calls it 'typical', Meduna³⁰ 'classical', and Milici³¹ 'basic' schizophrenia. Ripley³² applies the title 'chronic and deteriorative' and Ausubel³³ prefers the term 'evolutionary'. The results of

23 E. Kraepelin, Dementia Praecox, translated from 8th German Edition of Textbook in Psychiatry, Edinburgh, E. S. Livingston, 1918, x-331 p.

24 Eugen Bleuler, Dementia Praecox or the Group of Schizophrenia, translated by Joseph Zinkin, New York, International University Press, 1950, viii-548 p.

25 Bellak, Ibid., see ref. 13.

26 Meyer, Ibid., see ref. 2, 3, 4.

27 Darrah, Ibid., see ref. 14.

28 Benjamin, Ibid., see ref. 1.

29 Langfeldt, Ibid., see ref. 6.

30 Meduna, Ibid., see ref. 17.

31 Milici, Ibid., see ref. 8.

32 Ripley, Ibid., see ref. 18.

33 Ausubel, Ibid., see ref. 21.

a study by Wittman³⁴ indicate that Meyer's concept of shut-in personality best fits the process description. In a recent study by Kantor³⁵ the term process is used as differentiated from reactive schizophrenia.

The categorizing of the various terms used by these authors does not necessarily imply that the writer believes them to be synonymous.

It is felt that a commentary on and an evaluation of some of the high lights of the process-reactive dichotomy should be presented; because this seem essential to an understanding of some of the implicit and explicit factors operative, but hardly conducive to, a fuller appreciation of these two concepts in clinical practice.

34 Wittman, Ibid., see ref. 7.

35 Kantor, Ibid., see ref. 21.

3.- Commentary on the Process-Reactive Dichotomy.

A cursory glance at some of the articles written on this topic brings many questions to mind which one feels merit some sort of an answer. One immediately asks, does it not seem inexplicable that this useful dichotomy has not been applied in clinical practice? and why is it only recently gaining some sort of recognition in North America?

The answer to this question seems to be contained in the warning issued by Meyer³⁶ where he stressed the importance of reviewing each case history in such a manner that this dichotomy could easily have been differentiated. He warned physicians against mere diagnosis. He stated that the word diagnosis in mental disease implies more than a fact and, therefore, that it is inadequate and falls "short of presenting the actual facts in the case, sufficiently to designate the etiological, symptomatic, prognostic, and therapeutic status" of the patient.

His awareness of the shortcomings of physicians in the field of psychopathology has given us some insight into one of the probable reasons why these two concepts were not adopted earlier in the field of clinical psychiatry. This quotation will in part illustrate the point presented for consideration.

³⁶ Meyer, Ibid., see ref. 2.

There is no doubt that many diagnoses of dementia praecox are made on the ground of rule-of-thumb principles. This danger can be obviated by our taking a definite view of what diagnosis in mental disease means. Some physicians have been more or less superstitious with regard to what they imply by a diagnosis. Where they are on safe and easily controllable grounds the diagnosis is plainly a brief term for the statement of fact. As one gets into ill defined facts, the diagnosis becomes what one would like to do, what one would like to know, etc., that is to say, an expression for a substitutive attitude, rather than for the actual demonstrated fact.³⁷

It is no wonder then that clinical psychiatry has been reduced to the very workable though hardly fruitful procedure of labeling, filing, and forgetting the case histories of patients in the great majority of our mental hospitals.

In America, it was not until the late forties that psychological investigation of the concept of process and reactive schizophrenia was launched on a more objective and scientific basis, as evidenced by the study of Wittman³⁸ and a later study by Kantor³⁹. Many of the studies written on the general topic prior to this period point to poor methodology and much arm-chair hypothesizing.

An outstanding example of what Meyer⁴⁰ warned physicians to beware of is well illustrated in an article by

37 Meyer, Ibid., see ref. 2.

38 Wittman, Ibid., see ref. 7.

39 Kantor, Ibid., see ref. 22.

40 Meyer, Ibid., see ref. 2.

Klapman⁴¹, who states, "The tendency to think of true schizophrenia and schizophrenic like reaction or process and reactive schizophrenia has little basis in fact". He concluded from a report on three cases, which he studied, that reactive schizophrenics, if continually thwarted, may become fixed in their regressive pattern; while process schizophrenics, if sufficiently protected, will exhibit little regression in behavior. The end product of both types is the same, according to Klapman. This sort of study may be very interesting and probably fruitful in some respect, but psychology has long since advanced beyond the Kraepelinian stage, and therefore, it is not primarily interested in end products, but rather in a diagnosis which involves prognosis, therapy and even prophylaxis.

That these concepts need further investigation in order that one may thoroughly understand all that is contained in this dichotomy, both in the applied and theoretical fields needs justification. A survey of the literature clearly points to the fact that too little sound scientific and methodological research was conducted along this specific line prior to the studies of Wittman⁴² and Kantor⁴³.

41 J.W. Klapman, "Therapeutic Potentialities in Psychotic Disorder", Disease of Nervous System, Vol. 5, 1944, p. 208-218.

42 Wittman, Ibid., see ref. 7.

43 Kantor, Ibid., see ref. 22.

B. Thought-Language Studies in Schizophrenia.

There have been numerous approaches to the study of thought and language in schizophrenics varying from the dynamic approach to the concept-formation test, and more recently to the study of their logic. The latter method attempts to explain "why" and "how" this type of thought process develops. A more detailed treatment of these methods calls for a few paragraphs.

Before proceeding to a close consideration of the various techniques and theories utilized in attempting to understand schizophrenic thought and language disturbances, it is necessary to point out that most of the studies on this matter compared schizophrenics with organics, seniles, children, and the like. These studies, of course, are of value, but most of them are not directly concerned with the problem at hand. They are presented here with the thought in mind that they will permit a more adequate understanding of the nature of the research carried out thus far, and also furnish a historical perspective to the present approach to the problem.

1.- The Conceptual Studies and the Methods of Study.

Let us first consider the aspect of conceptual thinking in schizophrenia. Vigotsky⁴⁴, who obtained the idea of concept formation from Ach, and later Hanfmann and Kasanin⁴⁵, who modified the Vigotsky method, were the first to attack this problem with some medium that would lend itself to a quantification of the results.

It was Vigotsky⁴⁴ who noted that schizophrenics suffer impairment in formation of concepts and also exhibit complex thinking. This was later confirmed by Hanfmann and Kasanin⁴⁵, also by Bolles and Goldstein⁴⁶ and again by Hanfmann⁴⁷.

It was Rashkis⁴⁸ who observed that schizophrenics could not sort on an abstract level, Goldstein⁴⁹ noted a mixing of

⁴⁴ L.S. Vigotsky, "Thought in Schizophrenia", translated by J.S. Kasanin, Archives of Neurology and Psychiatry, Vol. 31, 1934, p. 1063-1077.

⁴⁵ E. Hanfmann and J.S. Kasanin, "A Method for the Study of Concept Formation", Journal of Psychology, Vol. 3, 1937, p. 521-540.

⁴⁶ M. Bolles and K. Goldstein, "A Study of Impairment in Abstract Behavior in Schizophrenic Patients", Psychiatric Quarterly, Vol. 12, 1938, p. 42-65.

⁴⁷ E. Hanfmann, "Analysis of the Thinking Disorder in a Case of Schizophrenia", Archives of Neurology and Psychiatry, Vol. 41, 1939, p. 568-579.

⁴⁸ H. Rashkis, et al., "A New Method for Studying Disorders of Conceptual Thinking", Journal of Abnormal and Social Psychology, Vol. 41, 1946, p. 71-74.

⁴⁹ L.D. Goldstein, "The Language of Schizophrenia", Journal of General Psychology, Vol. 45, 1951, p. 95-104.

concrete and abstract attitudes while Zaslow⁵⁰ found that some schizophrenics show concrete, rigid behavior, though others give evidence of a more fluid approach to the problem at hand. The exhibiting of stereotyped or rigid behavior in some schizophrenics, while others showed a more fluid and complex approach, was also noted by White⁵¹, Kasanin⁵² and Bleuler⁵³.

In a breakdown of schizophrenic types, Benjamin⁵⁴ noted a greater disturbance in the conceptual thinking of hebephrenics, paranoids, and chronic insidious types, while a lesser degree of impairment was noted in paranoiacs and acute catatonics. Hanfmann and Kasanin⁵⁵, and Kasanin⁵⁶, observed

50 R.W. Zaslow, "A New Approach to the Problem of Conceptual Thinking in Schizophrenia", Journal of Consulting Psychology, Vol. 14, 1950, p. 335-337.

51 M.A. White, "A Study of Schizophrenic Language", Journal of Abnormal and Social Psychology, Vol. 44, 1949, p. 61-74.

52 J.S. Kasanin, "The Disturbance of Conceptual Thinking in Schizophrenia", in J.S. Kasanin, Editor, Thought and Language in Schizophrenia, Berkeley, University of California, 1944, p. 41-48.

53 Eugen Bleuler, Textbook of Psychiatry, translated by A.A. Brill, New York, Macmillan, 1936, xxvi-635 p.

54 Benjamin, Ibid., see ref. 1.

55 Hanfmann and Kasanin, Ibid., see ref. 45.

56 Kasanin, Ibid., see ref. 52.

greater disturbance in the conceptual thinking of hebephrenics, paranoid schizophrenics, and those cases which they described as "primary thought disorder", where disturbance of thought and language was immediately evident. Less difficulty was noted in the formation of concepts in the acute catatonics, schizo-affectives, paranoid homosexuals and questionable cases of schizophrenia.

Eugene Kahn stated, in a discussion following the report by Kasanin and Hanfmann⁵⁷, that he doubts whether impairment in conceptual thinking is present in all schizophrenics. This is also the opinion expressed by the authors of their report. More recently similar views were again expressed by Goldstein⁵⁸.

⁵⁷ J.S. Kasanin and E. Hanfmann, "An Experimental Study of Concept Formation in Schizophrenia: Quantitative Analysis of the Results", American Journal of Psychiatry, Vol. 95, 1938, p. 35-52.

⁵⁸ K. Goldstein, "A Methodological Approach to the Study of Schizophrenic Thought Disorder", in J.S. Kasanin, Editor, Thought and Language in Schizophrenia, Berkeley, University of California Press, 1944, p. 17-40.

2.- Studies on Boundaries and Internal Organization.

Another fruitful consideration to the study of language and thought disturbances in schizophrenia is discussed by Cameron^{59,60,61,62}. He noted that the schizophrenic lacks internal organization, the inability to eliminate irrelevant elements and to maintain clear boundaries. He claims that this difficulty results in confusion for the patient and for those with whom he speaks, this difficulty leads to inability of social communication. Sullivan⁶³ holds a similar view by stating that the inability to differentiate that which is real and what is false results in disturbance of language, and adds that a disturbance in language leads to a break in

59 Norman Cameron, "Experimental Analysis of Schizophrenic Thinking", in J.S. Kasanin, Editor, Thought and Language in Schizophrenia, Berkeley, University of California Press, 1944, p. 50-64.

60 -----, "Reasoning, Regression, and Communication in Schizophrenia", Psychological Monograph, Vol. 50, 1938, p. 1-34.

61 -----, "A Study of Senile Deterioration and Schizophrenic Disorganization", American Journal of Psychology, Vol. 51, 1938, p. 650-655.

62 -----, "Deterioration and Regression in Schizophrenic Thinking", Journal of Abnormal and Social Psychology, Vol. 34, 1939, p. 265-270.

63 H.S. Sullivan, "The Language of Schizophrenia", in J.S. Kasanin, Editor, Thought and Language in Schizophrenia, Berkeley, University of California Press, 1944, p. 4-16.

communication. It is Sullivan's⁶⁴ opinion that the schizophrenic lacks consensual validation. Slatkin⁶⁵ also noted the ineffective social communication of the schizophrenic, due to the private character of schizophrenic symbolization. He thus hypothesizes that "normal symbolic interaction is basic in the development of society and culture".

The inability to eliminate irrelevance and to maintain clear boundaries was noted by Lewin⁶⁶, Balken⁶⁷, Bak⁶⁸, Zaslow⁶⁹, Goldstein⁷⁰ and Kasanin⁷¹. Fenichel⁷² also speaks of the disappearance of boundaries between the ego and the world.

64 Sullivan, Ibid., see ref. 63.

65 J.S. Slatkin, "The Nature and Effect of Social Interaction in Schizophrenia", Journal of Abnormal and Social Psychology, Vol. 37, 1942, p. 345-368.

66 M. Lewin, "Misunderstanding of the Pathogenesis of Schizophrenia Arising from the Concept of Splitting", American Journal of Psychiatry, Vol. 94, 1938, p. 887-889.

67 E.R. Balken, "A Delineation of Schizophrenic Language and Thought in a Test of Imagination", Journal of Psychology, Vol. 16, 1943, p. 239-271.

68 R.C. Bak, "Dissolution of the Ego Mannerism and Delusion of Grandeur", Journal of Nervous Mental Disease, Vol. 98, 1943, p. 457-464.

69 Zaslow, Ibid., see ref. 50.

70 Goldstein, Ibid., see ref. 49.

71 Kasanin, Ibid., see ref. 52.

72 O. Fenichel, The Psychoanalytic Theory of Neurosis, New York, Norton, 1945, x-703 p.

He states that such difficulty is due to the domination of the reality principle by the pleasure principle, resulting in the disintegration of the ego, and leading to distortion of reality. This disintegration results in regression and so the schizophrenic, as a consequence of this regression, proceeds from a logical to a pre-logical level of expression.

3.- Studies of Schizophrenic Logic.

The regression noted in schizophrenics, as evidenced by their mode of expression, from a logical to a pre-logical level, mentioned by Fenichel⁷³, is discussed by Von Domarus⁷⁴. He calls this form of logic para-logical. This non-Aristotelian logic ignores the mode of Barbara, and bases the similarity of things on the basis of adjectives or predicates. The most extensive and intensive treatment of this type of logic in relation to schizophrenic thinking is presented by Arieti^{75,76}. He not only deals with the principles presented by

73 Fenichel, Ibid., see ref. 72.

74 E. Von Domarus, "The Specific Law of Logic in Schizophrenia", in J.S. Kasanin, Editor, Thought and Language in Schizophrenia, Berkeley, University of California Press, 1944, p. 104-144.

75 Silvano Arieti, "Special Logic of Schizophrenia and other Types of Autistic Thought", Psychiatry, Vol. 11, 1948, p. 325-338.

76 -----, "Autistic Thought: Its Formal Mechanisms and its Relationship to Schizophrenia", Journal of Nervous Mental Disease, Vol. 111, 1950, p. 288-303.

Von Domarus⁷⁷, but has four additional principles or working postulates. He utilizes these principles in explaining autistic thinking, and "how" and "why" it develops in schizophrenia.

- 0 - 0 - 0 - 0 - 0 -

In summary, it has been observed that most authors presented in this review perceive the disturbance in conceptual thinking or abstract attitude as a cardinal symptom of schizophrenia. Others have pointed out that such difficulty as maintaining boundaries, evidenced by irrelevance, distortion, and regression to a pre-logical, para-logical or paleological level of thinking, has lead to difficulty in proper conceptual thinking, and therefore, ineffective social communication.

At this time the author wishes to make it clear that he is not interested in the etiology of schizophrenia, but rather in the disturbances in language and thought, which are manifested in diverse ways. On this point we are in accord with Vigotsky⁷⁸. The factors mentioned as disturbances in schizophrenic thought and language are not viewed as causes of schizophrenia, but as manifestations of the process.

77 Von Domarus, Ibid., see ref. 74.

78 Vigotsky, Ibid., see ref. 44.

CHAPTER II

EXPERIMENTAL PROCEDURE

The objective of this study is to find out whether any significant difference exists in the formal thinking disorders of the process and reactive schizophrenic groups. To undertake this task we needed a discriminating tool, a specific population fulfilling the criteria; and finally, a technique to analyze the results statistically, in order to determine the degree of significant difference between the results of the two groups.

A. The Tool: Ebaugh's Proverbs.

Proverbs had been used in investigation of thinking disorders with schizophrenics by Hadlick¹, who pointed out that this group had difficulty rendering the correct meaning of the proverb. In reporting his work, Benjamin² states that the former did not undertake a systematic working out of the material and made no clinical correlations.

It is in the very nature of the proverb that lies its discriminatory value, since a proverb is concrete in form but abstract in meaning. And the process of understanding proverbs

1 H. Hadlick, "Schizophrene Denkstörung", Psychologische Forschung, Vol. 15, 1931, p. 359-373.

2 John D. Benjamin, "A Method for Distinguishing and Evaluating Formal Thinking Disorders in Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 65-90.

requires a good grasp of reality, which the schizophrenic does not possess. "It also involves a synthetic process of picking from life experience generalizations from which concrete figures of the proverb (. . .) may serve as an effective symbol"³. In schizophrenia this ability to distinguish between symbols and substance is lost. With this disturbance of reality testing the proverbs tend to be understood literally⁴, and their broader meaning is missed or distorted⁵. Thus, if any difference in formal thinking disorders exists between the process and reactive groups, it should be manifested in the nature of responses given to proverbs.

But, proverbs are numerous and varied. It would seem that a few good ones should be a sufficient test. A valid short test is easier to give and to score. A list that had already been tried, and scored, would seem to be a good choice: such was Ebaugh's List of Proverbs:

3 R.L. Jenkins, "Nature of Schizophrenic Process, A Working Hypothesis for Therapy", Archives of Neurology and Psychiatry, Vol. 64, 1950, p. 243-262.

4 W. Muncie, "The Psychopathology of Metaphor", Archives of Neurology and Psychiatry, Vol. 37, 1937, p. 796-804.

5 Benjamin, Ibid., p. 18.

1. When the cat's away, the mice will play.
2. Don't cry over split milk.
3. It never rains but it pours.
4. The burnt child dreads the fire.
5. Don't cross your bridges till you come to them.
6. A rolling stone gathers no moss.
7. Discretion is the better part of valor.
8. To fiddle while Rome burns.
9. Don't count your chickens until they're hatched.
10. The proof of the pudding is in the eating.
11. He who laughs last, laughs best.
12. New brooms sweep clean.
13. Ingratitude, thy name is women.
14. He travels swiftest who travels alone.

These very proverbs had previously been used on a schizophrenic group by Benjamin⁶. Why would they not be useful in the differentiating of reactive and process groups, since he had devised a scoring system to fit the various types of formal thinking disorders.

The proverbs were individually administered by the examiner. The subject was simply given the following instructions: "I have here a list of proverbs. You know what proverbs are? They are saying which tell you something". If the patient looked confused he was given example, e.g. "The early bird gets the worm". The majority of the patients selected seemed to understand the directions with only a few requiring an example.

One of the proverbs in the above list, the thirteenth, could not really be evaluated in terms of formal thinking disorder categories, since it was purposively misquoted to

6 Benjamin, *ibid.*, p. 65-90.

illicited possible responses to an absurd statement⁷. In this study we evaluated the responses to this proverb in terms of other scoring categories; it was felt that these might shed some light on the manner in which the respective groups handled this misquote. The analysis of the particular scoring categories will be presented in the following chapter.

Benjamin's⁷ scoring method for evaluating the responses to the proverbs was used in this study, with a few modifications, additions, and omissions. The categories used are presented below:

Complete Literalness	= L
Slight Literalness	= l
False Desymbolization	= FS
False Abstraction	= FA
Over Abstraction	= OA
Proverb Response	= P

There can be a combination of the above responses with "P", such as "P-FA" or "P-l". Another factor that should be clarified is that a ^{"P"} response is acceptable, if correct, in the sense that it is applicable. It can however be contaminated, as noted by the two combinatory responses mentioned above. Benjamin⁷ states that one of the above responses is not truly pathological or characteristic of schizophrenics, the response type "OA". The proverb in this type of a response is correctly understood, but the attempts to put it in abstract terms

⁷ Benjamin, Ibid., p. 65-90.

overshoot the mark. Though this type of answer occurs occasionally in schizophrenics, it also appears in over-ambitious, moderately intelligent normals.

Since Benjamin⁸ does not present a symbol for refusal, "R" was used as an indicator; and in the same way "A" was utilized to designate an acceptable response. There was also an omission from his scoring system of the category "GL", or generalization from the literal. He feels that the response "GL" is essentially the same as the "L" response. In light of this fact its inclusion does not seem warranted, since it is really a component of "L".

The experimenter included several other useful scoring symbols. These do not measure formal thinking disorder, but were deemed essential in evaluating the results. The symbol "NF" was used to indicate unfamiliarity with a proverb. It was felt that this category was necessary in order to check for any discernible differences between the two groups. The use of "NF" was of additional service when a breakdown of the "R" type response was considered, since a refusal was scored for anyone who failed to undertake the task regardless of the reason or cause for not participating. Those who did not answer the proverbs because of unfamiliarity had to be scored "R". This clouded rather than clarified the nature of the "R" response.

⁸ Benjamin, Ibid., p. 65-90.

To correct for this shortcoming another combinatory scoring category was chosen and called "R-(NF)". This category is useful in that the obtained "R" from "R-(NF)" tells us the number of people who gave responses where no real interpretation was offered and symbolization or desymbolization was not a factor.

The nature of the scoring system required the use of several judges in evaluating the material. Both of the individuals selected for the task were given practice lists of proverbs to score, prior to undertaking the actual quantification of the data. Questions in scoring were dealt with and discussed with the examiner as they rose during the trial period.

After the scoring of the actual data by the judges, the examiner and the judges met to re-check the material for discrepancy in the number of acceptable responses for each case in question. In several instances where some doubt existed as to the acceptability of the response, the material was submitted to a third party for evaluation. Disagreements of this type were not very frequent, but when such a situation presented itself the above method was employed to cope with the problem.

B. The Population: 60 Schizophrenics.

The first criterion in selecting the sixty white patients was an unquestionable final diagnosis of schizophrenia; this is to say, no patients were included who had a diagnosis of schizophrenia with additional complicating components, such as alcoholism, chronic brain syndrome, or any form of central nervous system pathology due to injury, toxic conditions, unknown causes and vitamin deficiency. Although cases of the latter type are rarely met, yet several were present in the potential sample and had to be eliminated. Patients who had schizophrenic reactions accompanied by other disease, such as tuberculosis, were excluded. In short, anything which in some way could have altered the schizophrenic picture was excluded. This was done to eliminate as many possible factors which might complicate rather than clarify the obtained results.

Age was another factor that had to be considered. A lower limit of eighteen years of age and an upper limit of forty-five years were considered as cut-off points. The rationale for eliminating anyone under eighteen years of age or persons who may have suffered a psychotic break prior to that age was determined by the nature of the test administered. Since abstract conceptual thinking does not reach full maturity until approximately that age limit generally speaking, it was

felt that it would be rather absurd to test for any formal thinking disorder in someone not yet fully endowed with a particular function at the onset of the psychosis. This was done to avoid the paradox of stating that such a capacity is not operative or is impaired when in reality it was, in all probability, never present to its fullest degree of development.

The selection of the upper age limit had a twofold purpose. One being rather obvious, while the other was more of a precautionary move to avoid possible distortion of results. It was thus felt that in order to eliminate the element of senility from effecting the data that the age of forty-five be chosen as a relatively safe upper boundary. Since the possibility of some slight organic involvement increases with age, it was deemed that the upper limit was a necessary precautionary measure to avoid the inclusion of some of the not so discernible organic cases.

The third factor controlled was intelligence. It was desirable that the subjects have an average intelligence quotient. This was evaluated by various means. If intelligence tests were available, no one was selected with an I.Q. lower than 90 on the test administered. In the absence of test results grade level of achievement was checked. No one with less than high school education, for those under thirty years of age were included in the sample; while it was felt that completion of the eighth year was sufficient for those over

thirty-five years of age. Also considered as adjuncts in evaluating the intellectual capacity were the social milieu and occupation of the individual.

The reason for not including those below average in intelligence is again due to the nature of the test administered. Benjamin⁹ has pointed out that those individuals between 80 and 90 I.Q. tend to give responses which take on the literalness resembling that of the schizophrenic. Thus, to avoid this contamination the factor of intelligence was considered in selection.

The next selective factor was the omission of those patients who had received electro shock treatment within a period of a month prior to the date of testing. The length of time was decided upon by the examiner as a result of previous empirical observations. It was noted that those who had received this treatment usually exhibited memory impairment of varying degrees. This was not true of all cases, but a cut-off point had to be established. Thus, a period of one month appeared to be a reasonable lapse of time for disappearance of the major after-effects of shock.

The final point considered for preliminary screening was that of excluding anyone of foreign birth who had not obtained formal education in the American school system, since

⁹ John D. Benjamin, Ibid., p. 65-90.

formal knowledge of the language was deemed an essential condition in avoiding misunderstanding of the proverbs.

Finally the dichotomy between process and reactive had to be established in order to determine whether the patients belonged to one group or the other group, or did not fulfill the criterion. This was done by obtaining Elgin Prognostic Ratings for each individual selected.

The scale is a rating schedule designed to predict recovery in schizophrenia. It consists of twenty ratings weighted according to prognostic importance. The favorable factors are assigned negative weights and the unfavorable factors are assigned positive weights. These variables are to a large extent based on premorbid social history secured from those closely associated with the patient.

The Elgin Prognostic Scale was constructed by Wittman¹⁰ following a review of over fifty studies concerned with prognostic factors in schizophrenia. The initial validation included 343 cases diagnosed as schizophrenics by the medical staff at Elgin State Hospital. The staff judgment and the prognostic ratings were secured independently before treatment of each patient. The results revealed that the scale was more effective in predicting immediate outcome of therapy and was

¹⁰ P. Wittman, "A Scale for Measuring Prognosis in Schizophrenic Patients", Elgin Papers in Elgin State Hospital, Illinois, Vol. 4, 1941, p. 20-33.

much superior to staff estimates of prognosis. A follow-up study was undertaken with 804 schizophrenic and 152 manic depressives. Again the prognostic ratings were more accurate in predicting outcome of therapy than staff estimates¹¹. An additional study conducted by Wittman¹² in 1951 suggested the use of this scale in differentiating the two groups on the basis of prognostic scores.

In view of the facts presented, it was decided that the Elgin Prognostic Scale is a tool which can operationally define our criterion of process and reactive schizophrenia. With this thought in mind prognostic ratings were obtained for each individual selected. Only those patients with prognostic scores of minus ten or more and plus thirty or over were chosen for the study. These cut-off scores were empirically selected after consultation with the originator of the scale.

A pilot study was conducted to determine the number of patients that would be lost as a result of this cut-off criterion. It was noted that there was less than 50% return. In the actual collection of the data the return was approximately 45%. Our two groups would thus be extremes of a distribution containing approximately 22% of the potential population of the selected schizophrenics.

11 P. Wittman and L. Sternberg, "Follow-up of an Objective Evaluation of Prognosis in Dementia Praecox and Manic Depressive Psychosis", Elgin Papers, Vol. 5, 1944, p. 216-227.

12 P. Wittman, "Diagnostic and Prognostic Significance of the 'shut-in personality' as a Prodromal Factor in Schizophrenia", J. of Clinical Psychology, Vol. 4, 1948, p. 211-214.

In order to rate patients on the Elgin Prognostic Scale, it was necessary to read all pertinent information in their record and treatment folders. This usually included reports by the psychologist, the psychiatric case worker, and additional information obtained from the progress sheets maintained by the charge physician. Outpatient treatment notes were also checked.

In addition to cut-off scores of the Elgin Prognostic Scale, it was essential that certain items within the scale be consistent for each individual for the patient to fall into the process or reactive group. The items, and their corresponding number in the scale, were selected as follows:

1. Shut-in Personality
2. Schizothymic Personality
3. Defects of Interest
5. Inadequate Affect
6. Limited Range of Interest
7. Insidious Onset
10. Careless Indifference
11. Stubborn Trait
12. Low Energy Tone
15. Constitutional Bias
16. Ideas of Influence
17. Bizarre Delusions
18. Hebephrenic Symptoms
19. Absence of Atypical Symptoms
20. Asthenic Body Build

The items above had to be consistently positive or negative in direction for each patient for the cases to fit into the prescribed criterion for differentiating the two categories; thus, all the reactive group had to obtain

negative weights on these items, while the process group had to obtain positive weights. This did not pose a problem, since the cases selected on the basis of the cut-off scores exhibited this internal consistency on the items selected. There were some cases where one or more of the items deviated, and only a few which had to be eliminated due to greater deviations.

In a study by Lorr, Wittman and Schanberger¹³, a factor analysis of the Elgin Prognostic Scale was undertaken, in order to obtain factors useful in predicting recovery. Three factors were derived. These contained, with few exceptions, the items which were selected by this writer to differentiate the process group from the reactive group. The first factor was labeled "schizoid withdrawal", the second "schizophrenic reality distortion", and a third less defined factor of "personality rigidity of unadaptability"¹³. The first two factors seem identical to Jenkins¹⁴ "schizoid withdrawal" and "schizophrenic disorganization", which he considers as basic elements to the hypothesis of schizophrenia. Since our reactive group scored negative on these factors items it appears that these factors are not applicable to that group, while the process group which scored positively is endowed with these traits, which are essentially schizophrenic in nature.

¹³ M. Lorr, P. Wittman and W. Schanberger, "An Analysis of the Elgin Prognostic Scale", Journal of Clinical Psychology, Vol. 7, 1951, p. 260-263.

¹⁴ R.L. Jenkins, Ibid., p. 243-262.

C. Methods Used for Statistical Analysis of Data.

The reliability of scoring of the proverbs by the two judges was checked by the chi square method. A 2 by k table was constructed, and the total scores for each scoring category were obtained for the respective judges.

The scores for the number of acceptable responses were not used in determining the reliability of scoring, since they were the same for both judges. Their inclusion would have altered the significance of the chi square results; they were therefore omitted. The following formula was used to determine the reliability of the scoring of the proverbs by the two judges.

$$\chi^2 = \frac{(b_o - b_e)^2}{\delta e}$$

After the reliability of the judges on the scoring of proverbs was established, it was necessary to check whether any of the scoring categories differed significantly between the process and reactive groups. This was accomplished by taking the standard error of proportion for each of the categories in the reactive and process groups. The standard error of the difference between proportions was then obtained, finally a critical ratio was derived to determine what scoring categories were significantly different for the two groups at the .01 level of significance. The formulas used in checking the level of significance of the scoring categories are as follows:

$$\sigma_p = \sqrt{\frac{pq}{N}} \quad \text{and} \quad \sigma_D = \sqrt{\sigma_{p_1}^2 + \sigma_{p_2}^2}$$

Our next aim was to determine whether any of the proverbs had any discriminatory functions, in term of the type of responses given, between the two groups represented in this study. This final operation called for an item analysis by use of a "t" technique. This simply involves checking the obtained results to determine whether the t_{Df} was large enough to be significant at the .01 level of significance. This formula was devised by Dayhaw and Chagnon¹⁵ and is presented below.

$$t_{Df} = \frac{d_1 - d_2}{\sqrt{N_1 p_1 q_1 + N_2 p_2 q_2}}$$

In view of the hypothesis, a tool has been chosen, a population selected, and the statistical method used in evaluating the data has been presented. Let us now proceed to the next chapter which will deal with the presentation and discussion of the results.

¹⁵ Dayhaw and Chagnon, Unpublished formula to appear shortly.

CHAPTER III

PRESENTATION AND DISCUSSION OF RESULTS

Before presenting and discussing the findings of the present study, let us briefly review and consider some of the comments made concerning the tenability of the process-reactive dichotomy. It was Klapman¹ who stated, "The tendency to think of schizophrenic-like reaction and true schizophrenia or process and reactive schizophrenia has no basis in fact". Milici² pointed out that even when the onset appears to be acute in a fairly well integrated personality, there is upon close examination hardly ever lacking evidence of pre-dementia praecox disposition throughout earlier life. On the other hand, Meduna³ differentiates between symptomatic or exogenous and the endogenous schizophrenic states in his discussion of the concept of onierophrenia. Wittman⁴ obtained results which suggest that the concept of shut-in personality does

1 J.W. Klapman, "Therapeutic Potentialities in Psychotic Disorder", Diseases of the Nervous System, Vol. 5, 1944, p. 208-218.

2 P. Milici, "Dementia Praecox: Preventable", Psychiatric Quarterly, Vol. 11, 1937, p. 552-560.

3 L.J. Meduna, Oneriophrenia: The Confused State, Urbana, University of Illinois Press, 1950, xi-100 p.

4 P. Wittman, "Diagnostic and Prognostic Significance of the 'shut-in personality' as a Prodromal Factor in Schizophrenia", Journal of Clinical Psychology, Vol. 4, 1948, p. 211-214.

differentiate the process from the schizophreniform reaction of Langfeldt⁵. Kantor, et al.⁶, found that cases can reliably be differentiated into process and reactive schizophrenia, with the reactive group tending to have a non-psychotic Rorschach, while process are inclined to have a psychotic Rorschach.

The author does not now wish to comment here on the above résumé. It is being presented only to give perspective to, and to suggest the timeliness of, the present study.

In order to avoid the mere use of terms and to prevent the formulation of conceptual structures which in essence are non-definitive, it is being stated that our concept of the process-reactive dichotomy is based on the Elgin Prognostic Scale item scores, and the factors derived from the analysis of the items. By utilizing these tools an operational definition of the process and the reactive types of schizophrenia is being used.

It was hypothesized in the introduction that a significant difference in the formal thought process should be discernible between the reactive and process groups. The next

⁵ Gabriel Langfeldt, "The Diagnosis of Schizophrenia", American Journal of Psychiatry, Vol. 108, 1951, p. 123-125.

⁶ R.C. Kantor, et al., "Process and Reactive Schizophrenia", Journal of Consulting Psychology, Vol. 17, 1953, p. 157-162.

task was one of selecting a tool, a population, and the statistical techniques for determining whether the above hypothesis was tenable or not in light of the results obtained.

Before turning to a discussion of the data, consideration will be given to the degree of agreement between the two judges in scoring the proverbs. A chi square of 1.66 obtained for their scoring would indicate that there was no significant difference between them.

With the reliability established, it was safe to proceed to determine the standard error of the difference between the types of responses of the two groups, and to check whether any of the obtained differences were statistically significant at the .01 level, or higher.

Table I contains the scoring categories of Benjamin⁷, with few omissions, and with the additional symbol "NF", included to check whether the two groups differed in their familiarity with the proverbs. Also included was another combination "R-(NF)": since "R" includes all refusals regardless of the reason for so doing, the addition of "R" minus the "NF" category was expected to give a more accurate picture of the "R" response between the two groups.

7 John D. Benjamin, Ibid., p. 65-90.

TABLE I.-

Response Differences Between Process and Reactive Groups

N: 390

Categories		Group "R"	Group "P"	D	δD	C.R.
A	N	187	102			
	p ¹	.48	.26	→ 22	.03361	6.54
R	N	68.5	132			
	p	.176	.364	→ 188	.03105	6.05
FS	N	70.5	66.5			
	p	.1807	.1700	→ 0107		
L	N	39	66			
	p	.10	.169	→ .069	.0243	2.88
l	N	20.5	12.5			
	p	.0525	.0320	→ .0205		
P-FA	N	4.5	11			
	p	.014	.028	→ .014		
NF	N	40	40			
	p	.102	.102			
R-(NF)	N	32	97			
	p	.082	.249	→ .167	.0258	6.47

1 p: proportion of total number of responses; 1.00=390.

Now that the study has been given perspective, a presentation of the various findings will be discussed. The first section will consider the overall response differences between the two groups, ~~will~~^{while} the second part concerns itself with response differences in each proverb, between the process and the reactive group. The final portion of the chapter will deal with the analysis of differences between Group "R" and Group "P" of the replies to Phrase thirteen.

A. Overall Response Differences Between the Two Groups.

A cursory glance at Table I immediately reveals that in category "A" there exists a statistically significant difference between the process and reactive groups. The obtained critical ratio of 6.54 is significant beyond the .001 level, with the reactive group giving a significantly greater number of acceptable responses than the process group.

Now what does this difference mean? Statistically speaking the obtained critical ratio reveals that it is indeed unlikely that the two groups belong to the same parameter. It also reveals that group "R" has greater ability of desymbolization than group "P", that is to say, group "R" has greater ability to translate the figurative symbols into their proper category. Thus, it can be stated that the reactive group exhibits a lesser degree of thought disturbance than the process group. It can also be said that group "R" exhibits

a higher degree of reality testing, since it can accomplish a greater degree of desymbolization, as evidenced by the greater number of responses which conform to the generally accepted answer to these proverbs. It would seem, therefore, that group "R" is more aware, more conscious, and thus more in contact with external surroundings, and reacts more appropriately to these stimuli than group "P". Sullivan⁸ would state that group "R" has a greater degree of consensual validation than group "P", and significantly so. This is to say, "What we say can be understood by the other party in the sense that both understand what is said as being true"⁸. This is tantamount to stating that the thinking of the reactive group is significantly more complete, more logical, and accompanied by a better use of grammar.

The above concepts bring to mind several studies of language and thought of the schizophrenic group, Arieti^{9,10} pointed out that the thinking of the schizophrenic is

⁸ H.S. Sullivan, "The Language of Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 4-16.

⁹ S. Arieti, "Specific Logic of Schizophrenia and Other Types of Autistic Thought", Psychiatry, Vol. 11, 1948, p. 325-338.

¹⁰ S. Arieti, "Autistic Thought: Its Formal Mechanisms and Its Relation to Schizophrenia", Journal of Nervous Mental Disease, Vol. 111, 1950, p. 288-303.

paleological in nature. Von Domarus¹¹ states that it is paralogical, that is, an idea next in the train of thought is repressed and replaced by another. This type of thinking established similarity or connection between two things on the basis of accidental qualities or predicates rather than on the essential nature of things. Bleuler¹² noted that schizophrenics lose their faculty of logical ordering of thoughts, with wishes and fears prevailing in place of logic. This seemingly is the type of thinking that is more prevalent in our process group. Whether, on the other hand, the reactive group exhibits thinking which is similar to, or significantly different from, the neurotic or normal is not known. All that can be stated thus far, on the basis of the results of category "A", is that the reactive group exhibits a significantly greater degree of normal thinking than the process group.

The next category presents a rather negative approach to the problem of differences between the two groups. It involves the consideration of not one but of two aspects of

11 E. Von Domarus, "The Specific Law of Logic in Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 104-144.

12 E. Bleuler, Dementia Praecox or the Group of Schizophrenia, translated by Joseph Zinkin, New York, International University Press, 1950, viii-548 p.

the refusal category, which are represented by "R" and "R-(NF)". The former category is indicative of the number of times the group failed to undertake the task regardless of the reason for so doing, while the latter category is indicative of the number who failed to engage in the interpretation of proverbs for reasons other than unfamiliarity with the particular saying.

Another aspect which may have thrown some light on the nature of our two groups would have been a further analysis of the components constituting the "R-(NF)". It may have been possible to ascertain what factors were responsible for refusals and also, which of these exhibited a significant difference between the two groups. One factor, which can be eliminated as responsible for the existing differences in refusal between the two groups is unfamiliarity with the proverbs.

As noted in Table I, the difference between group "R" and group "P" on refusal is statistically significant beyond the .001 level as evidenced by a critical ratio of 6.05. The category "R-(NF)", with an obtained critical ratio of 6.47 is even more significant than the "R" response. Both categories show that the process group exhibits a greater degree of this response than the reactive group.

A comparison of category "A", and "R" and "R-(NF)", for the two groups suggests that there is a negative relation between the "A" and "R" response. This of course is understandable since "A" involves the process of correct desymbolization, while "R" means that the patient was unable to desymbolize correctly. Thus there exists a significant difference between group "R" and group "P", with the latter showing a greater degree of impairment in thinking. It can hardly be stated that the impairment is in formal thinking since the meaning of the "R" response is unknown.

A third category to be discussed is "L", or complete literalness. An example will give the reader some idea of the response type. Proverb No. 1 will be used: "When the cat's away the mice will play". The response to this proverb as given by one of the patients was as follows: "When the cat's away they will play", and another response, "They're free, no one's watching them". In the last example, although an explanation is presented, the difference is not significant, since only the literal meaning is given.

The results of the obtained difference between the two groups on category "L" are given in Table I. It will be noted that group "P" exhibited a greater number of this response type than group "R". The critical ratio being 2.88, which is significant beyond the .01 level.

The difference between the two groups suggests several hypothesis. One being that the process group experiences a greater degree of difficulty in shifting in the psychic field. Since proverbs are concrete in form but abstract in meaning, it appears that the statement of Jenkins¹³ regarding interpretation of proverbs is applicable: "Their interpretation involves a synthetic process of picking from life experience generalizations from which the concrete figures of the proverb" (. . .) may serve as effective symbols". He further states: "In schizophrenia symbolization loses, to a greater or lesser degree, its function of facilitating adaption to the world of reality. With this change, the capacity to distinguish between symbol and substance diminishes"¹⁴. Muncie¹⁵ also states that "the metaphor tends to be literally understood, and thus the broader meaning of the proverb is missed or distorted". As this occurs a notable loss of reality orientation becomes apparent. Sullivan¹⁶ and Jenkins¹⁴ both stressed the fact that the thinking process must continually be checked with reality, otherwise the thinking progressively loses its correspondence with reality. It

13 R.L. Jenkins, "Nature of the Schizophrenic Process, A Working Hypothesis for Therapy", Archives of Neurology and Psychiatry, Vol. 64, p. 243-262.

14 R.L. Jenkins, Ibid., p. 243-262.

15 W. Muncie, "The Psychopathology of Metaphor", Archives of Neurology and Psychiatry, Vol. 37, p. 796-804.

16 H.S. Sullivan, Ibid., p. 4-16.

therefore becomes clear that the amount of complete literalness of meaning assigned to the proverbs is determined by the degree of reality testing present. It seems apparent that the greater the reality testing operative in the individual, the lesser the number of literal responses to the proverbs.

In Table I group "P" exhibits a greater amount of "L" and thus a significantly greater degree of reality distortion than group "R". The findings of categories "A" and "R" further strengthen those of category "L". It appears that the greater the number of "L" and "R" responses, the lesser the number of "A" category. Stated in other terms, group "R" is characterized by a greater degree of reality testing and a lesser degree of reality distortion. The reversal being true for the process group.

The remainder of the results of the scoring responses presented in Table I were not statistically significant at the .01 level; however some consideration of the implication of these findings will be dealt with.

The category "l" or small literalness is, to quote Benjamin¹⁷, "difficult to evaluate". He noted that the "l" response is found in schizophrenics of both low and superior intelligence, often accompanying "L" responses. And this,

17 John D. Benjamin, Ibid., p. 65-90.

he feels, confirms their relations, in some cases, to the "L" response. Whether this is a tenable assumption is not too clear, and our results do not shed much light on the matter. It would seem that if category "l" and "L" were positively related that there would be a greater number of "l" in the process group than in the reactive group, but such was not found in our results. It may be that a study of neurotics and normals would give us a better perspective of the relationship of "l" to "L", and also to other responses in the system, if such an inter-relationship exists.

In our study no significant difference was obtained between the reactive and process group on the "l" category. It does appear however that the "l" type response is characteristic of the more mild type of formal thought disturbance; but exactly what significance to attach to it is difficult to say.

An example of this response type will illustrate the nature of this category. Proverb No. 6: "A rolling stone gathers no moss" illicited the response: "Somebody that's rolling from one place to another will never get ahead". The use of "rolling" puts this response into the "l" category.

One could hypothesize that the "l" type response, since it appears to be more closely related to the "A" category than the "L" category, is somewhat similar to the disturbance of attention which is reflected in missing a word in speech

or in sentence structure. This can appear under sever strain, or increasing frustration, or in the less severe schizophrenic cases, as mentioned by Bleuler¹⁸. Whether this assumption is tenable is a matter for investigation, but it does appear from our results in Table I that "l" is more directly related to "A" and inversely related to "L", which suggests that the above hypothesis may be worthy of further investigation.

The fifth category, false desymbolization, denoted by the symbol "FS" was rather prevalent in both groups. The exact nature of this response is not clear either. It appears to be very closely related to the refusal, although it is quite different from it. An "R" response means no desymbolization has taken place, while "FS" represents an effort or attempt that has missed the mark. ~~Through~~ the end result may appear the same, the "FS" reflects the presence of a higher degree of integration, and in some cases a greater amount of energy tone and less careless indifference than the "R" response.

Benjamin¹⁹ has pointed out that due to the complexity of this response it is rather difficult to evaluate in terms of a formal thinking disorder, since there is a great variety

18 E. Bleuler, Ibid., viii-548 p.

19 John D. Benjamin, Ibid., p. 65-90.

of answers to this category. The content of the response being determined by individual expressions and psychotic preoccupation.

It appears to the experimenter that "FS" takes on a rather close relation with the "R" response, though the former has qualitative differences. In light of this hypothesis a critical ratio was obtained for the difference between the two groups for "R+FS" and "[R-(NF)]+FS" and found to be 4.28 and 4.46 respectively. Both critical ratios indicate a very significant difference between the two groups beyond the .001 level of significance, with the process group having a greater number of these responses and thus a larger amount of reality distortion.

The next category in Table I, "P-FA", though not significant, certainly shows a trend in the proper direction and is in conformity with the findings discussed thus far. It will be noted that the process group exhibits a greater amount of this category than the reactive groups, though the difference is not significant.

As stated earlier in the chapter, a prerequisite to translating the concrete metaphorical meaning of the proverbs into the correct abstract symbols, demands a sound grasp on reality. It appears that the process group suffers a greater degree of reality distortion than the reactive group, though

with respect to the findings in category "P-FA", only a trend is noted and the difference is not significant. It is to be noted, however, that significant differences in reality distortion exist between the two groups as evidenced by the results of responses "A", "R" and "L", and that the trend observed in false abstraction between the process and reactive group is in conformity with the results obtained by other observers. Benjamin points out that:

It is an interesting fact, previously noted by several observers, that the schizophrenic who is most literal, who has the greatest difficulty in dealing with normal symbols and abstractions, often shows a predilection for unusual symbolism and pseudo-abstract thinking.²⁰

The content of the above quotation certainly has been characteristic of the process group in this study.

The last category, "NF", was merely included to avoid possible speculation on the fact that some of the obtained differences could be due to unfamiliarity with the proverbs. Results in Table I indicate that both groups exhibit the same amount of this component, and therefore "NF" is not a factor that needs consideration when interpreting obtained differences or similarities between the two groups.

20 John D. Benjamin, Ibid., p. 65-90.

Now that the results of the response differences between the process and reactive groups have been discussed for the thirteen proverbs combined, the next step is to consider the response differences in each proverb between the process and reactive groups.

B. Response Differences in Each Proverb Between Two Groups.

In Table II, Proverbs One, Four, Five, and Six discriminate significantly between the process and the reactive group on category "A", with the reactive group exhibiting the greater number of these responses. These differences are statistically significant at the .01 level or higher. In the refusal category, which is inversely related to category "A", Proverbs Six and Twelve, exhibit significant differences, with the process group having the larger number of these responses. And the last significant difference was obtained in the "P-FA" category on Proverb Two. With the process group having the significantly greater number of such responses.

It appears that the above results are in agreement with the findings noted in Table I, for the overall test, with the exception of category "L" which did not exhibit any significant differences at the .01 level in Table II, though several would be significant at the .05 level. And finally, the responses "FS" and "l" did not exhibit significant differences, which is definitely in accord with the finding of these responses in the test as a whole.

TABLE II

Response Differences in Each Treatment Between Progress and Reactor Groups

Categories	1	2	3	4	5	6	7	8	9	10	11	12	14
A	FR	21	16	14	24	9	8	15	22	11	8	9	8
	FD	11	14	6	11	1	1	9	16	3	5	3	4
R	FR	5.5	0	4	0	14	20	3	0	6	15.0	10.5	3
	FD	3.5	4	0	7	5	27	8.5	5.5	2	0.0	17	12
T0	FR	4	2	3.5	3	15.5	0.0	6.5	4	5.5	0.0	7	12.5
	FD	5.5	4	0.5	3	1.5	0.0	10	4.5	6	0.0	5	5
L	FR	1	0	5.5	1	4.5	1.5	2.5	3	6	3.5	4.5	5
	FD	3.5	1	7.5	2	3	0.5	3.5	0	0	1	0.5	3
1	FR	0	12	3	0	0	1	2	0	1.5	0.5	0	0.5
	FD	1	5	3	0	0	0	1	0	0.5	2.5	0	0.0
P-FA	FR	0.5	0	0	0	2	0	1	0	0	0	0	1
	FD	1	2	1	1	2	1	1	1	1	0	1	0
MP	FR	0	0	2	1	2	13	3	0	3	0	9	0
	FD	0	0	1	0	4	16	1	1	2	0	6	0

1 All differences indicated are significant at the .01 level or higher.

Another note of interest on Table II is the absence of the "FS" category for sayings Seven and Eleven. This is due to the fact that these two phrases require no desymbolization, but "either a translation from more general to more specific terms, or the mere restatement in simpler language"²¹. The purpose of these phrases was to measure the degree of ability to shift from "one type of problem to another"²¹.

A glance at categories "A", "R", and "L", indicates that both groups have a great deal of difficulty in shifting, but that the process group exhibits a greater amount of stereotypy than the reactive group, though the difference is not significant.

The "NF" category in Table II does not exhibit any differences. It will be of interest to compare our results with those of Benjamin²¹ with regards to difficulty level and familiarity with the proverbs.

He states that Proverb Twelve is not only the most difficult but the most unfamiliar. The trend noted in Table II suggests that Proverb Seven is more difficult and less familiar than Proverb Twelve, as evidenced by replies to categories "A", "R", "FS", "L", and "NF".

²¹ John D. Benjamin, Ibid., p. 65-90.

Amongst the most familiar in our list were numbers One, Two, Five, Eleven and Fourteen, while Benjamin²² found numbers Two and Six falling in the most familiar category. The latter saying according to our findings was third in difficulty level and also third amongst the least familiar.

As stated in the previous chapter, the thirteenth saying on our list was included to determine the manner in which the two groups would reply to this absurdity. It is this aspect of the study that will be considered in the section to follow.

C. Response Type Differences on Phrase Thirteen.

In the previous chapter it was mentioned that saying number Thirteen, "Ingratitude, thy name is women", was purposely misquoted "in order to illicit possible responses to what is, after all, an absurd statement"²². As a result of this misquote the response could not be included with the other proverbs for evaluation in terms of formal thinking disorder responses. On the other hand it was felt that an investigation of the manner in which the two groups reacted to this saying might be of value in understanding more about the nature of the two groups.

Table III indicates that the process and reactive groups differ, though not significantly, in the "NF" category, with

22 John D. Benjamin, Ibid., p. 65-90.

TABLE III.-

Analysis of Differences Between Process and Reactive Groups
of Replies to Saying Thirteen.

Categories	Group "R"	Group "P"	Differences
NF	22	18	4
NF \bar{c} no answer	14	15	1
NF \bar{c} answer	6	1	5
Answer	5	2	3
Ans. \bar{c} nonsensical reply	1	10	9
Denial of proverb	3	1	2
NF \bar{c} correction of prov.	1	1	0

1 Differences underlined are significant at the .01 level or higher.

\bar{c} : cum.

group "R" having the larger number of these replies than group "P". It could be hypothesized that the greater the proportion of unfamiliarity with this saying, the greater the degree of reality testing and orientation. This hypothesis does not seem contraindicated since lesser the degree of "NF" the greater the unawareness of the absurdity of the saying, and the ~~greater~~ ^{lesser} the degree of reality orientation. This is just a conjecture; whether the hypothesis is tenable is a matter which might be clarified by further investigation.

The "NF \bar{c} with no answer" simply means that the patient was unfamiliar with the saying and did not venture an answer. The next two responses "NF \bar{c} answer" and "answer" involve logical attempts to explain the saying. The reactive group exhibits a greater number of these responses than the process group. Exactly what this method of replying reflects is not clear, but the next category may shed some light on this matter.

There is a significant difference between the reactive and process groups on "Ans \bar{c} nonsensical reply" category. This difference reveals that group "P" gave a significantly greater number of answers that were not logical and not related to what the saying might possibly imply. This category might be in some ways comparable to "R" and "FS" type of response.

The sixth category "Denial of proverb" simply lists the number of people who denied that "women are ungrateful". This probably reflects the attitudinal set of the individual with regard to the subject.

The last category though numerically small is very revealing. The "NF \bar{c} correction of prov." represents the number who denied that this was the correct version of the proverb and then proceeded to render the correct form. This really indicates how unfamiliar both groups were with the proverb, and may be considered a check on the "NF" category.

Now that the results of the study have been presented, discussed and given perspective, the following section will deal with a summary of the findings, the conclusions and areas suggesting further study.

SUMMARY AND CONCLUSIONS

The objective of the present study was to investigate and measure any existing differences in formal thinking of the process and reactive schizophrenic groups, in order to determine the degree of reality distortion present. The tool chosen to measure formal thinking of the two groups was Ebaugh's List of Proverbs, with the qualitative findings being quantified by the use of a scoring system devised by Benjamin¹. The final operation was the statistical analysis of the data to evaluate the obtained differences between the two groups on the overall test and also between each proverb.

The results of the study indicate that:

1. The Proverb Test as a whole differentiates significantly the process and reactive groups at the .01 level or higher on the following responses: "A", "R", "R-(NF)", "L", "R+FS", and "R-(NF)+FS". These findings are consistent in their [directional] trend for the respective groups, with group "R" giving a significantly larger number of "A" responses, while group "P" had a significantly larger number on the other five responses.

¹ John D. Benjamin, "A Method for Distinguishing and Evaluating Formal Thinking Disorders in Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 65-90.

2. The remainder of the responses for the overall test listed in Table I, namely "1", "FS", and "P-FA", though not significant at .01 level were skewed in the same direction.

3. The analysis of the individual Proverbs showed significant differences between the two groups, on scoring responses, "A", "R", and "P-FA". These differences were significant at the .01 level or higher. Table II will immediately reveal the number of the proverbs which were significant, for the above mentioned responses. The results of these findings between the two groups were consistent with the general findings with the exception of response "L", which exhibited no differences significant at the .01 level, but some that would be significant at the .05 level.

4. A difference significant at the .01 level was obtained between the process and reactive groups on phrase number thirteen which is a misquote. The category in which this difference occurred was "NF \bar{c} nonsensical reply". The process group giving the greater number of replies. This is in accord with the other findings presented.

5. The general overall interpretation of our results point to a significantly greater amount of reality testing and orientation, as measured by the degree of abstraction, for the reactive group than for the process group. These differences are evident from the substantial size of the critical ratios.

6. Statistically speaking, the obtained differences suggest that it is highly improbable that the two groups belong to the same parameter. This suggest an area of further study. It would involve an experiment to determine the relationship existing between the two groups and the neurotic and normal population. This would give a clearer perspective of the position each group would occupy on the continuum.

7. The items on the Elgin Prognostic Scale which were used to differentiate the two groups, reveal that the process group exhibits the presence of the following factors, "Schizoid withdrawal", "Schizophrenic reality distortion", and "Stereotype behavior". The presence of these factors in the process group was reflected in the analysis of the Proverb responses.

8. Concluding that the reactive group has less formal thinking disorders and thus better reality testing suggests the hypothesis that this group has a greater potential for reversing the schizophrenic process, and therefore a better prognosis, than the process group. In the light of this hypothesis and the findings of this study, the dichotomy of process and reactive schizophrenia is warranted; and furthermore, this differentiation is of diagnostic, therapeutic, and prognostic significance.

9. There is a need for a reliability and validity study of proverb and the scoring system in order to derive a clearer perspective of the significant responses, and to observe the trend of the remainder of the scoring responses between these two groups.

BIBLIOGRAPHY

Arieti, S., "Specific Logic of Schizophrenia and Other Types of Autistic Thought", Psychiatry, Vol. 11, 1948, p. 325-338.

Discusses the law of paleological thinking or archaic logic, with an explanation of the "why" and "how" a person abandons a logical system of thought. Explain that not all thinking is logical or paleological, but that some is associational, and does not follow an end. This latter form of thinking follows the law of contiguity/similarity and is effected by emotional influence. Points out that schizophrenics suffer from a three types of thought disturbances mentioned. This was useful in acquiring an understanding of thought disturbances, and clarifying concepts used in this study.

-----, "Autistic Thought: Its Formal Mechanisms and Its Relationship to Schizophrenia", Journal of Nervous Mental Disease, Vol. 111, 1950, p. 288-303.

Elaborates on the concept of autistic thought. Explains how the drive or force for autistic thinking may be unconscious, but not the thought itself. Points out that autistic thinking may be undertaken by a child, poet, neurotic, primitive man, or when emotions get the upper hand. The fact is stressed that autistic thought is not solely characteristic of schizophrenics, though these individuals may exhibit schizophrenic like behavior. The difference between the schizophrenic and the others is the awareness on the part of the latter that these things are not so. This work strengthened the tenability of existence of a schizophreniform or reactive group.

Ausubel, David P., "A Psychopathological Classification of Schizophrenia", Psychiatric Quarterly, Vol. 23, 1944, p. 127-144.

Presents two classifications of schizophrenia, namely the "evolutionary" and "reactive form". Describes the psychopathological mechanism of the evolutionary type as an outgrowth of defects in maturation and ego development in a predisposed introversive individual. The second type has had a normal development but is driven into schizophrenic reaction in an attempt to gain freedom from an unbearable situation. This was of theoretical interest. His dichotomy was fruitful in gaining a better understanding of the two types used in this study.

Balken, E.R., "A Delineation of Schizophrenic Language and Thought in a Test of Imagination", Journal of Psychology, Vol. 16, 1943, p. 239-271.

Attempts to illicit phantasies of seventy-five schizophrenics with ten neutral TAT cards in effort to note manner in which material was handled. The material points to an almost total unawareness of self in relation to the outer world of persons and object. There was almost complete fusion of subject and object in the various productions. This fusion of subject and object illustrates rather well the paleological thinking which was noted in the process group in this study.

Bellak, Leopold, Dementia Praecox: The Past Decade's Work and Present Status: A Review and Evaluation, New York, Grune and Stratton, 1947, xv-456 p.

This was valuable as a cross reference on some of the works reviewed by the experimenter.

Benjamin, John D., "A Method for Distinguishing and Evaluating Formal Thinking Disorders in Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 65-90.

The author presents and discusses a scoring system for evaluating proverb responses. It gives examples with explanation of each scoring response adopted. It surveys the formal thinking disorders found in schizophrenia and other groups. This system was adopted in this study.

Bleuler, Eugen, Dementia Praecox or the Group of Schizophrenia, translated by Joseph Zinkin, New York, International University Press, 1950, viii-548 p.

This is a basic book on the various aspects of schizophrenia. It was important in crystalizing and giving perspective to some of the concepts used in this study.

Boisen, Anton T., "Onset in Acute Schizophrenia", Psychiatry, Vol. 10, 1947, p. 157-166.

Discusses the relationship between creative thinking and acute schizophrenic reactions, with the stages of development common to both. Points out the flexibility of the normal thinking procedure in solving problems. The schizophrenic lacks this trait and thus what appears to be creative thinking is an obsession with a problem which results in disturbance of the psychological homeostasis of the organism. Lists three categories into which acute cases fall after discharge. This was important in understanding our concept of reactive cases and what to consider in differentiating the two groups.

Bolles, M. and K. Goldstein, "A Study of Impairment in Abstract Behavior in Schizophrenic Patients", Psychiatric Quarterly, Vol. 12, 1938, p. 42-65.

Found that schizophrenics and normals differ in abstract behavior but not in concrete attitude, when the latter was appropriate. This study points to the various developmental stages of thinking process and the order in which they become impaired. This was useful in deciding the degree of impairment in the two groups. Also of historical importance.

Cameron, N., "A Study of Thinking in Senile Deterioration and Schizophrenic Disorganization", American Journal of Psychology, Vol. 51, 1938, p. 650-655.

Used incomplete sentence fragments which were to be completed by expressing causal relationship. This demonstrated how different schizophrenic thinking was from that of a child or senile. The schizophrenic was characterized by inexact approximation, progressive unclearness and unprecise substitutes. This was not a very regressed group and he does not speak of individual differences within his group. This was reviewed for historical reasons.

-----, "Deterioration and Regression in Schizophrenic Thinking", Journal of Abnormal and Social Psychology, Vol. 34, 1939, p. 265-270.

This illustrates thinking disturbance found in schizophrenic. It explains that the lack of internal organization, the inability to eliminate conflict and irrelevant elements results in confusion not only to the hearer but to the patient. This sound like the lack of consensual validation which "discussed in this study. This was used to illustrate how this type of thinking brings about reality distortion.

-----, "Experimental Analysis of Schizophrenic Thinking", in J.S. Kasanin, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 50-64.

Discuss speech content of child and schizophrenic and points out how they differ. Schizophrenic speech is not incoherent, but it lacks unity and synthesis. This is due to introjection of individual problems, a factor resultant from **lack** of thought control. This was of theoretical importance in discussing the concept of reality testing.

Darrah, L., "Shall We Differentiate Between Schizophrenia and Dementia Praecox"? Journal of Nervous Mental Disease, Vol. 9, 1940, p. 323-328.

She differentiates between dementia praecox and schizophrenia. The former fits are concept of the process schizophrenic group, while the latter is descriptive of the reactive group. This was of historical importance. Useful in delineating our two groups.

Gladstone, Iago, "On the Etiology of Depersonalization", Journal of Nervous Mental Disease, Vol. 105, 1947, p. 25-39.

Describes the differences between depersonalization and schizophrenia. In the former, the "super ego" is functionally weak, in the latter the "id" is constitutionally weak. Comparison is offered between the two types. States that the depersonalized individual is neurotic while the schizophrenic is psychotic. This was presented since both tend to be viewed as one disease. This was of importance in selection of the two types studied.

Goldstein, K., "A Methodological Approach to the Study of Schizophrenic Thought Disorder", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 17-40.

Discusses concrete and abstract attitude. The former being bound to the here and now, while the latter transcends sense impressions and is more conceptual in nature. With loss of conceptual thinking the boundaries become less defined. This is important in our concept of reality testing and its relationship to conceptual thinking. It was noted that concrete attitude overlooks the essential nature of things. It is a type of thinking which bases similarity on predicates rather than essential nature of things. This is schizophrenic. **This gave** us some idea of what to expect in the study providing the hypotheses were tenable.

Goldstein, L.D., "Language of Schizophrenia", Journal of General Psychology, Vol. 45, 1951, p. 95-104.

Presents the various theories of schizophrenic language disturbance and attempts some synthetic interpretation of them. He considers the disturbance of function of communication as cardinal problem in schizophrenia. In this respect his views are similar to those of Sullivan and Cameron. Mixture of concrete and abstract attitude in schizophrenia as due to loss of definiteness. This is akin to our problem of awareness and reality testing. It is a good review of the various theories.

Hanfmann, E., "Analysis of Thinking Disorder in a Case of Schizophrenia", Archives of Neurology and Psychiatry, Vol. 41, 1939, p. 568-579.

Attempt is made to characterize developmental stages of thinking disturbance, by a thorough study of one case. A variety of language and performance tests were administered to check the thinking process. The results indicate a loss of categorical thinking, that is, the inability to perceive objects as members of a class, or as other than concrete objects. Attempt was made to relate the amount of concreteness to disorientation. This was a useful concept in interpretation of scoring differences in the study.

Hanfmann, E. and J.S. Kasanin, "A Method for the Study of Concept Formation", Journal of Psychology, Vol. 3, 1937, p. 521-540.

This involves a discussion of the concept formation test devised by the two authors. This was of historical importance.

Jenkins, R.L., "Nature of Schizophrenic Process: A Working Hypothesis for Therapy", Archives of Neurology and Psychiatry, Vol. 64, 1950, p. 243-262.

Presents the hypothesis that schizophrenia is a progressive maladaptive process resulting from frustration beyond the patient's limits. This has therapeutic implications which he discusses. Reviews the use of proverbs and fables as a measure of schizophrenic withdrawal or disorder. Explains the process involved in interpretation of these metaphors, and how this process is impaired in schizophrenics. This was of use in the discussion of results and in the justification of the use of proverbs as a tool.

Kantor, R.C., et al., "Process and Reactive Schizophrenia", Journal of Consulting Psychology, Vol. 17, 1953, p. 157-162.

Notes that the process-reactive dichotomy is justified on the basis of their study. Noted that the former tends to have non-psychotic Rorschachs while the latter tends towards non-psychotic Rorschachs. This had a great deal of significance in considering the nature of the population and results expected in our study. This study is both of therapeutic and prognostic significance.

Kasanin, J.S., "Disturbance of Conceptual Thinking in Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 41-48.

Discusses three types of thinking, namely physiognomic, (syncretic), concrete, and abstract. States that schizophrenic thinking is concrete, having a personal rather than symbolic meaning. Discusses five classifications of schizophrenia based on the degree of contact with reality. This was useful in our own dichotomy and in formation of our own concept.

Kasanin, J.S. and E. Hanfmann, "An Experiment Study of Concept Formation in Schizophrenia: Quantitative Analysis of Results", American Journal of Psychiatry, Vol. 95, 1938, p. 35-52.

They administered their concept formation test and found the schizophrenics differ from the normals in conceptual thinking. Education is seemingly related to degree of conceptual thinking. This is true of both groups. This was important to know in our own study. There was a question and answer session after the reading of this paper. The question asked was whether thought disorder was present in all schizophrenics. Kasanin does not think so. This definitely shows the need for a dichotomy in schizophrenia, because of the implications involved in the differentiation.

Kraepelin, E., Dementia Praecox, translated from the 8th German Edition of Textbook in Psychiatry, Edinburgh, E.S. Livingston, 1918, x-331 p.

This book was reviewed to obtain first hand information of Kraepelin's views on this disorder. He, like Bleuler, states that this disease has a constitutional bias, but admits that there are cases which show marked improvement or even complete recovery. This suggests the need for establishing a dichotomy with the schizophrenic group a evidenced which will assist in determining therapeutic and prognostic results.

Langfeldt, Gabriel, "The Diagnosis of Schizophrenia", American Journal of Psychiatry, Vol. 108, 1951, p. 123-125.

This is an amplification of an earlier foreign publication in which he dealt with the concept of doubtful and typical schizophrenia. The former being labeled "schizophreniform state or reaction". These two states discussed are fundamentally different in their prognosis, and are comparable to the reactive-process dichotomy in this study. This article was useful in formulating our two concepts.

Lorr, M., P. Wittman, and W. Schanberger, "An Analysis of the Elgin Prognostic Scale", Journal of Clinical Psychology, Vol. 7, 1951, p. 260-263.

This factor analysis of the scale was of importance in discussion of the results and justified the items selected to differentiate the process from the reactive groups in our study.

Meduna, J.L., Onierophrenia: The Confused State, Urbana, University of Illinois Press, 1950, xi-100 p.

The author differentiates classical from symptomatic or exogenous schizophrenia. States that the latter has a better prognosis. The classical is similar to the process group discussed in this study, and the exogenous approaches our concept of the reactive type. These findings were important to our conceptual frame work.

Meyer, A., "Fundamental Conceptions of Dementia Praecox", Journal of Nervous Mental Disease, Vol. 34, 1906, p. 331-336.

This presents Meyer's approach to understanding schizophrenia. Speaks of different types. And state that various type have different degree of favorable prognosis. This article is really advanced considering the futile view which Freudianism took of schizophrenia. It is of historical importance and give a very clear perspective into schizophrenic disorder.

-----, "Dynamic Interpretation of Dementia Praecox", American Journal of Psychiatry, Vol. 21, 1910, p. 385-403.

He opposes the fatalistic view towards schizophrenia and attempts to study the cause and effect relationship in the disorder. This was written in opposition to the school that felt schizophrenia was organic and deteriorative and therefore hopeless. His cause-effect relationship of schizophrenia took a more promising view and thus effected the attitude towards this disease. It is of historical importance.

Milici, P., "Dementia Praecox: Preventable", Psychiatric Quarterly, Vol. 11, 1937, p. 552-560.

The author is of the opinion that even when onset is acute in a well integrated individual, that there is never lacking upon close examination definite evidence of pre dementia praecox disposition in earlier life. This is historically significant in illustrating the change in outlook towards schizophrenic disturbance.

Milici, P. and C. Salzen, "Situational Schizophrenia", Psychiatric Quarterly, Vol. 12, 1938, p. 650-668.

They describe cases of schizophrenic reaction, which may be hysterical in nature. This reaction is viewed as protective rather than destructive. This is important in clarifying the concept of reactive schizophrenia discussed in this study.

Nielsen, J.M., "The Basic Pathology of Schizophrenia", Journal of Nervous Mental Disease, Vol. 107, 1948, p. 340-357.

Describes several cases of patients which show disturbance in association, but no other psychotic symptoms. These cases differ from the neurotic and psychopathic and he suggests that they be labeled apsychotic schizophrenia with disturbance in the diencephalon. He feels etiology is congenital but not hereditary. The study was important in reviewing the various views on the schizophrenic dichotomy.

Rashkis, H., et al., "A New Method for Studying Disorder of Conceptual Thinking", Journal of Abnormal and Social Psychology, Vol. 41, 1946, p. 71-74.

A verbal sorting test given to schizophrenic, paretics, normal adults, and children. The test was to measure whether sorting was on an abstract or complex level. Schizophrenics could not do abstract sorting. Also noted resistance in shifting from one attitude to another in schizophrenic group. This is of historical importance in determining the level of thinking characteristic of schizophrenics.

Slatkin, J.S., "Nature and Effect of Social Interaction in Schizophrenia", Journal of Abnormal and Social Psychology, Vol. 37, 1942, p. 345-368.

Observed twenty schizophrenics in a room for a period of four months. Concluded that there is a difference in symbolic interaction between the schizophrenic and the normal. This symbolism of the schizophrenic is responsible for the ineffective communication, which results in a minimum of social interaction. These views are in accordance with the findings of Cameron and Sullivan. This is of historical and therapeutic significance.

Sullivan, H.S., "The Language of Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 4-16.

Discuss the use of language and its role as an instrument in social adjustment. Also considers the concept of consensual validation. States that language disturbance is a result of inability to differentiate that which is real and what is false. This article is of theoretical importance in the discussion.

Taylor, G.T., "A Consideration of Acute Schizophrenic Episode", Psychiatric Quarterly, Vol. 23, 1949, p. 530-538.

Used three cases to illustrate the existence of non-malignant cases of schizophrenia. Points out that these people because of traumatic emotional experience or toxic agents may exhibit paranoid schizophrenic reaction. Believes that this happens in schizoid personality structure. This study illustrates the need for operational definition of cases like many of the others that have been reviewed. It is of historical importance and gives perspective as to the type of studies being undertaken.

Vigotsky, L.S., "Thought in Schizophrenia", translated by J.S. Kasanin, Archives of Neurology and Psychiatry, Vol. 31, 1934, p. 1063-1077.

Discuss the development of conceptual thinking. Feels that emotional, intellectual as well as perceptual disturbances are responsible for the mal function of concept formation. This is one of the first classical studies on this type of work. It is of historical importance.

Von Domarus, E., "Specific Law of Logic in Schizophrenia", in J.S. Kasanin, Editor, Thought and Language in Schizophrenia, Berkeley, University of California Press, 1944, p. 104-114.

Discusses the concept of paralogical thinking. This type of thinking results when two things are equated on the basis of predicates rather than on the basis of their essential nature. This is very important in understanding thought disturbances in schizophrenia.

Wittman, P., "Diagnostic and Prognostic Significance of 'shut-in personality' as a Prodromal Factor in Schizophrenia", Journal of Clinical Psychology, Vol. 4, 1948, p. 211-214.

This study involves the selection of cases on the basis of their social history. Elgin prognostic ratings were reported. Those in the minus category fit the "schizophreniform" group, while those with positive ratings fit the 'shut-in personality' category. This study was important in our choice of tool to define our concept of process and reactive. The results also further strengthened the tenability of the process-reactive dichotomy.

Zaslow, R.W., "A New Approach to the Problem of Conceptual Thinking", Journal of Consulting Psychology, Vol. 14, 1950, p. 335-337.

Test given to twenty-four schizophrenics and sixteen surgical patients. The use of a concept formation test consisting of fourteen forms was used to measure fluidity, rigidity, conceptual level and ability to arrange forms in a continuum. Found that some schizophrenics show restriction of conceptual field, this was interpreted as a sign of rigidity and concreteness. Other schizophrenics exhibited over inclusiveness and thus fluidity. This robs the arrangement of conceptual structure. Both types of schizophrenics show concrete behavior. The other differences in the two types of schizophrenics suggests that various types of schizophrenics exist, having varying degrees of thinking disorder. This is of historical importance.

APPENDIX 1

ELGIN PROGNOSTIC SCALE
DEFINITIONS OF PROGNOSTIC FACTORS

ELGIN PROGNOSTIC SCALE

DEFINITIONS OF PROGNOSTIC FACTORS

1. CONSTITUTIONAL PERSONALITY OF "SHUT-IN" TYPE. +5 to 0

The psychotic condition simply an exaggeration of the peculiar type of personality shown all through childhood. Stormy childhood often with over-protection and anxiety, a difficult adolescence characterized by inability to get along with and mix with other children. Constitutional apparently rather than product of specific environment.

2. SCHIZOTHYMIC versus SYNTONIC PERSONALITY. +5 to -5

Seclusive, shy, retiring, mixes little with others; few if any close friends; interested in ideas rather than people; passive, an onlooker at life rather than an active participant; poor "Bite on Life".

versus

Sociable, fond of people and social gatherings; many friends, active in groups and sports, participates in life of his community.

3. DEFECTS OF INTEREST versus DEFINITE DISPLAY OF INTEREST. +5 to -5

Withdrawn and indifferent toward life interests of the average individual, home, family, friends, work, sports, arts, pets, gardening, social activities, music, dramatics, no deep interest of any sort.

versus

Keen, ambitious, interest in some of the fields listed above.

4. LACK OF HETEROSEXUAL CONTACTS versus NORMAL HETEROSEXUAL CONTACTS. +5 to -5

No association with the opposite sex, never had any dates, avoids dances and social gatherings which require the intermingling of boys and girls.

versus

Purposefully contacts the other sex, dates frequently, makes successful effort to be attractive in manner, dress, accessories, etc., so as to be popular with girls (or boys).

5. INADEQUATE AFFECT versus EMOTIONAL INSTABILITY. +5 to -5

Inadequate, inappropriate, rigid or dull affect, emotional life expressed, at odds with behavior or else strikingly inappropriate; little or no change in emotional expression despite the strength of the stimulus.

versus

Very marked swings in mood with little or no stimulation. Easily upset, frequent crying or laughter, hysterical outbursts, nervous temperament with facile display of emotion.

- 2 -

6. LIMITED RANGE OF INTERESTS versus WIDE RANGE OF INTERESTS. +5 to -5

Inadequate interest in varied problems of life, rigid, narrow goals or interests, circumscribed activities because of the narrow range of interests.

versus

Wide and varied interests, keen bite on life and its opportunities, forward and interested in making adaptations to daily life in many spheres.

7. INSIDIOUS versus ACUTE ONSET. +5 to -5

Very slow, gradual development of symptoms so that final disorder appears as an exaggeration of already strongly accentuated personality traits.

versus

Sudden, acute dramatic divorcement from more or less commonplace living.

8. DURATION OF PSYCHOSIS. -4 to +4

Under 2 months	=	+4
2 - 4 "	=	-2
4 - 6 "	=	-2
6 - 8 "	=	-1
10 months-1 year	=	1
1 to 2 years	=	2
2 " 3 "	=	3
Over 3 "	=	4

9. MARKED ACADEMIC INTERESTS versus ACTIVE INTERESTS IN SPORTS. +4 to -4

Fond of study, works diligently at school and excels in this field associated with inadequacy in sports and social fields, a grind without the ambition or drive in work and play to equal his achievements as a student.

versus

An active interest in sports, participates in baseball, basketball, tennis, football or other sports. A solitary sport such as swimming or golf, not so important unless the patient plays or swims with others rather than himself.

10. CARELESS INDIFFERENCE versus WORRYING, SELF-CONSCIOUS TYPE. +4 to -4

Withdrawal and disinterest in social surroundings, careless of social requirements, given to day-dreaming, and eccentricity, i.e., dirty, disheveled appearance, profane language, unacceptable habits.

versus

Subjectively sensitive, critical of self, preoccupied with own conflicts, but shows little of the extreme, bizarre, unusual, mysterious or socially unacceptable in behavior.

11. EXCLUSIVE STUBBORN TRAITS versus INSECURITY AND INFERIORITY FEELINGS. +4 to -4

Complete withdrawal from surroundings and interests, inadequate in meeting life but stubborn and opinionated, refuses to change, even if suggested, to achieve a more adequate adjustment. Opinionated and egocentric.

versus

Timid, lacks self-confidence, feels insecure and inferior. Very sensitive and critical of self; feels certain problems in life but participates and does not accept his lot passively or without regret and struggle.

12. ENERGY TONE. +4 to -4

Submissive, inadequate passive reactions, weak grasp on life, does not go out to meet life's problems, does not participate actively but passively; accepts his lot without having energy to help himself.

versus

Strong drive, keen active and alert interest and ambition shown in school, social and work spheres. Good grasp on life, liked life and had energy enough to enjoy it. Outgoing and adequate in meeting life.

13. SITUATIONAL REACTION. +4 to -4

Onset of psychotic symptoms not related to any disturbance or difficulty in the patient's situation -- or a disturbance of such a trivial nature that it would be ignored or quickly forgotten by the average person.

versus

A definite relationship between onset and symptoms and a situational problem that would require definite and continued effort to adjust satisfactorily, i.e., death, failure, loss, etc.

14. TOXICITY OR EXHAUSTION. +4 to -4

Excellent health history, health in no sense an etiologic factor in the development of psychosis.

versus

History of illness, disease or exhaustion closely associated with the onset of psychotic symptoms.

15. CONSTITUTIONAL BIAS versus FAVORABLE ENDOGENOUS STRUCTURE. +3 to -3

Regarded from early childhood as different, queer or odd; perhaps associated with some real defect or handicap -- physical, such as a deformity, or speech defect, but more often only an imaginary defect of person or personality.

versus

A healthy, strong, energetic physical and mental makeup that makes the interplay between heredity and environmental influence during childhood (the most plastic period of development), a satisfactory one.

16. IDEAS OF INFLUENCE -- OF BEING FORCED. +4 to 0
 Patient feels that someone or something is directing his actions, thoughts, or speech. Some outside influence forces him to do things even against his own will.
17. PHYSICAL INTERPRETATION DELUSIONS. +4 to 0
 The patient has certain feelings (possibly, although not necessarily hallucinations) that are linked up with definite delusional ideas; for instance, that there is a snake in his stomach, that food passes right through his body, that someone is passing electrical currents through his body, that the food he eats is poisoned, etc.
18. HEBEPHRENIC SYMPTOMS. +4 to 0
 Extreme indifference, complete divorce between ideas and affect; extreme carelessness in appearance and reaction with untidiness in some cases, silly behavior, often silly laughter without appropriate stimulation.
19. ATYPICAL SYMPTOMS. 0 to -4
 Manic or depressive features mixed with the schizophrenic picture. Display of affect appropriate to the situation. Over-talkative, distractive, facetious, display of interest in other patients or expressed desire to help them or humanity in general. Depressed feelings of sin or guilt; retardation.
20. ECTOMORPHIC versus ENDOMORPHIC MESOMORPH. ASTHENIC versus PYKNIC BODY BUILD AND FACE CONTOUR. +3 to -3
 Long, slender extremities with relatively small, narrow trunk; egg-shaped face; elongated narrow head on a tall, slender neck.
versus
 Large, barrel-shaped trunk, with relatively short legs and arms; shield-shaped face; short, broad head upon a thick neck, set well down between shoulders.

AN ABSTRACT OF
DIFFERENCES IN FORMAL THINKING DISORDERS BETWEEN
PROCESS AND REACTIVE SCHIZOPHRENICS
AS MEASURED BY PROVERBS

ABSTRACT OF

Differences in Formal Thinking Disorders Between
Process and Reactive Schizophrenics
as Measured by Proverbs

The objective of this study is to determine the amount of reality testing present in the process and reactive schizophrenics as measured by the degree of formal thought disturbance revealed by responses to proverbs. It was hypothesized that the process group should exhibit a significantly larger amount of this disturbance than the reactive group.

The criterion for selecting the reactive and process groups was the item scores and factors derived from the Elgin Prognostic Scale. Ebaugh's List of Proverbs was chosen to test for formal thinking disorders, while a scoring system devised by Benjamin¹ was adopted for the qualification of the Proverb responses. The degree of significance was set at .01 level between the two groups on the Proverb responses for the overall test. The differences between the two groups for the scoring responses on each Proverb were determined by a t_{Df} significant at .01 level or higher.

¹ John D. Benjamin, "A Method for Distinguishing and Evaluating Formal Thinking Disorders in Schizophrenia", in J.S. Kasanin, Editor, Language and Thought in Schizophrenia, Berkeley, University of California Press, 1944, p. 65-90.

The findings of the statistical analysis of the Proverb responses suggests that it is rather unlikely that the reactive and process groups belong to the same parameter, as evidenced by the size of the critical ratios and the t_{Df} of the various scoring responses.

The significance of these findings in terms of formal thinking disorders point to the fact that the reactive group has a greater degree of reality testing and a larger amount of reality orientation than the process group, as evidenced by the significantly lesser degree of thought disturbance.

The above findings suggest the hypothesis that in the reactive group the schizophrenic process can be more readily halted or reversed than in the process group. In the light of this hypothesis and the findings the process-reactive dichotomy seems warranted and is of considerable diagnostic, therapeutic, and prognostic significance in evaluating schizophrenic reactions.

A reliability and validity study of the Proverbs should be undertaken on the normal and the neurotic to obtain a clearer meaning of the statistically significant responses, and also of those that exhibited certain trends. This would help establish the relationship of the two groups to the normal and neurotic population, and would seem to be of therapeutic and prognostic importance.