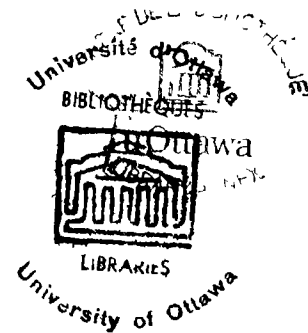


EXTENT OF PSYCHOLOGICAL DIFFERENTIATION AMONG HOSPITALIZED
MALE SCHIZOPHRENICS/CLASSIFIED ALONG THE PROCESS-REACTIVE
AND DELUSIONAL-HALLUCINATORY DIMENSIONS

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CURRICULUM STUDIORUM

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INTRODUCTION

In the past two decades, there has been a substantial revival of interest in the interrelationships between cognition and personality. Although this renewed concern has taken diverse expressions, one line of interest in which considerable research effort has been invested has been in styles of cognitive functioning as related to individual patterns of adaptation. The chief investigators in this area have been Herman A. Witkin and his colleagues.

From extensive studies on perception and personality using space orientation tests, Witkin and his associates amassed data demonstrating that wide individual differences exist among subjects in their modes of perceptual functioning. These findings pointed to the existence of two extreme modes of perception called "field dependence" and "field independence," or the extent to which a person's spatial orientation tends to be influenced by the surrounding visual field. The evidence further indicated that this perceptual trait was a relatively stable, consistent characteristic, having a certain amount of generality.

More recently, Witkin and his co-investigators have vastly broadened the scope of their research with findings which suggested that a person's basic orientation in space underlies functioning in many other areas of psychological

behavior. In order to explain the communality obtained in these various areas of functioning, Werner's orthogenetic principle of differentiation was adopted as a unifying theoretical construct. Consequently, the study of the interrelationships between cognition and personality were now conceptualized in the context of developmental theory. The contrasting modes of field approach were now considered to reflect differences in extent of psychological differentiation.

The present experiment will be concerned with the relationship between extent of differentiation and one category of psychopathology, namely, schizophrenia. On the basis of past research reported in the literature, it is suggested that both the process-reactive and the delusional-hallucinatory classifications of schizophrenia are promising methods for discriminating among more differentiated and less differentiated personalities in these patients. This study will combine these two classifications in an attempt to explore the possible relationships among the process-hallucinatory, process-delusional, reactive-hallucinatory, reactive-delusional classifications of schizophrenia and extent of differentiation.

Witkin's construct of field dependence, including its origins, methods of assessment, personality correlates, and related parameters (intelligence, sex differences,

stability), will be reviewed in the first two sections of chapter one. The principle of psychological differentiation and its relationship to psychopathology will also be discussed, with special emphasis on studies dealing with schizophrenia and extent of differentiation. The statement of the problem and experimental hypotheses will conclude chapter one. Chapter two will present the experimental design utilized to test the hypotheses; including a discussion of the psychometric instruments, the subjects, the procedure and, finally, an outline of the statistical techniques used to analyse the data. Chapter three will present and discuss the results of this study, to be followed by a summary and conclusion section. The appendices will include the two rating scales used in this study to classify patients according to prognosis and symptoms; analysis of variance summary tables for age, education and intelligence; and, finally, the abstract of the present study.

CHAPTER 1

REVIEW OF THE LITERATURE

As with any endeavor in psychology, Witkin's construct of field dependence has undergone several modifications over the years. To help sensitize the reader to these changes and their respective ramifications, its evolution shall be discussed in the following manner. The origin of field dependence will be presented in the first section, including some remarks on methods of assessment and perception-personality correlates. In the second section, research findings will be outlined with respect to three related parameters of field dependence, namely, intellectual functioning, sex differences, and stability of field approach. The third section will elaborate on Witkin's recent adoption of the more comprehensive principle of psychological differentiation as the unifying theoretical construct underlying field dependence. In the fourth section, the general relationship between psychopathology and psychological differentiation will be discussed both theoretically and from the point of view of research findings. Moreover, that section will include a more detailed review of studies especially concerned with the relation between schizophrenia and differentiation; consequently, setting the stage for the fifth and final section which will present the problem and experimental hypotheses.

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1. The Construct of Field Dependence.

In 1943, a series of articles was published which, in a vicarious way, was responsible for the later formulation of the construct of field dependence.^{1,2,3,4} In short, these studies attempted to resolve an older controversy as to whether an individual's ability to perceive the upright in space under various conditions was primarily determined by postural factors on the one hand, or from the objects in the surrounding visual field on the other. Through the use of some ingenious techniques, Asch and Witkin presented cogent evidence demonstrating that an individual's ability to estimate the vertical in space is based primarily upon objects in the surrounding visual field, and only in a secondary way upon postural determinants. That result,

1 S.E. Asch and H.A. Witkin, "Studies in Space Orientation: I. Perception of the Upright with Displaced Visual Fields," in Journal of Experimental Psychology, Vol. 38, 1948, p. 325-337.

2 -----, "Studies in Space Orientation: II. Perception of the Upright with Displaced Visual Fields and with Body Tilted," in Journal of Experimental Psychology, Vol. 38, 1949, p. 455-477.

3 H.A. Witkin and S.E. Asch, "Studies in Space Orientation: III. Perception of the Upright in the Absence of a Visual Field," in Journal of Experimental Psychology, Vol. 38, 1948, p. 603-614.

4 -----, "Studies in Space Orientation: IV. Further Experiments on Perception of the Upright with Displaced Visual Fields," in Journal of Experimental Psychology, Vol. 38, 1948, p. 762-782.

along with later observations of consistent individual differences among subjects in their perceptual performances,⁵ led Witkin and his colleagues to formulate the dimension of field dependence-independence. That dimension can be illustrated by performance on three of Witkin's perceptual tests: the Rod and Frame Test (RFT), the Embedded Figures Test (EFT), and the Room Adjustment Test (RAT).

In the RFT, the subject sits in complete darkness, facing a luminous rod surrounded by a luminous frame. Rod, frame and chair can be independently tilted to one side or to the other. The subject sees the rod and frame first in tilted positions while being tilted himself. Then, while the frame and chair remain tilted, he moves the rod until it appears to him that it is in a true vertical position. Some subjects tip the rod far towards the angle of tilt of the frame in order to perceive it as upright, thus determining its position mainly in relation to the visual field that immediately surrounds it. These subjects find it difficult to overcome the influence of the surrounding field in making their judgments of the upright. It is because of this characteristic that their perception has been designated "field dependent." Other subjects, in contrast,

⁵ Herman A. Witkin, "The Nature and Importance of Individual Differences in Perception", in Journal of Personality, Vol. 18, 1949, p. 145-170.

are able to bring the rod to the true upright, perceiving it independently of the surrounding field. Their perception is called "field independent."

On another of the tests, the HFI, the subject is required to find simple geometric figures that are hidden in more complex designs of varying difficulties. Some subjects are able to separate the simple figure from the complex embedding design very quickly. Their perception is field independent. Others are unable to locate the simple design within the five-minute time period allotted to complete each trial. Their perception has been labeled field dependent.

The other of Witkin's tests, the RAT, is concerned with the individual's ability to determine the position of his body in space. The apparatus for this test consists of a small room, which can be tilted left or right, within which is a chair, which can also be tilted left or right independently of the room. The subject's task is to make his body vertical in the chair while the room remains tilted. In a field dependent performance, the subject tends to align his body to the tilted position of the room. At the other extreme of the performance range, subjects are able to bring their bodies close to the true vertical, regardless of the position of the surrounding room. Their perception is field independent.

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All three tests have in common the fact that an individual perceives an object in relation to its surroundings. All tasks require the separation of an item from its field, whether the "item" be a rod, a simple geometric figure, or a body in space. Successful performance on these tests is considered to reflect an analytical, field independent way of functioning; that is, parts of the field are thought to be experienced as discrete and the field as a whole organized. In contrast, when a subject is unable to separate the item from its field, a more global, field dependent way of functioning is said to exist. In this latter case, the organization of the field seems to dictate the manner in which its parts are experienced.⁶ Furthermore, performances reflecting extent of field dependence were considered by Witkin to be distributed along a continuum, with most people found in the middle of the performance range.⁷

Witkin et al.⁶ also showed that people tend to perform in a self-consistent manner on the three perceptual tests. That is, an individual who was able to disregard

6 H.A. Witkin, H.B. Lewis, M. Hertzman, K. Machover, P.B. Meissner, and J. Wapner, Personality through Perception, New York, Harper, 1954, xxvi-571 p.

7 H.A. Witkin, S.A. Karp, and D.R. Goodenough, "Dependence in Alcoholics," in Quarterly Journal for the Study of Alcoholism, Vol. 20, 1955, p. 437.

8 Witkin et al., Op. Cit., 1954, p. 61-76.

the tilted frame and perceive the rod in a true vertical position was also able to quickly locate the simple geometric figure in the embedded context as well as determine closely the vertical position of his body in space. Moreover, Witkin and his associates have cited evidence demonstrating that the same individual would also be able to keep item apart from context in a wide variety of other perceptual situations such as the classical tasks involving constancies, illusions, and reversible perspective.² Such consistency in behavior, according to Witkin, was indicative of a stylistic tendency in perception. In other words, Witkin concluded that the dimension of field dependence-independence was a self-consistent, pervasive characteristic of an individual's perceptual process.¹

Following that reasoning one step further, Witkin took the general position that by studying perception (field dependence), which is a given "part" of man's total functioning, one is apt to gain information about other areas of functioning together with information regarding the total system itself, e.g., personality organization. Subsequently, Witkin et al. examined the basic differences in perception

¹ H.A. Witkin, R.B. Dya, H.F. Paterson, L.R. Goodenough, and S.A. Karp, Psychological Differentiation, New York, Wiley, 1962, p. 46-57.

² Witkin, et al., Op. Cit., 1954, p. 401-402.

by relating a subject's perceptual data to his personality variables.

On the basis of clinical interviews, both "objective" and projective techniques, and the standard perceptual battery of tests (RFT, EFT, RAT), a number of personality correlates of the field dependence-independence dimension were identified. In short, field dependent perceptual performers tended to display relatively poor analytic abilities in intellectual and problem-solving situations, to be passive in dealing with the environment, to be unfamiliar with and fear their own impulses, together with having poor control over them, to have little self-esteem, and to possess a relatively undifferentiated body image. In contrast, subjects who successfully resisted the influence of the field tended to display relatively well developed analytical abilities, to be active and independent in relation to the environment, to have better control and insight over their own impulses, to have relatively high self-esteem, and to have a more differentiated body image.¹¹

Criticisms regarding certain 'methodological weaknesses' in some of these original studies have been

¹¹ Ibid., p. 466.

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advanced.^{12,13,14} One relevant criticism voiced by these authors centers on a possible 'biasing' effect, namely, that the perception-personality correlations obtained by Witkin et al. may have been contaminated by the experimenter's prior knowledge of the subject's field dependence score. Despite such a possible shortcoming, the general consensus of opinion of these critics has been that one could not readily reject the major contributions made by Witkin et al. in the area of perception-personality relationships.

7. Three Parameters of Field Dependence.

Throughout the development of field dependence, Witkin and others have also investigated (a) the relationship of field approach to intellectual functioning, (b) sex differences and field approach, and (c) the stability of field approach.

A) Field Approach and Intellectual Functioning.-

Since the ability to separate an item from its surrounding

12 W.H. Holtzman, "Review of H.A. Witkin, H.B. Lewis, M. Hertzman, K. Machover, P. Neisser, and S. Wapner, Personality through Perception," in American Journal of Psychology, Vol. 68, 1955, p. 501-504.

13 A. Gruen, "A Critique and Re-evaluation of Witkin's Perception and Perception-Personality Work," in Journal of General Psychology, Vol. 56, 1957, p. 73-83.

14 A. Anastasi, Differential Psychology, New York, MacMillan, 1950, p. 357.

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field was recognized as reflecting intellectual as well as perceptual activity, Witkin and his group investigated the relationship between field dependence and intellectual functioning.

Woerner and Levine,¹⁵ working in Witkin's laboratory with a small group of twelve-year old children, reported a significant relationship between scores on Witkin's perceptual battery of tests and scores on the Wechsler Intelligence Scale for Children (WISC). Their findings raised the possibility that perceptual mode of field approach might be a function of "general intelligence." However, upon closer analysis, Woerner and Levine discovered that the perceptual measures were more highly related to WISC Performance scores than to WISC Verbal scores. From that analysis, it was suggested that the relationship of the perceptual measures with total I.Q. might be "carried" primarily by certain subtests on the WISC featuring that same ability.

To test that hypothesis, Goodenough and Karp¹⁶ performed a factor analysis of the matrix of intercorrelations among the WISC subtests and the perceptual battery (PFT,

¹⁵ M. Woerner and T. Levine, "A Preliminary Study of the Relation between Perception and Thinking in Children," unpublished study, cited by H.A. Witkin, H.B. Dyk, H.F. Paterson, D.R. Goodenough, and S.A. Karp, Psychological Differentiation, New York, Wiley, 1962, p. 59.

¹⁶ D.R. Goodenough and S.A. Karp, "Field Dependence and Intellectual Functioning," in Journal of Abnormal and Social Psychology, Vol. 63, 1961, p. 241-246.

BFT, NAT) on a group of children ranging in age from 7.5 years to 12.5 years. From that study, three factors were isolated: (1) Verbal-Comprehension as represented by the vocabulary, information and comprehension subtests; (2) Attention-Concentration as represented by the digit span, arithmetic and coding subtests; and (3) Analytical Field Approach as represented by the block design, picture completion and object assembly subtests. The fact that the perceptual index scores correlated .26 (not significant), .19 (not significant) and .56 ($P < .01$) with the three factors respectively, led the authors to conclude:

[...] [the] relationships obtained in many studies between tests of field dependence and standard tests of intelligence stem, at least in part, from common requirements shared by measures of field dependence and of certain kinds of intellectual abilities.¹⁷

These findings were later interpreted by Witkin¹⁸ as demonstrating that the relation between field dependence and Full Scale I.Q. is carried by those portions of the intelligence test which involve the capacity for analytical functioning. The relation between field dependence and intelligence was now based, according to Witkin, on the expression of a "general cognitive style in both,"¹⁹ or

17 Ibid., p. 245.

18 Witkin, et al., Op. Cit., 1962, p. 61-71.

19 Ibid., p. 70.

In other words, the fact that both involve overcoming embeddedness. Therefore, Witkin concluded that some aspects of Performance intelligence are relevant to mode of field approach, whereas Verbal intelligence is not. That conclusion has met criticism.

Zigler^{20,21} maintained that many of the empirical relationships found between Witkin's perceptual measures and certain other tests were due to the common relationship between all the scores and "general intelligence" as defined by standard intelligence tests. Zigler based his position on Cohen's²² factor analytic work in which it was found that for ten-year olds (the age of Goodenough and Karp's subjects) the three subtests comprising Witkin's "analytic factor" were found to have higher correlations with the "G" factor than did the three subtests of Witkin's "verbal-comprehension factor." Furthermore, Zigler contended that many of the instruments used by Witkin to validate his earlier findings, such as the Rorschach, TAT and Figure Drawings, are also highly loaded on general intelligence. In effect, therefore,

20 E. Zigler, "A Measure in Search of a Theory," in Contemporary Psychology, Vol. 3, 1963, p. 133-135.

21 -----, "Zigler Stands Firm," in Contemporary Psychology, Vol. 8, 1963, p. 459-461.

22 J. Cohen, "The Factorial Structure of the WISC at Ages 7-6, 10-6, and 13-6," in Journal of Consulting Psychology, Vol. 23, 1959, p. 285-299.

Eigler argued that Witkin's perceptual measures are in fact significantly loaded by a general intelligence factor.

Until more evidence is reported directly bearing on this controversy, it seems necessary to control for the possible influence of a general intelligence factor on field dependence performances.

b) Sex Differences and Field Approach.- Sex differences in extent of field dependence is one of the most consistent findings in the literature. Witkin et al.²³ cited numerous studies which demonstrated that females tend to be significantly more field dependent than males. This sex difference has been found to exist all the way from eight-year old children to individuals in late childhood.²⁴ Before the eight-year level, some evidence is available to suggest that there may be no significant sex differences in field dependence.^{25,26} Similarly, one study indicates that sex differences in mode of field approach disappears in geriatric groups.²⁷

23 Witkin, et al., Op. Cit., 1962, p. 214.

24 Ibid., p. 215.

25 C.H. Cuyden, "Form Abstraction by Children," in Journal of Genetic Psychology, Vol. 53, 1941, p. 113-129.

26 D.R. Goodenough and C.J. Eagle, "A Modification of the Embedded-Figures Test for Use with Young Children," as cited in Witkin, et al., Op. Cit., 1962, p. 215.

27 S.A. Karp, "Field Dependence and Aging," in Research Reports, Sinai Hospital of Baltimore, Vol. 1, 1966, p. 1-9.

Sex differences in field approach have also been reported in many diverse groups, including various educational and socio-economic backgrounds.²⁶ Moreover, Witkin reported recently that small but consistent sex differences in tests of field dependence have been found with groups from various countries such as the United States, a number of western European countries, in Hong Kong, Israel, and Sierra Leone, Africa.²⁹

Sex differences in field approach has also been found within certain psychiatric groups. Karp, Poster and Goodman³⁰ found that alcoholic women tend to be significantly more field dependent than alcoholic men. Since alcoholic males as a group have been found to be significantly more field dependent than either "normal" non-alcoholic males or hospitalized non-alcoholic males,³¹ the findings of Karp et al. appear to give extra strength to the notion of sex differences in field approach.

²⁸ H.A. Witkin, "Psychological Differentiation and Forms of Pathology," in Journal of Abnormal Psychology, Vol. 70, 1965, p. 319.

²⁹ Ibid.

³⁰ J.A. Karp, D.C. Poster and A. Goodman, "Differentiation in Alcoholic Women," in Journal of Personality, Vol. 31, 1963, p. 386-393.

³¹ W. Bailey, F. Mustayer and A. Kristofferson, "Alcoholism, Brain Damage and Perceptual Dependence," in Quarterly Journal for the Study of Alcoholism, Vol. 27, 1961, p. 387-393.

within a hospitalized schizophrenic sample, Powell³² found that female schizophrenics tend to be significantly more field dependent than male schizophrenics on RFT performance, but not on EFT performance. In attempting to explain the failure of the EFT to discriminate between sexes in the expected direction, Powell attributed a great deal of significance to the factor of verbal intelligence. More specifically, she speculated that the factor of verbal intelligence may have been differentially related to RFT and EFT performance when considering the difference in performance by sex. To date, Powell's suggestion remains as a hypothesis.

Within cited further evidence which tended to suggest that within each sex mode of field approach is related to measures of masculinity-femininity.³³ In this connection Vaught³⁴ found that subjects whose role identification was highly masculine (low femininity) tended to be significantly more field independent on RFT performance than those subjects whose identification was highly feminine, regardless of

32 B.J. Powell, "A Study of the Perceptual Field Approach of Normal Subjects and Schizophrenic Patients under Conditions of an Aversive Stimulus," unpublished doctoral dissertation, Washington University, 1964, iii-31 p.

33 Witkin et al., Op. Cit., 1952, p. 216.

34 G.M. Vaught, "The Relationship of Role Identification and Ego Strength to Sex Differences in the Rod-and-Frame Test," in Journal of Personality, Vol. 33, 1965, p. 271-283.

biological sex. Both Witkin and Vaught tended to consider such findings as giving support to the hypothesis which attributes sex differences in this area to cultural and social values, which are thought of as molding the female in a more dependent, less differentiated way than the male.

c) Stability of Field Approach.- As already mentioned, Witkin considers a person's mode of field approach as being a pervasive, self-consistent characteristic of his perception; a statement which implies that mode of field approach should be a relatively stable phenomenon. Evidence from both cross-sectional and longitudinal studies tends to support that implication. Test-retest correlations on the RFT and EFT ranging over a period from one to three years for adults of both sexes were found to be between .56 and .97.³⁵ Furthermore, evidence is reported which suggests that mode of field approach remains relatively stable even after certain major changes in life experiences, such as marriage, divorce, and psychotherapy.³⁶

Various experimental attempts to alter mode of field approach have also been reported. Studies of this type have used such techniques as drugs, convulsive seizures, stress situations, and special training.

³⁵ Witkin et al., Op. Cit., 1962, p. 370.

³⁶ Ibid.

Frank,³⁷ administered either sodium amytal (a barbiturate), dexedrine (an amphetamine), a placebo, or nothing to each of four groups. No significant differences in RFT performance were found in any of the groups. It was concluded by Within et al. that the subjects "[...] seemed to 'survive' the transient changes in psychological state induced by drugs."³⁸ Along similar lines, Pollack, Kahn, Karp, and Fink³⁹ studied the effects of a course of tranquilizer therapy (chlorpromazine or Promazine) on antidepressant (imipremine), or convulsive therapy (electric or inhalant) upon RFT performance of patients in a voluntary psychiatric hospital. The subjects were given the RFT prior to, during the fourth week of, and following treatment. No significant change in mean RFT scores occurred during treatment for either the drug or convulsive therapy groups. Moreover, test-retest correlations of .36 and .38 ($P < .01$) were obtained in each instance, following cessation of

37 C.M. Franks, "Différences déterminées par la personnalité dans la perception visuelle de la verticalité," in Revue de Psychologie Appliquée, Vol. 6, 1956, p. 235-246, as cited in Within et al., Op. Cit., 1962, p. 371.

38 Within et al., Op. Cit., 1962, p. 371.

39 M. Pollack, R.L. Kahn, E. Karp, and M. Fink, "Individual Differences in the Perception of the Upright in Hospitalized Psychiatric Patients," paper read at Eastern Psychological Association, New York, 1961, as cited by Within et al., Op. Cit., 1962, p. 371.

treatment the drug therapy group again showed no significant change in extent of field dependence, although this time the convulsive therapy group showed a significant reduction in performance. With respect to that change in RFT performance for the convulsive group Witkin pointed out that those patients were found to be suffering from retrograde amnesia for the previous testing; implying that the amnesia might have been a contributing factor to the change.

On the basis of these findings, Witkin concluded that the studies

[...] are consistent in suggesting that mode of field approach tends to remain stable with changes in psychological state induced by various kinds of drugs although apparently not by convulsive seizures.⁴⁰

In studies designed to measure the effects of stress upon performance in tests of mode of field approach, the findings are generally consistent with the results of the drug studies. Kraidman⁴¹ found no significant change in RFT performance from a pre-post testing in a group of patients who underwent heart surgery. In another situation which is also highly stressful for many people, Davis

⁴⁰ Witkin et al., Op. Cit., 1962, p. 371.

⁴¹ Emma Kraidman, "Developmental Analysis of Conceptual and Perceptual Functioning under Stress and Non-Stress Conditions," unpublished doctoral dissertation, Clark University, 1959, as cited by Witkin et al., Op. Cit., 1962, p. 372.

McCourt and Solomon⁴² found no significant change in RFT performance in subjects who were tested before and after a period of prolonged confinement in a sensory-isolation experiment.

With respect to the effects of special training on mode of field approach, Witkin concedes that performance on the perceptual tests may be affected, but feels that special training apparently does not affect a person's basic mode of perceptual field approach. Somewhat surprisingly, evidence supporting this line of reasoning was, at best, merely suggestive at the time Witkin made the statement. It was only in a later study by Elliott and McMichael⁴³ that one finds cogent evidence confirming that position.

Elliott and McMichael selected two groups of subjects matched according to age, sex, and RFT performance. After a mean interval of nine days from their initial RFT testing, one group was again tested under special "lecture training" conditions which consisted of verbal and visual training in how RFT works. The second group was tested under a different

42 J.M. Davis, W.F. McCourt and P. Solomon, "Sensory Deprivation: (1) Effects of Social Contact, (2) Effects of Random Visual Stimulation," paper read at American Psychiatric Association Meeting, Philadelphia, 1960, as cited by Witkin et al., Op. Cit., 1962, p. 372.

43 R. Elliott and R.E. McMichael, "Effects of Special Training on Frame Dependence," in Perceptual and Motor Skills, Vol. 17, 1963, p. 363-367.

training procedure called "feedback training." In that case, subjects not only received the lectures but also were given continual feedback of their performance after each trial. The "lecture training" group showed no improvement in their second RFT, although the "feedback training" group did show significant improvement. In order to test whether the improvement in the latter group was 'permanent' or not, the "feedback training" group was tested again for the third time anywhere from four to seven weeks after their second testing. On that last testing, the improvement found earlier in their RFT performances was now entirely lost. Moreover, the test-retest correlations for the "feedback training" group for their first and third administration was found to be .99. It was concluded that the initial improvement in RFT performance was a function of inferential operations and not due to better perception.

Although mode of field approach has been generally stable with respect to experimental attempts to alter it, it is known that field dependence can be increased under certain conditions. In a study already referred to, Bailey et al.⁴⁴ reported that brain damaged subjects are significantly more field dependent than either hospitalized

44 Bailey et al., Op. Cit., p. 357-363.

psychiatric patients or normal control subjects. Gross⁴⁵ also found that a subject's field dependence could be significantly increased by experimentally introducing distractions during RFT performance.

With regard to the research reported in this section, it seems worthwhile, in retrospect, that several points be summarized. The literature suggests that certain variables have no significant effect on an individual's field dependence performance. Those variables are: (1) psychotherapy, (2) marriage or divorce, (3) drugs, (4) stress situations (heart surgery, sensory isolation), and (5) special training (in the long run). On the other hand, the literature also suggests that certain other variables tend to have significant influences on field dependence performances and consequently require controls. They are: (1) sex, (2) ECT, (3) brain injury, (4) alcoholism, and (5) direct experimental distraction during the test itself.

3. The Principle of Psychological Differentiation.

From extensive studies utilizing both cross-sectional and longitudinal designs, Witkin and his associates

⁴⁵ Frances Gross, "The Role of Set in Perception of the Upright," in Journal of Personality, Vol. 27, 1959, p. 95-103.

demonstrated that the dimension of field dependence-independence has definite developmental features.⁴⁶ Specifically, it was shown that children tend to perceive in a field dependent manner. Then, as they grow older, they tend to perceive in a more field independent manner. Field dependence thus appeared to be associated with more rudimentary stages of development, while, conversely, field independence seemed to represent a more advanced level of perceptual development. A close inspection of the personality correlates of field dependence also supported similar conclusions regarding the developmental aspects of the dimension. For instance, a young child tends to display poor impulse controls, a relatively undifferentiated body concept, etc., whereas, at a later date in normal development, the same person tends to manifest better impulse controls, a more differentiated body image, and so on.

From such evidence, Witkin and his colleagues postulated that the field dependence-independence dimension might be related to a still broader aspect of personal functioning,- that of psychological differentiation. In other words, the patterns of field dependence-independence reported above, including the related personality characteristics, were now thought to be reflecting differences in

⁴⁶ Witkin *et al.*, *Op. Cit.*, 1954, p. 130-152.

extent of differentiation.⁴⁷ Such a theoretical position is in agreement with Werner's⁴⁸ orthogenetic principle of differentiation which states that all psychological development proceeds from a state of globality or lack of differentiation to a state of increasing differentiation and hierarchic integration.

In following Werner's context, Witkin and his group have described the nature of differentiation as follows:

[...] differentiation refers to the complexity of a system's structure. A less differentiated system is in a relatively homogeneous structural state; a more differentiated system is in a relatively heterogeneous state.⁴⁹

Continuing, Witkin maintained that:

The description of a system as more differentiated or less differentiated carries definite implications about how it functions. [...] Among the major characteristics of the functioning of a highly differentiated system is specialization. The subsystems which are present within the general system are capable of mediating specific functions which, in a relatively undifferentiated state, are not possible or are performed in a more rudimentary way by the system as a whole. When used to describe an individual's psychological system specialization means a degree of separation of psychological areas, as feeling from perceiving, thinking from acting. It means as well specificity in manner of functioning within an area. Specific reactions are apt to occur in response to specific stimuli as opposed to diffuse reaction to any of a variety of stimuli.⁵⁰

⁴⁷ Witkin et al., Op. Cit., 1962, p. 3-4.

⁴⁸ H. Werner, Comparative Psychology of Mental Development, New York, Science Editions, 1948, xii-564 p.

⁴⁹ Witkin et al., Op. Cit., 1962, p. 7.

⁵⁰ Ibid., p. 9-10.

Within the framework of this system, Witkin and his group have essentially operationally defined extent of differentiation in terms of how an individual performs on certain tasks; several of which assess how well an individual can separate the item from the surrounding field. In the perceptual realm, therefore, a more differentiated individual is one whose perceptual mode of functioning tends to be analytical or field independent, whereas a poorly differentiated individual is one who tends to perform in a more global, field dependent manner. In this connection, Witkin has further theorized:

With respect to relation with the surrounding field, a high level of differentiation implies clear separation of what is identified as belonging to the self and what is identified as external to the self. The self is experienced as having definite limits or boundaries. Segregation of the self helps make possible greater determination of functioning from within, as opposed to a more or less enforced reliance on external nurturance and support for maintenance, typical of the relatively undifferentiated state.⁵¹

Therefore, Witkin maintains that greater differentiation implies a clear separation of self from non-self; a factor which helps enable one to become less reliant on the external environment for support and maintenance, e.g., being able to separate rod from frame.

⁵¹ Ibid., p. 10.

Witkin's use of differentiation has not gone without criticism. In a review article of Witkin et al.'s latest book, Gardner states: "The term 'psychological differentiation' seems to imply, more generality than is warranted even by the notable consistencies described."⁵² Gardner based his statement on the fact that several published studies indicated that certain problem-solving and verbal skills which clearly require a high level of differentiation were not found to relate to Witkin's measures of differentiation.

Witkin, himself, was seemingly aware of this problem as he stated:

Though numerous questions are left unanswered by the findings reported, the evidence does indicate that the development of at least some kinds of verbal skills may follow a different pattern, than the development of mode of field approach and other characteristics of developed differentiation.⁵³

In effect, therefore, Witkin is proposing what might be called a "different pattern" hypothesis for explaining the discrepancy in the research reported.

Some critics, however, don't seem to accept Witkin's "different pattern" hypothesis as a valid way of handling the matter. Sigler, for example, proposed an alternative way Witkin could have interpreted the problem.

⁵² R.W. Gardner, "Book Reviews," in The American Journal of Psychology, Vol. 76, 1963, p. 710.

⁵³ Witkin et al., Op. Cit., 1962, p. 1-3.

Witkin might also have stated that he had driven the differentiation notion to the point where it broke down and had simply abandoned it, a perfectly respectable procedure.⁵⁴

The same "abandon hypothesis" was also implied by Zimiles in another review article of Witkin et al.'s book when he said, "This reader [Zimiles] preferred field dependence to differentiation as an explanatory construct."⁵⁵

In deciding whether to accept Witkin's "different paths" hypothesis or Zigler's "abandon hypothesis", it seems that one must be careful not to confuse the process of differentiation with any measures of differentiation. More specifically, if scores on Witkin's measures, which are purported to reflect extent of psychological differentiation, do not correlate with scores on other measures which also purport to assess degree of differentiation, it does not necessarily follow that one or other (or both) measures are not in fact reflecting extent of psychological differentiation. Rather, it seems feasible to this writer that each set of measures could be reflecting the process of differentiation, but due to certain idiosyncrasies in the measuring instruments themselves, one does not find a relationship between the

⁵⁴ Zigler, "Zigler Stands Firm," p. 461.

⁵⁵ H.L. Zimiles, "The Problem of Individuality in Systematic Research," in Merrill-Palmer Quarterly, Vol. 10, 1964, p. 363.

scores on the measures. Such idiosyncrasies could include anything from a lack of precision in the instruments themselves to the fact that the measures are actually assessing different factors comprising extent of differentiation. Since experimental research directly concerned with the problem of psychological differentiation has been rather sparse until the entrance of Witkin et al.'s work, it would appear that we might be throwing out the baby with the bath water if the "abandon hypothesis" was accepted at this time. Therefore, for purposes of the present study, Witkin's measures of field dependence are assumed to be reflecting level of psychological differentiation.

4. Psychopathology and Psychological Differentiation.

Evidence from various sources indicates that extent of psychological differentiation is not related to the presence or absence of pathology, that is, adequacy of adjustment. Witkin et al.⁵⁶ found performances ranging over the entire perceptual continuum of field dependence in their early studies of hospitalized psychiatric patients. It was concluded that there appears to be no direct linkage between psychopathology per se and mode of field approach. Bailly,

⁵⁶ Witkin et al., Op. Cit., 1954, p. 335-342.

Hustayer and Kristofferson⁵⁷ found that in a group of fifteen schizophrenics, fourteen had scores which fell within the range of a control group of normal subjects on the RFT. They concluded that there was no evidence that psychopathology and hospitalization are associated with field dependence. Moreover, several unpublished studies are cited by Witkin et al. in their latest book which also give support to this same notion regarding the relationship between psychopathology and mode of field approach. Pollack and Goldfarb⁵⁸ are reported to have found no preferred mode of field approach within a group of disturbed children. Sangiuliano⁵⁹ is also reported to have found a full range of perceptual performances in a group of hospitalized psychiatric female patients.

Witkin has recently theorized as to why no apparent relationship is found between the presence or absence of psychopathology and extent of psychological differentiation.^{60,61}

57 Bailey et al., Op. Cit., p. 397-393.

58 M. Pollack and W. Goldfarb, personal communication, as cited in Witkin et al., Op. Cit., 1962, p. 204.

59 Iris A. Sangiuliano, "An Investigation of the Relationship between the Perception of the Upright in Space and Several Factors in Personality Organization," unpublished doctoral dissertation, Fordham University, 1951, as cited in Witkin, et al., Op. Cit., 1962, p. 205.

60 Witkin et al., Op. Cit., 1962, xii-410 p.

61 Witkin, Op. Cit., 1965, p. 317-336.

To understand Witkin's position clearly, however, it is necessary to consider the relation between differentiation and integration. As will be remembered, differentiation refers to the complexity of structure of a psychological system. Moreover, greater differentiation is characterized by both specialization of function and clear separation of self from non-self. Integration, on the other hand, refers particularly to the form of the functional relations among the various parts of a psychological system and between the system and its environment. Thus, varied modes of integration are possible at any level of differentiation, although more complex integrations can be expected with more developed differentiation. The absence of psychopathology is, therefore, according to Witkin:

[...] mainly a function of effectiveness of integration--that is, a more or less harmonious working together of parts of the system with each other and of the system as a whole with its environment. Adequate adjustment is to be found at any level of differentiation, resulting from integrations effective for that level, although the nature of adjustment that may be considered adequate varies from level to level. Moreover, impaired integration, with resulting pathology, may also occur at all levels of differentiation.⁶²

In effect, Witkin is saying that effectiveness of integration tends to be related to the presence or absence of psychopathology, whereas, extent of psychological differentiation

⁶² Ibid., p. 234.

is not. Therefore level of differentiation (as measured by his instruments, at least) is not closely related to effectiveness of integration.

Witkin does maintain, and this is of particular importance, that different levels of differentiation are likely to be related to different forms of impairment. That is, one can expect to find within different forms of pathology, either relatively more differentiated or less differentiated personalities. Many studies are reported in the literature bearing on this issue.

Several studies have demonstrated poorly developed differentiation in clinical groups with symptoms commonly regarded as rooted in severe dependency problems, or in what Witkin et al. called "[...] a lack of developed sense of separate identity."⁶³ Clinical groups included among these studies were ulcer patients,⁶⁴ obese people,⁶⁵ asthmatic children,⁶⁶ and, of course, the numerous studies

63 Witkin et al., Op. Cit., 1962, p. 206.

64 B. Gordon, "An Experimental Study of Dependence-Independence in a Social and a Laboratory Setting," unpublished doctoral dissertation, University of Southern California, 1953.

65 H. Parde; and S.A. Kerp, "Field Dependence in Obese Women," in Psychosomatic Medicine, Vol. 27, 1965, p. 236-244.

66 C.M. Fishbein, "Perceptual Modes and Asthmatic Symptoms: An Application of Witkin's Hypothesis," in Journal of Consulting Psychology, Vol. 27, 1963, p. 54-58.

already referred to in which alcoholics were consistently found to be poorly differentiated.

Other kinds of clinical groups observed to show a mode of field approach reflecting poorly developed differentiation have included patients with an hysterical character structure⁶⁷ and patients with functional cardiac disorders.⁶⁸ On the other hand, an articulated cognitive style reflecting developed differentiation has been found among obsessive compulsive characters⁶⁹ and neurotics with organized symptom pictures.⁷⁰

Although extent of psychological differentiation does relate to some forms of pathology, it has not been found to relate to the major psychiatric nosological categories, such as neuroses⁷¹ and schizophrenia.^{72,73} This is not surprising,

67 L. Zukmann, "Hysterical Compulsive Factors in Perceptual Organization," unpublished doctoral dissertation, New School for Social Research, 1957, as cited in Witkin et al., Op. Cit., 1962, p. 207-208.

68 J. Doll, "The Effect of Frustration on Functional Cardiac Disorder as Related to Field Orientation," unpublished doctoral dissertation, Adelphi University, 1963, as cited in Witkin, Op. Cit., 1965, p. 325.

69 Zukmann, Op. Cit., p. 207.

70 Sheldon Korshin, personal communication, as cited in Witkin, Op. Cit., 1965, p. 326.

71 Mae M. Bound, "A Study of the Relationship between Witkin's Indices of Field Dependency and Eysenck's Indices of Neuroticism," unpublished doctoral dissertation, University of Utah, 1961.

72 Witkin, et al., Op. Cit., 1954, p. 327-340.

73 D.H. Bennett, "Perception of the Upright in Relation to Body Image," in Journal of Mental Science, Vol. 102, 1956, p. 437-506.

however, when one considers the major flaws of the current nomenclature, such as the unreliability found among diagnosticians, and the number of unclassifiable patients encountered.⁷⁴ Consequently, all levels of differentiation are found among patients in these broad psychiatric categories.

Within some of these broad psychiatric categories, however, extent of psychological differentiation does appear to have relevance. This is especially true for the category of schizophrenia. Several studies have offered evidence that level of differentiation relates to certain symptoms found among schizophrenics as well as to certain types of schizophrenia.

From a male schizophrenic population, Taylor⁷⁵ selected two groups of patients on the basis of their symptom picture. These two groups, consisting of twenty-seven primarily delusional and twenty-six primarily hallucinatory hospitalized patients, were established on the basis of ratings on a series of items derived from a modified Lorr scale for rating psychiatric patients. Taylor hypothesized

⁷⁴ Maurice Lorr, C. James Klett and Douglas I. McNair, Syndromes of Psychosis, New York, Pergamon Press, 1963, p. 10.

⁷⁵ James N. Taylor, "A Comparison of Delusional and Hallucinatory Individuals Using Field Dependency as a Measure," unpublished doctoral dissertation, Purdue University, 1956, vii-61 p.

that patients primarily hallucinatory would be significantly more field dependent than either patients primarily delusional or control patients exhibiting neither symptom. Such a prediction was grounded on the notion that delusional states represent attempts to maintain separate identity and ego integrity, whereas hallucinatory states imply dissolution of ego boundaries. The hypothesis was confirmed when utilizing the HFT as the measure of field dependence. Underlying this finding is the implication that hallucinatory schizophrenics are functioning at a more primitive level of differentiation than are schizophrenics primarily delusional.

With regard to the relation between psychological differentiation and kind of schizophrenia, Bryant⁷⁶ found process schizophrenics to be significantly more field dependent than reactive schizophrenics when using the HFT and RFT as the measures of field dependence. The process-reactive classification of schizophrenia is based primarily

76 Arthur Bryant, "An Investigation of Process-Reactive Schizophrenia with Relation to Perception of Visual Space," unpublished doctoral dissertation, University of Utah, 1961, vi-147 p.

on developmental and prognostic criteria.^{77,78} In process schizophrenia, there is considered to be exhibited a poor premorbid personality, a gradual or insidious development of symptoms, a primitive or undifferentiated personality structure and, in general, a poor prognosis. In contrast, the reactive schizophrenic is considered to show a relatively good premorbid personality, a sudden onset of symptoms, a greater differentiation in personality organization, and a good prognosis. Hence, Bryant's findings were anticipated on the basis that process schizophrenics are less differentiated than are reactive schizophrenics.

A more recent study by Sugerma,⁷⁹ however, has not provided clear-cut confirmation of Bryant's findings. In using the same technique as Bryant to classify male schizophrenics into the process and reactive categories (Phillips Premorbid Adjustment Scale⁸⁰), Sugerma hypothesized a

77 R.E. Kantor, J.M. Wallner and C.L. Winder, "Process and Reactive Schizophrenia," in Journal of Consulting Psychology, Vol. 17, 1953, p. 157-162.

78 Wesley Becker, "A Genetic Approach to the Interpretation and Evolution of the Process-Reactive Distinction in Schizophrenia," in Journal of Abnormal and Social Psychology, Vol. 53, 1956, p. 229-236.

79 A. Sugerma, "Prognostic Factors in Schizophrenia: A Developmental Approach," unpublished doctoral dissertation, Department of Psychiatry, Downstate Medical Center, Brooklyn, New York, 1962, vi-141 p.

80 I. Phillips, "Case History Data and Prognosis in Schizophrenia," in Journal of Nervous and Mental Disease, Vol. 117, 1953, p. 515-525.

relationship between Phillips scores and RFT scores on the basis that both reflected developmental maturity (differentiation). However, a non-significant correlation of $-.63$ was found between these two variables. In discussing this result, Sugarman suggested that many of the Phillips scores in his research were probably contaminated by the quite heterogeneous ethnic and social composition of his sample. More specifically, since the Phillips scale is markedly loaded by marital status,⁶¹ and since his sample was comprised of various social and ethnic backgrounds (e.g., Puerto Rican, Polish, Hungarian, Irish-Americans, Italian-Americans, etc.) Sugarman reasoned that marriage might require different levels of psychological differentiation among these different groups, thereby contaminating the Phillips scores for at least the married subjects.

To test that reasoning, Sugarman divided his sample into two groups, those married subjects (21 Cs) and those unmarried patients (30 Sa). The ten most field dependent single patients were found to have significantly higher Phillips scores (process) than the remaining twenty single patients ($P < .05$), although no significant difference between Phillips scores was found within the married group when it was divided according to high and low RFT performers.

⁶¹ Sugarman, Op. Cit., p. 64.

These secondary findings led Sugarman to conclude that it is very likely that the social and ethnic differences did in fact contaminate the Phillips scores of his married sample. Moreover, since Bryant's sample consisted of male schizophrenics drawn from a V.A. Hospital in the midwestern United States, Sugarman further concluded that it is quite likely that the amount of social and ethnic heterogeneity which was present in his own sample was not present in Bryant's sample. Hence, Sugarman appears to implicitly conclude that process schizophrenics are less differentiated than reactive schizophrenics despite his overall zero correlation between Phillips scores and RFT scores.

Thus, both delusions vs. hallucinations and the process vs. reactive classifications appear to be promising methods for discriminating those schizophrenic, characterized by relatively more differentiated or less differentiated personalities.

5. The Problem and Theoretical Hypotheses.

From the above-mentioned studies dealing with the relation between psychological differentiation and schizophrenia, it is suggested that: (a) schizophrenics primarily hallucinatory are functioning at a lower level of psychological differentiation than are schizophrenics primarily delusional, and (b) process schizophrenics are functioning

at a lower level of psychological differentiation than are reactive schizophrenics. From the standpoint of psychological differentiation, therefore, one might expect delusions to be more characteristic of reactive schizophrenics and hallucinations to be more characteristic of process schizophrenics. Yet Eliseo⁵² reported data strongly suggesting that delusions are just as apt to be found in the process schizophrenic as in the reactive schizophrenic. Similarly, it is suggested that hallucinations are just as apt to be found in the process schizophrenic as in the reactive schizophrenic.⁵³ Consequently, delusions and hallucinations are found within both the process and reactive categories, the symptoms appearing to be independent of the process-reactive dimension.

Therefore, it seems reasonable that by stratifying schizophrenics into the following four groups: process-hallucinatory, process-delusional, reactive-hallucinatory, and reactive-delusional, one might hypothesize a ranking effect to occur in terms of field dependence performances. That is, process-hallucinatory patients would be most field

⁵² Thomas S. Eliseo, "Delusions in Process and Reactive Schizophrenics," in Journal of Clinical Psychology, Vol. 20, 1964, p. 352.

⁵³ H. Wiener, "Diagnosis and Symptomatology," in L. Bellak, (ed.), Schizophrenia: A Review of the Literature, New York, Logan Press, 1958, p. 107-173.

dependent and reflect the most primitive level of differentiation, whereas reactive-delusional patients would be most field independent and reflect greatest differentiation. The process-delusional and reactive-hallucinatory groups would probably fall somewhere within the intermediate range of functioning, since an apparent contradiction in underlying rationale seems to apply to these two groups. For, within the process-delusional schizophrenic, the process element suggests primitive differentiation, while the delusional element suggests relatively high differentiation, and within the reactive-hallucinatory schizophrenic, the reactive element suggests relatively high differentiation, while the hallucinatory element suggests primitive differentiation.

In short, by stratifying the patients according to the symptom criterion and the prognostic criterion, a two-way (2×2) analysis of variance design with fixed factors can be computed which will permit statistical discrimination between and within these groups as to level of differentiation.

Analysis of the rows (delusions vs. hallucinations) and the columns (process vs. reactive) will enable a replication of both Taylor's and Bryant's research reported above. Such a replication is deemed necessary for at least the following reasons: (a) in the literature, only Taylor's study is found bearing directly on the symptom distinction

of delusions vs. hallucinations and their relation to psychological differentiation; (b) among Witkin's several available measures of extent of psychological differentiation, only the BFI was employed by Taylor, and, (c) a replication study would tend to lend further support to either Bryant's or Sugarman's obtained results regarding the process-reactive classification and extent of differentiation.

The analysis of variance design will also permit the testing for significance of the interaction effect. This phase of the design will be of special importance for the present study as it will permit testing for significant differences among the unique combinations of the prognostic (process-reactive) and the symptom (delusional hallucinatory) criteria as to degree of psychological differentiation.

In summary, then, three experimental hypotheses can be formulated. In null form, they are:

1. There is no significant difference between schizophrenics rated as being primarily delusional and those schizophrenics rated as being primarily hallucinatory (rows) on either BFI or BPI performances.

2. There is no significant difference between process schizophrenics and reactive schizophrenics (columns) on either BFI or BPI performances.

3. There is no significant interaction effect between the symptom (delusional-hallucinatory) and prognostic (process-reactive) variables on either RPT or EPT performances.

The following experimental design was established to test these hypotheses.

CHAPTER II

EXPERIMENTAL DESIGN

The last chapter presented a review of the literature leading up to the problem and experimental hypotheses of the present study. This chapter will concentrate on describing the experimental method that was used in operationally testing out those hypotheses. To that end, this chapter will elaborate on the following topics: (1) the Psychometric Instruments, (2) the Sample, (3) the Procedure, and (4) the Statistical Techniques for analyzing the data.

1. Psychometric Instruments.

The psychometric instruments used in this study consisted of the Phillips Premorbid Adjustment Scale for rating subjects along the process-reactive continuum; Taylor's modification of the Lorr scale for rating patients as being primarily delusional or primarily hallucinatory; the EPT and RPT for assessing extent of psychological differentiation; and, the Verbal subtest of the WAIS as an indicator of "general intelligence." Each of these instruments will be considered in order.

a) Phillips Scale.- Original, designed to help identify factors involved in the prediction or improvement of schizophrenic patients following electric shock

treatment, the Phillips prognostic scale permits quantitative ratings of four types of information based on case-history and mental status data: (1) premorbid history, (2) possible precipitating factors, (3) intactness of the personality in face of the disorder, and (4) signs of the disorder.¹

Only the Phillips premorbid subscale was used in the present study for classifying schizophrenics into the process-reactive dimension. The reasons for the selection of the premorbid subscale alone were: (1) the type of case-history data needed to secure a valid scale rating is minimal; (2) case-history information available for rating the other portions of the total scale are frequently sketchy or indeterminate; (3) several studies have found it to be a good predictor of remission; (4) it is the most frequently used scale; and (5) high reliability has been reported. Before elaborating on its reliability and validity, a few remarks regarding the description of this subscale seem in order.

The Phillips premorbid scale requires that each subject be rated in five areas of premorbid adjustment. Those areas include: (a) recent sexual adjustment; (b) the

1 I. Phillips, "Case History Data and Prognosis in Schizophrenia." in Journal of Nervous and Mental Disease, Vol. 117, 1953, p. 515-525.

social aspects of sexual life during and immediately beyond adolescence; (c) social aspects of the recent sexual life; (d) the past history of personal relations; and (e) recent adjustment in social relations. The entire Phillips pre-morbid scale as was used in this study is presented in Appendix 1.

Within each of these five areas, the rater "fits" the patient into one category depending on his reported level of adjustment for that area. Each "fit" category has a corresponding number from either 0 or 1 to 6. An individual's total score on this scale is obtained by summing the assigned numerical values for each of the five areas. Consequently, the range of possible scores on this scale is from 2 to 30, with a high numerical score indicating poor pre-morbid adjustment (process) and a low score, a good pre-morbid adjustment (reactive).

A cut-off score of 14.5 was used in the present study to distinguish the process from the reactive category. Since truly normative data of patients in terms of distribution scores are as yet unavailable, such a procedure was based solely on the fact that 14.5 is the most frequently

used cut-off score.^{2,3,4} Thus, for the present study, scores of 14 and below were operationally defined as reflecting reactive schizophrenics, while scores of 15 and higher were operationally defined as reflecting process schizophrenics.

As already mentioned, the validity of the premorbid subscale has been demonstrated in several studies. In Phillips' original article,⁵ he reported that the premorbid factors were found to significantly differentiate a group of improved and unimproved schizophrenic patients. Rodnick and Garmszy⁶ reported that they found the premorbid subscale to be particularly successful in predicting the outcome of treatment. Farina and Webb⁷ are also reported as having provided data which suggested that good premorbid tend to remain out of the hospital, following discharge, significantly longer than do poor premorbid. Finally, Cancro⁸

2 Ibid., p. 517.

3 Elliot H. Rodnick and Norman Garmszy, "Comments on Professor Lindzey's Paper," in Nebraska Symposium on Motivation, Lincoln, University of Nebraska Press, 1957, p. 107-104.

4 Robert Cancro, "A Comparison of Process and Reactive Schizophrenia," unpublished doctoral dissertation, State University of New York, Downstate Medical Center, Brooklyn, 1962, p. 55.

5 Phillips, Op. Cit., p. 515-525.

6 Rodnick and Garmszy, Op. Cit., p. 141.

7 Farina and Webb, "Premorbid Adjustment and Subsequent Discharge," as cited in Rodnick and Garmszy, Op. Cit., p. 141.

8 Cancro, Op. Cit., 111-103 p.

studied the validity of the premorbid subscale to predict short-term outcome as compared to the other subscales on the Phillips scale. Six months after the initial ratings of subjects on the complete Phillips scale, a check was made as to patients who had "improved" (discharged) and those who had "not improved" (still hospitalized). Only the premorbid subscale was found to predict short-term outcome ($P < .01$). On the basis of these studies therefore, it seems reasonable to conclude that the Phillips premorbid scale has adequate predictive validity. A summary of studies demonstrating the construct validity of this scale has been presented by Rodnick and Garnezy.⁹

The literature also indicates that the Phillips premorbid scale is a highly reliable instrument, at least across judges' ratings. Garnezy and Rodnick¹⁰ reported high interrater reliability ($r = .90$ and above) when senior clinicians had been compared with each other as well as with intermediate level graduate students. Garfield and Sundland¹¹ also found high interrater reliability ($r = .92$)

⁹ Rodnick and Garnezy, Op. Cit., p. 143-145.

¹⁰ Norman Garnezy and Elliot Rodnick, "Premorbid Adjustment and Performance in Schizophrenia: Implications for Interpreting Heterogeneity in Schizophrenia," in Journal of Nervous and Mental Disease, Vol. 129, 1959, p. 494.

¹¹ Sol Garfield and Donald Sundland, "Prognostic Scales in Schizophrenia," in Journal of Consulting Psychology, Vol. 30, 1966, p. 10-24.

between two judges when using the Phillips premorbid scale to rate schizophrenics. The Phillips premorbid scale thus appears to be an adequate measure of the process-reactive classification.

b) Taylor's Scale.- In an effort to obtain a quantitative method of rating delusional and hallucinatory behavior in patients, Taylor and his colleagues¹² constructed a scale made up of certain items drawn from the Lorr Scale.¹³ The selected items were considered by Taylor et al. to be measures of the involvement of a given patient in hallucinatory or delusional behavior derived from the patient's actual behavior.

The scale itself¹⁴ consists of eight items, each of which quantifies a specific behavior on a four-level continuum ranging from 0 to 3. For example, item number seven reads:

7. Does or did he tend to suspect or to believe on slight evidence or without good reason that some people talk about, refer to, or watch him.

0. No unjustified suspicions	1. Inclined to suspect	2. Inclined to believe	3. Has firm belief
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¹² James Taylor, "A Comparison of Delusional and Hallucinatory Individuality Using Field Dependency as a Measure," unpublished doctoral dissertation, Purdue University, 1956, vii-61 p.

¹³ Maurice Lorr, C. James Klett and Douglas McNair, Syndromes of Psychosis, New York, Pergamon Press, 1963, x-266 p.

¹⁴ The entire scale as used in this study is presented in Appendix 2.

The first three items on the scale are concerned with hallucinatory behavior and the last five items deal with delusional behavior. By adding the numbers corresponding to the assigned ratings for each of the first three items, one obtains a "hallucinatory score." A "delusional score" is achieved in the same manner, only using the sum of the ratings for the last five items. Thus, the range of possible hallucinatory scores is between 0 and 9, whereas the range of possible delusional scores is between 0 and 15.

One advantage of this scale centers on the manner in which groups can be selected. Specifically, through the use of cut-off scores, one can form any desired combination of delusional and hallucinatory groups, from groups exhibiting neither symptoms to groups displaying both symptoms at a maximal level.

The present study aimed at obtaining two groups of such patients: (a) a primarily delusional group and (b) a primarily hallucinatory group. Implicit in each of these groups is the notion that they not only exhibit the symptom in question to a relatively intense degree, but also, that they only display the other symptom to a minimal degree, if at all.

In the absence of any truly normative data with this scale, a primarily delusional patient was operationally defined as having a delusional score of 6 or higher and,

at the same time, having a hallucinatory score of 2 or less. Similarly, a primarily hallucinatory patient was operationally defined as having a hallucinatory score of 4 or higher and a delusional score of 2 or less.

In general, the cut-off scores used for defining each group in the present study were somewhat lower than those used by Taylor. Although comparable scores were originally planned, the nature of the distribution of scores in the present sample necessitated the lowering. Assuming the present hospital population to be essentially similar to that of Taylor's in most other respects, it would seem that, as a group, the present population is not exhibiting as intense symptoms as Taylor's group did. Such a possibility certainly appears feasible in light of the recognized impact drugs have had on "controlling" symptoms in the past dozen years, since the time of Taylor's study.

Despite the general trend of somewhat lowered ratings, the criterion scores used in the present study are still assumed to be quite valid discriminators of patients who are primarily delusional from those who are primarily hallucinatory. The validity of the scale itself, as is implicit in Taylor's description,¹⁵ is based entirely on "face validity."

¹⁵ Taylor, Op. Cit., p. 10-19.

In terms of interrater reliability, Taylor had six clinical psychologists rate patients on the basis of opinions of ward personnel who knew the patients, as well as on the basis of the patient's clinical record. When the ratings were completed, interjudge reliability tests were performed for hallucinatory and delusional items respectively. Coefficients ranging from .33 to .96 were reported for the hallucinatory items, while coefficients ranging from .33 to .96 were reported for the delusional items.¹¹

c) Rod and Frame Test (RFT). - From the point of view of general description, this test evaluates an individual's perception of the position in relation to the upright of a rod within a limited visual field. As mentioned in chapter one, the subject is placed in a completely darkened room, facing a luminous frame which surrounds a movable luminous rod. With the frame tilted, the subject is required to bring the rod to a position that he perceives as vertical. For successful performance of this test, the subject must "extract" the rod from the tilted frame through reference to body position. The subject is tested on some trials while sitting in an erect position, and on other trials while sitting in a tilted position. On all trials a large tilt of the rod when it is reported to be vertical

16 Ibid., p. 53.

indicates a relatively global manner of experiencing his surroundings (frame); whereas, a negligible error in tilt of the rod when it is reported to be vertical indicates an analytical, differentiated way of experiencing the surrounding (rod experienced as discrete from the frame).¹⁷

The apparatus consisted of a square frame, its sides one and one-half inches wide and forty-two inches long, within which was mounted a rod, one and one-half inches wide and thirty-eight and one-half inches long. The rod and frame were pivoted at their centers, but mounted on separate shafts, so that they could be tilted from side to side independently, of each other. A protractor ($\frac{1}{2}$ degree calibrations), mounted on the frame shaft, moved with the frame against a stationary pointer, permitting direct readings of the position of the frame in degrees. A similar arrangement showed the position of the rod. Rod and frame were coated with a luminous paint, and during the test were the only objects visible in the completely darkened room. The room itself was painted completely black and all sources of light were sealed off. A foot-peddle operating a small red light behind the rod and frame apparatus enabled the experimenter to see the readings. A black wooden chair for

17 H.A. Witkin, R.E. Dyk, H.F. Paterson, F.R. Goodenough, and J.A. Karp, Psychological Differentiation, New York, Wiley, 1962, p. 35-37.

the subject was placed seven feet in front of the rod and frame apparatus. It had a high back support, an adjustable headrest and a footrest. Midway between the rod and frame apparatus and the chair where the subject sat, a pulley curtain was constructed which enabled the experimenter to keep the room lights off at all times and the room in front of the curtain (subject's side) to remain completely black throughout all trials of the test. Although this latter gimmick deviated from within et al.'s usual procedure, its chief advantage was to rule out the possibility of subjects opening their eyes and "peeking" between trials when the lights are usually on.

The standard test includes three series, each consisting of eight trials. Whereas, in the first two series, the subject's chair is tilted 20° to the left and right respectively, on the third series, the chair remains erect.

For the purpose of the present study, it was deemed advisable to use series 3 (body erect) only, as the use of all three series would have proved too stressful for many of the patients. Series 3 has been found to correlate most highly with the total score on the RFT, a factor which led within et al. to state, "[...] Series 3 of the RFT may be substituted for total RFT scores with no loss in validity."¹⁰

¹⁰ ibid., p. 41.

The administration of the Series 3 of the RFT consisted of presenting the subject (who is sitting erect) with the luminous rod and frame in tilted positions. The test consisted of eight trials. In the first four trials the rod is presented tilted both to the same side and the opposite side as the frame, while the frame is presented tilted either to the right or the left by 25° from the vertical. The four trials, therefore, present the rod and frame as follows: (1) frame right, rod right; (2) frame right, rod left; (3) frame left, rod left; (4) frame left, rod right. These presentations were repeated in the second four trials.

The task of the subject was to get the rod in a vertical position on each trial. A subject's score for the test was the mean of his summed degrees of deviation from the vertical for the eight trials. The higher the score, the more field dependent the subject's performance. Witkin et al.¹⁾ found that the scores for Series 3 on their adult male standardization sample ranged from 1 to 25 degrees with a mean of 7.4 degrees error and a standard deviation of 5.5 degrees.

1) H.A. Witkin, H.B. Lewis, M. Hertzman, K. Mechover, P.B. Meissner, and S. Wapner, Personality Through Perception, New York, Harper, 1954, p. 46, 122.

Remarks regarding the reliability and validity of the RFT will be presented following a discussion of the other measure of psychological differentiation used in this study, the EFT.

d) Embedded Figures Test (EFT).-- The EFT is a paper-and-pencil test which requires the patient to find a simple figure within a larger complex figure. The EFT used was the Witkin's²⁰ modification of the original Gottschaldt's test. Witkin's test consists of eight of the original Gottschaldt simple figures, and twenty-four of the complex figures. In an effort to increase the difficulty of the test, the modification consisted of coloring the complex designs in such a way as to reinforce a given pattern and its subpatterns. The simple figure is "hidden" to a greater or lesser extent; its outlines may form the boundaries of several prominent subpatterns in the complex figure. Depending on the structure of the complex figure, detection of the simple figure may be very easy or very difficult.

The standard test consists of twenty-four complex figures, each of which contains a simple figure to be located. A maximum of five minutes is allowed per trial. The subject's score is the mean amount of time taken to find the

20 H.A. Witkin, "Individual Differences in Ease of Perception of Embedded Figures," in Journal of Personality, Vol. 19, 1950, p. 1-15.

simple figures within the complex ones. A high time score in this test indicated that the patient tends to function in a global unarticulated manner (field dependent), whereas a low score suggested a differentiated way of functioning. Witkin found that for males, the subject's times ranged from two to 56 minutes with a mean of 39.0 and S.D. of 32.0 when he standardized the test on an adult group.²¹

In the present study, Witkin's short form of the EFT was used. The short form consists of the first twelve items in the standard test. Although Witkin²² does not present the actual correlation coefficients he obtained between his short form and full scale EFT, he does state that they were comparable to those obtained by Jackson²³ who used a different combination of twelve items. Jackson's coefficients were in the mid-nineties for several groups of subjects. The five-minute time limit was maintained.

The reliability of both the EFT and RFT (perceptual tests) has been consistently demonstrated. In Witkin's original study on the EFT, the odd-even reliability was

21 Ibid., p. 5-7.

22 Witkin et al., Op. Cit., 1962, p. 40.

23 D.H. Jackson, "A Short Form of Witkin's Embedded-Figures Test," in Journal of Abnormal and Social Psychology, Vol. 53, 1956, p. 254-255.

+0.87 for men and +0.74 for women.²⁴ A summary of other studies reporting corrected odd-even correlations for the EFT also shows coefficients ranging from +0.88 to +0.95.²⁵ High internal consistency has also been reported for the RFT. These coefficients (corrected odd-even correlations) ranged from +0.87 to +0.92.²⁶

With regard to consistency over a three-year interval of time, Witkin reported the following test-retest correlations: for the EFT, $r = +0.89$ for men and $r = +0.89$ for women; and for the RFT, $r = +0.84$ for men and $r = +0.86$ for women.²⁷

In terms of the validity of both the EFT and RFT as measures of psychological differentiation, Witkin reports not only high intercorrelations between the two tests for adult males in both college and hospital populations ($r = .64$ and $.63$ respectively),²⁸ but also the results of studies in which these two perceptual tests were found to significantly correlate with other "indicators" of psychological

²⁴ Witkin, Op. Cit., 1950, p. 15.

²⁵ Witkin et al., Op. Cit., 1962, p. 41.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid., p. 44.

differentiation, such as articulation of body concept, sense of separate identity, and specialization of defenses.²⁹

Further, in a factor analytic study of eighteen perceptual tests using 150 male college students, Karp³⁰ found the EFT and RFT to load .82 and .78 respectively on the first factor which has been called analytic ability, or the ability to overcome embeddedness.

In summation, the reliability and validity for both the EFT and RFT appear to be quite adequate for research purposes.

e) Verbal Subtest of the WAIS.- Due to the present controversy over the relationship between "general intelligence" and field approach, which was discussed in the last chapter, it was deemed necessary to attempt to control for this variable. The vocabulary subtest of the WAIS was chosen and used as a measure of general intelligence for the following reasons: (1) Wechsler³¹ reported it to rank highest of any of his subtests on the "G" factor and (2) the

29 H.A. Witkin, "Psychological Differentiation and Forms of Pathology," in Journal of Abnormal Psychology, Vol. 70, 1965, p. 319-324.

30 S.A. Karp, "Field Dependence and Overcoming Embeddedness," in Journal of Consulting Psychology, Vol. 27, 1963, p. 294-302.

31 David Wechsler, The Measurement and Appraisal of Adult Intelligence, Baltimore, Williams and Wilkins, 1958, p. 132.

vocabulary subtest has been found to resist significant change in institutionalized schizophrenics over an average of six years in one study, and thirteen years in another.³²

2. Subjects.

All subjects used in the present study were patients at a large midwestern state hospital in the United States. In order to obtain a pool of potential subjects from which the final sample could be drawn, the hospital files were examined using for selection the following criteria: (a) male, (b) primary staff diagnosis of schizophrenia, (c) within the age range of twenty to fifty-five years, (d) no brain damage or past cerebral surgery, (e) no history of chronic alcoholism, (f) no diagnosis of mental deficiency, and (g) no form of shock therapy for at least six months prior to testing. With the enforcement of these criteria, a pool of 128 patients were left for rating.

At this point, the author rated each subject's file on the Phillips premorbid scale in order to classify the patients into the process-reactive categories. From that same group, the files of sixty patients were randomly

³² Wilson H. Guertin, Clayton E. Ladd, George H. Frank, Albert I. Rabin and Douglas Hiester, "Research with the Wechsler Intelligence Scales for Adults: 1960-1965," in Psychological Bulletin, Vol. 66, November 1966, p. 399.

selected and independently rated by a second experimenter to check on interrater reliability. On final analysis, sixty-two patients were classified as process, and sixty-six patients as being reactive.

The next step was to rate the same 128 patients as to the symptoms of delusions and hallucinations using the Taylor's modified Lorr scale. For that purpose, information was available from three sources: (a) the clinical files, (b) the patients themselves, and (c) the ward attendants who knew the patients. In general, the clinical files proved to be the most relied upon method for making the ratings as the ward attendants generally knew only certain patients and not others, and the patients themselves were found to be threatened to discuss such symptoms.

As with the Phillips scale, fifty patients were randomly selected and independently rated by a second experimenter to arrive at an estimate of interrater reliability. In analyzing the ratings, thirty-six patients were found as displaying neither symptom, 34 subjects as displaying both symptoms, 31 subjects as being primarily delusional, and 27 subjects as being primarily hallucinatory.

On the basis of these ratings, four groups of ten patients each were randomly selected from the potential subjects. These four groups were as follows: (a) process-primarily hallucinatory (P-H); (b) process-primarily

delusional (P-D), (c) reactive-primarily hallucinatory (R-H), and (d) reactive-primarily delusional (R-D). However, due to various reasons during subsequent testing, three subjects, one each from the P-D, P-H, and R-D groups, were eliminated and replaced in a random manner, so as to keep the N of each group equal at 10.

Within this final sample, one can also conceive of two other subgroupings; that is, from the point of view of the process-reactive dimension, the sample consisted of twenty process and twenty reactive patients. Similarly, using only the symptom criterion, the sample consisted of twenty primarily delusional and twenty primarily hallucinatory patients.

Table I presents the means, standard deviations and the ranges for the total sample and its various subgroups for age, education and verbal intelligence. The intelligence scores as represented are the scaled vocabulary subtest scores that each subject obtained on the WAIS. The variables of drug,³³ race, and socio-economic background were not controlled for in this study. Moreover, of the forty subjects in the final sample, all but seven patients had records of previous hospitalization.

³³ Of the forty patients utilized, all but one were on medication at the time of testing.

Table I.-

Means, Standard Deviations and Ranges for the Total Sample and Each Subgroup for Age, Education and Verbal I.Q.

Group	N	Age			Education			I.Q. ^a		
		Mean	S.D.	Range	Mean	S.D.	Range	Mean	S.D.	Range
P-H	10	29.5	9.5	20-53	3.4	2.5	4-12	6.7	2.5	3-12
P-D	10	34.5	10.4	20-53	2.9	3.3	6-16	9.4	2.9	5-12
R-H	10	35.3	7.7	25-53	10.4	2.2	6-14	9.7	3.2	4-15
R-D	17	34.1	6.1	22-47	9.1	2.7	3-13	9.5	2.9	6-15
All Process	20	32.0	10.3	20-53	9.1	2.7	4-16	9.1	3.0	3-12
All Reactive	20	34.7	6.6	22-53	9.0	2.5	3-14	9.6	3.2	4-15
All Hallucinatory	20	32.4	9.1	20-53	9.4	2.5	4-14	8.2	3.2	3-15
All Delusion	20	34.3	7.3	20-53	9.6	2.9	3-16	9.4	2.9	5-15
Total Sample	40	33.4	9.3	20-53	9.3	2.7	3-16	9.0	3.1	3-15

^a WAIS vocabulary subtest scaled scores.

EXPERIMENTAL DESIGN

3. Procedure.

Due to the fact that the same experimenter (the author) was required to both participate in the previous ratings as well as to administer the EFT and some of the verbal subtests of the WAIS, a precautionary measure of reducing a possible "biasing" effect on the part of the experimenter was attempted. Specifically, before the subjects were rated as to prognosis and symptoms, each patient was given a code to replace his name. On the other hand, during the testing itself, only the names of the clients were used and not the codes. Consequently, the experimenter was not able to associate names with codes or the patient's corresponding group during the testing.

In terms of the testing, the EFT, RFT, and verbal subtest of the WAIS were individually administered to the forty subjects. Each subject was brought to the author's office individually and told that he had been selected to take a series of tests. After a brief introduction to the nature of these tests, the experimenter administered the EFT. The subject was instructed as follows:

I am going to show you a series of colored designs. Each time I show you one of these designs, I want you to describe the overall pattern that you see in it. After examining each design, I will show you a simpler figure which is contained in that larger design. You will then be given the larger design again, and your job will be to locate the smaller figure in it. Let us go through one to show you how it's done.

The patient was first shown the practice complex figure for a period of fifteen seconds. It was then removed and the practice simple figure was shown for a period of ten seconds. When it had been removed, the complex figure again was presented with instructions that the simple figure be located in it. The patient was timed in this task and the score recorded was the time taken to locate the simple figure. The patient was required to trace around the figure to ensure that it was the correct one. After the practice trial, the patient was given these additional instructions:

This is how we will proceed on all trials. I would like to add that in every case the smaller figure will be present in the larger design. It will always be in the upright position. There may be several of the smaller figures in the same larger design, but you are to look only for the one in the upright position. Work as quickly as you possibly can, since I will be timing you, but be sure that the figure you find is exactly the same as the original figure, both in size and proportions. As soon as you have found the figure, tell me at once. If you ever forget what the small figure looks like, you may ask to see it again. Are there any questions.

Twelve trials were given using this same procedure. The patient's score on each trial was the time taken to locate the simple figure. A maximum of five minutes was allowed on each trial.

Following the completion of the EFT, each subject was asked as to whether he knew what the word vertical meant. Whether he did or not, vertical was explained to him along with giving him several concrete examples, i.e., use of a

pen straight up and down. After that lecture, each subject was then asked to repeat what was meant by vertical and to give the experimenter some different examples. All subjects were able to do this.

Each subject was then requested to accompany the experimenter to another room for the second test, the RFT. Here the patient was introduced to a second experimenter who helped administer the RFT to the subject. Whereas the author gave the instructions and operated the pulley curtain between trials, the second experimenter operated the RFT and collected the data. The second experimenter had no knowledge of any subject's ratings nor of his EFT performance.

Upon entering the dimly lit room, the subject was asked to sit in the chair. His head was placed in the headrest and his feet on the footrest. All lights were then switched off and the room completely darkened. During approximately the next four minutes, the subject was allowed to sit and permit his eyes to dark-adapt. Within that time span, the following instructions were given:

In a few minutes, all you will see in this room is a square frame with a rod in it. At that time, I will ask you to tell me if the rod is in a straight up and down or vertical position. You can answer me by saying yes the rod is in a vertical position if it appears vertical to you, or no, it is not in a vertical position if it does not appear to be in a vertical position. If it does not appear to be in a vertical position, I will then ask you to tell me in which direction it should be moved to become in a vertical position--to the right or to

the left. We will then move the rod until you tell us to stop--and that should be when the rod appears to be vertical or straight up and down. Do you understand? (If subject said no, instructions were repeated.) Again can you tell me what is meant by vertical. (Examples were required.)

At this point, the curtain was pulled back and the first trial was given. Eight trials were given following this same procedure. After each trial the curtain was again lowered to allow the second experimenter to re-set the apparatus and write down the subject's score. The patient's score on each trial was the number of degrees his setting deviated from gravitational vertical.

Following the completion of the RFT, each patient was permitted to return to his ward. Several days after all RFT and RAT data had been collected, fourteen of the forty subjects were recalled to the author's office and administered the verbal subtest of the WAIS. The remaining twenty-six patients did not require testing on this subtest as their clinical file contained verbal subtest results from previous testing. Analysis of data began after all testing was completed.

4. Statistical Techniques for Analyzing the Data.

This section outlines the statistical methods that were used to analyze the data.

In order to test the reliability of measure, the following statistical techniques were employed. Interjudge reliability for the Phillips scale was obtained through the use of a Pearson r .³⁴ For testing the reliability of each judge's ratings for delusions and hallucinations respectively (Taylor scale), ϕ coefficients were computed following Gullford's standard formula.³⁵ Odd-even coefficients for estimating the internal consistency of the BET and RAT performances were computed using Mosier's formula,³⁶ with regard to these odd-even coefficients, the Spearman-Brown formula³⁷ was applied in both cases to estimate the reliability of the total test.

Separate two-way (2 x 2) analysis of variance techniques³⁸ with fixed factors for age, education and intelligence were computed to determine if these variables differentially varied to a significant extent among the groups in the sample.

34 J.P. Gullford, Fundamental Statistics in Psychology and Education, New York, McGraw-Hill, 1956, p. 240.

35 Ibid., p. 31.

36 -----, Psychometric Methods. New York, McGraw-Hill, 1954, p. 377.

37 Ibid., p. 354.

38 L.-T. Dwyer, Manuel de Statistique, Ottawa, Editions de l'Universite d'Ottawa, 1963, p. 434-446.

Also, as previously referred to, two-way (2 x 2) analysis of variance techniques³⁹ with fixed factors and equal N's were used to analyze the data from both the RTT and ERT.

The results of these analyses will be presented and discussed in the next chapter.

39 Ibid.

CHAPTER III

PRESENTATION AND DISCUSSION OF RESULTS

The results of the experiment described in the last chapter will be presented and discussed in this chapter. In an attempt to maintain some clarity and order in this endeavor, the results shall be considered under the following headings: (1) Reliability of the Instruments, (2) Results Concerning the Control Variables, (3) Results Concerning the Experimental Hypotheses, and (4) a Discussion of the Results.

1. Reliability of the Instruments.

Interjudge reliability for the Phillips premorbid scale was computed for two judges on sixty patients randomly selected from the total sample of 126 patients. The Pearson r coefficient obtained for this relationship was $r = .69$ ($P < .01$). This coefficient compares favorably with those reported by Garzezy and Rodnick ($r = .50$ and above)¹ and Garfield and Sundland ($r = .42$).²

¹ Norman Garzezy and Eliot Rodnick, "Premorbid Adjustment and Performance in Schizophrenia: Implications for Interpreting Heterogeneity in Schizophrenia," in Journal of Nervous and Mental Disease, Vol. 129, 1957, p. 454.

² Sol Garfield and Donald Sundland, "Prognostic Uses in Schizophrenia," in Journal of Consulting Psychology, Vol. 30, 1966, p. 18-24.

With regard to the interjudge reliability of the Taylor scale, phi coefficients of $+ .80$ ($P < .01$) and $+ .84$ ($P < .01$) were obtained for delusions and hallucinations respectively when utilizing two raters on a randomly selected group of fifty patients. These obtained interjudge reliability estimates are somewhat higher than those of $+ .62$ ($P < .02$) for delusions and $+ .67$ ($P < .01$) for hallucinations reported by Taylor.³

The reliability estimates obtained for both scales in the present study were considered high enough to satisfy the present research needs.

Reliability estimates for internal consistency of the RFT and EFT were obtained on the final sample of forty patients. Odd-even coefficients of $+ .82$ ($P < .01$) and $+ .75$ ($P < .01$) were obtained for these two measures of psychological differentiation respectively. The Spearman-Brown correction formula for obtaining a reliability estimate for the total test was then applied, increasing the coefficients to $+ .86$ ($P < .01$) for the RFT and to $+ .85$ ($P < .01$) for the EFT. These reliability coefficients are similar to those summarized by Witkin et al.⁴

³ James Taylor, "A Comparison of Delusional and Hallucinatory Individuals Using Field Dependency as a Measure," unpublished doctoral dissertation, Purdue University, 1956, p. 17.

⁴ Herman Witkin, R.B. Dyk, H.F. Paterson, D.R. Goodenough, and S.A. Karp, Psychological Differentiation, New York, Wiley, 1962, p. 40.

3. Control Variables.

Relationships among the different variables involved in this study are presented in Table II which shows the intercorrelations of age, education, vocabulary, subtest scores, Taylor scale scores, Phillips scale scores, EFT, and RFT. An inspection of that table shows some significant relationships among the control variables (i.e., the expected positive relation between education and intelligence), as well as significant relationships between certain control and performance variables. The significant correlation between intelligence and RFT and EFT performances tends to indicate that the brighter the individual, the better his performance on these two tests is apt to be.

An inspection of Table II also shows EFT performances to correlate $r=.62$ ($P<.01$) with RFT performances. This correlation is very consistent with Witkin et al.'s reported correlation of $r=.63$ ($P<.01$) between the two tests for a hospitalized population.⁵

The other correlations reported in Table II which are more pertinent to the experimental hypotheses will be considered later on in this chapter.

⁵ Ibid., p. 44.

Table II.-

Correlation Matrix for Age, Education, Verbal Intelligence, RFT, EFT, Phillips Scale, and Taylor Scale Scores.

	<u>RFT</u>	<u>EFT</u>	Age	Education	Verbal I.Q.
Taylor scale ^a	.22	.24	.17	.05	.24
Phillips scale ^b	.31	.09	.17	.14	.32
<u>RFT</u> ^b		.62**	.26	-.37*	-.42**
<u>EFT</u>			.07	-.27	-.53**
Age				-.02	.15
Education					.60**

a These correlations are biserial "r's".

b Raw time scores were used in these correlations.

* P<.05.

** P<.01.

Prior to computing the analyses of variance for each of the control variables, homogeneity of the variances was tested by use of the F_{max} test.⁶ The highest obtained F_{max} value for any of the various combinations of groupings in the present sample was 2.3 which was far less than the critical tabled value. This result, therefore, indicated that the variances of the various groups for the variables of age, education, and intelligence, were not heterogeneous.

Table III summarizes the analyses of variance for each of the control variables in terms of their F values for age, education and intelligence. (The more detailed summary tables of these analyses are presented in Appendix 3.) As found in Table III, the analyses of age, education and intelligence showed that the groups in the sample did not vary significantly on these variables.

3. Experimental Hypotheses.

To test for homogeneity of variance preparatory to the analyses of variance concerning the experimental hypotheses, F_{max} tests were again computed using this time the variances for EFT and RFT scores from the various groupings in the sample. The highest obtained F_{max} value was 1.9

⁶ E.J. Winer, Statistical Principles in Experimental Design, New York, McGraw-Hill, 1962, p. 92-96.

Table III.-

F Values Obtained from Separate Analyses of Variance for All Patients on the Variables of Age, Education and Intelligence.^a

Source of Variation	Age	Education	Intelligence
Symptoms	0.4	0.0	1.7
Prognosis	0.3	0.4	2.6
Symptoms x Prognosis	1.1	2.7	2.3

^a For df (1, 30), $F_{01} = 7.56$; $F_{05} = 4.17$.

which was far below the critical tabled value. Thus, the assumption of homogeneity of variance appeared tenable for all groupings.

Tables IV and V present the summary tables of the analysis of variance for the RFT and EFT respectively. From an examination of those tables, it can be seen that all three of the null hypotheses made in the present study had to be accepted. More specifically, hypothesis one which stated that there is no significant difference between schizophrenics rated as being primarily delusional and those schizophrenics rated as being primarily hallucinatory on either RFT or EFT performances could not be rejected. Similarly, the second hypothesis could also not be rejected. Hypothesis two predicted that there is no significant difference between process schizophrenics and reactive schizophrenics on either RFT or EFT performances. Finally, the results of the analyzes did not allow the rejection of hypotheses three which stated there is no significant interaction effect between the symptom and prognostic variables on either RFT or EFT performances.

On the grounds that the use of the EFT raw time scores might not be as precise measurements as the use of work accomplished per unit of time scores,⁷ each subject's

⁷ Lawrence Fayhaw, personal communication, 1967.

Table IV.-

Summary of the Analysis of Variance for RFT Performance.

source of Variation	SS	df	MS	F	F ₀₁	F ₀₅
Symptoms	1400.4	1	1400.4	.2	7.56	4.17
Prognosis	15601.6	1	15601.6	2.2	7.56	4.17
Symptom x Prognosis	1123.6	1	1123.6	.2	7.56	4.17
Within	255570.0	36	7071.2			
Total	273883.6	39				

Table V.-
Summary of the Analysis of Variance for BFT Raw Time
Performances.

Source of Variation	SS	df	MS	F	F ₀₁	F ₀₅
Symptoms	912	1	912	2.72	7.56	4.17
Prognosis	616	1	616	1.93	7.56	4.17
Symptom x Prognosis	3	1	3	0.00	7.56	4.17
Within	11070	36	330			
Total	13401	39				

EFT raw time score was converted into reciprocal values. Using these reciprocal time values, a subsequent analysis of variance was computed for EFT performances. Table VI presents the results of that analysis in terms of the summary table. From an inspection of that table, it can be seen that none of the three null hypotheses regarding EFT performances could be rejected.

As a final note to this section, the more descriptive data regarding the RFT and EFT performances found in the present study are reported in Table VII. Specifically, that table presents the ranges, means, standard deviations, and standard error of the means for RFT and EFT performances for the total sample and its various subgroups. With both measures of differentiation, the mean differences are noted to be in the expected direction. That is, both delusional patients and reactive patients tended to perform better on the RFT and EFT than did hallucinatory patients or process patients. Similarly, one finds that the reactive-delusional (R-D) group tended to perform better on both tests than the process-hallucinatory (P-H) group, with the process-delusional (P-D) and reactive-hallucinatory (R-H) groups falling between these first two groups in RFT and EFT performances. None of these mean differences, however, reached acceptable levels of significance.

Table VI.-

Summary of the Analysis of Variance for EPT Reciprocal Time Performances.

Source of Variation	SS	df	MS	F	F ₀₁	F ₀₅
Symptoms	.011	1	.011	1.53	7.56	4.17
Prognosis	.001	1	.001	0.16	7.56	4.17
Symptom x Prognosis	.004	1	.004	0.67	7.56	4.17
Within	.217	30	.006			
Total	.233	32				

Table VII.-

Ranges, Means, Standard Deviations and Standard Error of the Mean for RPT and BEY Performances for the Total Sample and Its Subgroups.

Group	RPT				BEY				
	N	Range	\bar{x}	σ	σ_M	Ranges	\bar{x}	σ	σ_M
F-H	18	0-30	16.1	11.1	3.7	0-30	237.2	76.3	25.4
F-D	18	0-30	12.4	9.1	2.7	0-30	211.6	63.3	27.0
M-H	20	0-30	15.9	11.1	3.0	0-30	193.3	75.5	31.7
M-D	17	0-30	7.6	5.2	2.7	0-30	152.1	69.5	26.8
Process	21	0-30	14.2	9.7	3.3	0-30	214.4	66.2	30.2
Reactive	26	0-30	12.8	10.1	2.4	0-30	174.5	95.4	21.7
Hallucinatory	26	0-30	13.6	11.2	2.6	0-30	217.0	66.9	26.2
Delusional	20	0-30	11.3	5.3	1.9	0-30	175.2	67.3	26.4
Total	40	0-30	13.5	10.2	1.6	0-30	196.7	61.7	14.6

a Raw time scores expressed in seconds.

The results of the statistical analyses reported in the previous sections will be discussed in the following section.

4. Discussion of Results.

The interjudge reliability estimate of the Phillips scale was high enough to indicate that it is a reliable instrument, at least in the sense that judges tend to agree in their ratings of patients along the process-reactive continuum. Moreover, a trend in the present sample seems to support to some extent the validity of the scale as a prognostic instrument. Specifically, the process group (poor prognosis) tended to be both older and have less intelligence than the reactive group (good prognosis). These trends were reflected by the obtained correlations of $r_b = .17$ for the Phillips scale and age and $r_b = .32$ ($P < .10$) for the Phillips scale and WAIS vocabulary scores (Table II). These trends support the general clinical observation that a better prognosis is usually associated with a younger adult of higher intelligence than with an older adult with less intelligence.

With regard to the Taylor scale used in the present study, the interjudge reliability estimates were high enough to suggest that judges tend to agree in their ratings of patients as to delusions and hallucinations. It was already

noted that Taylor's obtained interjudge reliability coefficients were lower than those found in the present study. One possible reason for this finding might stem from the fact that in Taylor's study, the ratings were based on both the patient's clinical records and the opinions of ward personnel, whereas, in the present study, the opinions of the ward personnel were found to be rather skimpy and consequently not utilized. More variability in ratings is therefore seen as stemming from the opinions of the ward personnel than the clinical records, thus possibly accounting for the higher coefficients found in the present study.

The validity of the Taylor scale is difficult to evaluate, despite its good reliability. For the most part, the scale rests on face validity. Two issues with regard to the effectiveness of the scale in the present study were raised by the raters upon completion of the ratings. Both seem worthwhile mentioning.

The first issue concerned the type of included items in the scale and the possible effects they can have on the final categorizing of the subjects into the two symptom groups. Specifically, only two of the five delusional items (Nos. 4 and 6) can be appropriate if a patient has only grandiose delusions, whereas four of the five delusional items (Nos. 4, 5, 6, and 7) can be appropriate if his only delusions tend to be persecutory in nature. A similar

bias was also found with the three hallucinatory items. Only one item (No. 3) concerns visual hallucinations, while two items (Nos. 1 and 2) concern auditory hallucinations. Thus, the cut-off scores used in the present study tended to exclude the patient whose symptom picture was only characterized by visual hallucinations or grandiose delusions from being a potential subject as operationally defined.

The second issue is perhaps even more serious in nature. Since many of the patients in the present sample were reported as having had previous hospitalizations, it was not known in most cases as to whether they displayed a consistent delusional and/or hallucinatory picture during these earlier hospitalizations. From the few records that were available regarding past hospitalizations, it was noted that the only two patients who were potential subjects (primarily hallucinatory) on the basis of current records had to be rejected due to past records of delusional symptoms. From this, therefore, one wonders about the consistency of these symptoms from one hospitalization to another. No study is known bearing on this point. It is suggested that future research in this area use only first admissions to avoid this issue.

Both tests assessing psychological differentiation were found to have high reliability in the present sample. This would indicate that a male schizophrenic's performance

on either the RFT or EFT tends to be consistent from one trial to another. Moreover, the fact that both tests were found to be significantly related to each other lends support to the position that they tend to measure the same phenomenon to some extent. Of particular interest, however, is the fact that general intelligence was found to be significantly related to RFT and EFT performances. As noted from Table II, the RFT was found to correlate $-.53$ with scaled WAIS vocabulary scores, while the EFT was found to correlate $-.42$ with scaled WAIS vocabulary scores, both correlations being significant beyond the one per cent level of confidence. This finding lends support to Zigler's⁶ position that general intelligence is an important factor to consider when evaluating Witkin's measures of psychological differentiation.

In terms of the sample employed in this study, some interesting trends are noted when comparing the mean RFT and EFT performances of the various groups to the developmental normative data for the two tests reported by Witkin et al.⁷ For instance, the delusional group would appear to

⁶ E. Zigler, "A Measure in Search of a Theory," in Contemporary Psychology, Vol. 8, 1963, p. 133-135.

⁷ H.A. Witkin, H.B. Lewis, M. Hertzman, K. Machover, P.B. Meissner, and S. Wapner, Personality through Perception, New York, Harper, 1954, p. 122, 124.

be functioning on about the same level as the "normal" ten to thirteen year olds on the tests, whereas the hallucinatory group appears to be functioning on par with about the eight to ten year olds. In terms of the process-reactive distinction, both groups appear to be functioning around the ten-year old level. The R-D group is closest to the thirteen-year old normative group, whereas the P-H group is closest to the eight-year old normative group. In this light, a couple of views expressed in personality theory appear to gain some tentative support. On the one hand, schizophrenics appear to be fixated and/or regressed in terms of differentiation when compared to their "normal" contemporaries and, on the other hand, hallucinations appear to be a more primitive symptom than delusions. It should be emphasized, however, that the support for these conclusions found in the present study is solely tentative. The trends reported above (as well as all trends in this study) could be due to certain selection factors.

The results of the analyses of variance for RFT and EFT performances did not permit the rejection of any of the three null hypotheses made in the present study. Neither schizophrenics who were rated as being primarily delusional nor rated as being reactive were found to be significantly more differentiated on the basis of their RFT and EFT scores than those schizophrenics who were rated as being either

primarily hallucinatory or process. Similarly, no significant interaction effects between the symptom and prognostic variables as to extent of differentiation were found on either test.

As they stand, therefore, the results of the present study fail to support the implication of Taylor's¹⁰ findings, that schizophrenics primarily delusional are significantly more differentiated than schizophrenics primarily hallucinatory, and fail to support the implications of both Bryant's¹¹ and Sugerma's¹² studies, that reactive schizophrenics are more differentiated than process schizophrenics. This is particularly surprising in the cases of Bryant's and Taylor's studies as they both found significant differences when using the same instruments as were employed in the present study. The failure to obtain positive results in this study may have its basis in several factors.

One obvious factor centers on the small N utilized in the present sample. It is possible that the size of the

10 Taylor, Op. Cit., vii-61 p.

11 Arthur Bryant, "An Investigation of Process-Reactive Schizophrenia with Relation to Perception of Visual Space," unpublished doctoral dissertation, University of Utah, 1961, vi-147 p.

12 A. Sugerma, "Prognostic Factors in Schizophrenia: A Developmental Approach," unpublished doctoral dissertation, Department of Psychiatry, Downstate Medical Center, Brooklyn, New York, 1962, vi-141 p.

"true" differences in RFT and EFT scores among the various experimental groups is smaller than that required by statistical theory in small samples for reaching acceptable levels of significance. Perhaps by increasing the N of the sample, therefore, one would find positive results. Two observations, however, do not seem to buttress this line of reasoning. First, both Bryant's and Taylor's samples were also relatively small. Secondly, the mean RFT and EFT scores reported by Bryant for the reactive groups tend to indicate marked differences from those found in the present study for the same group despite very similar mean scores for the process group. For example, for series 3 of the RFT and for the EFT, Bryant reported the reactive group had mean scores of 4.7 degrees error and 45.37 seconds respectively. The present study found the reactive group to have mean scores of 12.0 degrees error on the RFT and 174.5 seconds on the EFT. Unfortunately, neither Sugarman nor Taylor report their descriptive data.

An additional source of possible variation was also noted among the samples from these various studies. Whereas both Bryant's and Taylor's samples were composed of only white patients, the present sample had both Negro and white patients. In returning to the literature, a most recent

study by Morgan¹³ was found demonstrating that Negro male hospitalized schizophrenics have significantly less analytic ability than white male hospitalized schizophrenics. Consequently, it appears that race may have contaminated the results of the present study.

From an inspection of the present sample, however, it was discovered that the P-H group had seven Negroes, the P-D group 5, the H-H group 5, and the H-L group 3. When considering the suggested effects of race on mode of field approach, it seems that the composition of the various groups in terms of race should have "stacked the cards" in favor of rejecting the null hypotheses in the present study. Yet, even with the groupings "loaded" with respect to race, no significant results were found.

Another factor to consider in possibly determining why the results of this study differ from similar ones, is the variable of general intelligence. As pointed out, this factor was found to have a significant relationship to both HFT and EFT performance, as well as having a tendency to relate to both the Phillips scale and the Taylor scale (Table II).

¹³ Donald L. Morgan, 'WAIC 'Analytic Index' and Rehospitalization of Schizophrenic Servicemen,' in Journal of Consulting Psychology, Vol. 30, 1966, p. 257-269

In resounding Zigler's cry, it is possible that the obtained trends between the experimental groups in the present study may have been primarily a result of differences in general intelligence among the patients rather than being primarily reflections of differences in extent of differentiation. An observational analysis of Table I showing the descriptive statistics regarding WAIS vocabulary scaled scores among the groups tends to lend tentative support to that possibility. In this connection too, it is interesting to note that Sugerman, who controlled for verbal intelligence, failed to obtain a significant relationship between the Phillips scale and RFT performances. Although Bryant controlled for Full Scale I.Q., Taylor had no control for general intelligence. Of course, conclusive evidence bearing on this issue awaits the scrutiny of further research.

Apart from the factor of past hospitalization already referred to when considering the Taylor scale, another serious factor which may have confounded the results in the present study centers on the effects of drugs on the patients' test performances. During the EFT performances, for instance, a few subjects in all groups verbally complained about the medication interfering with their vision and consequently hindering their performances. Although this reaction may have been in part (or total) a rationalization, it is also likely that the medication was disrupting

their performances, especially since blurring of vision is a side effect of certain drugs. Although several studies reviewed in chapter one indicated that drugs do not appear to influence mode of field approach on RFT performances, no study has indicated the possible effects of various drugs on EFT performances. More research directly concerned with the effects of drugs on mode of field approach is certainly indicated.

Questions concerning differential amounts of attention and motivation among the patients may also be raised. Due to the subtlety of this point in terms of the present experimental design, it is difficult to ascertain. No marked trends were observed among the groups in the clinical observations made by the examiners during the testing. Further, if different degrees of attention and motivation were occurring among the patients during their performances, it would seem that sporadic test behavior would be found. Yet, an observational analysis of both RFT and EFT trial scores for each patient and among the groups showed no such trend. Moreover, the high odd-even correlations for both tests indicate high internal consistency in the patients' performances.

In retrospect, therefore, the results obtained in the present study gave no conclusive support to the notions that: (1) process schizophrenics are significantly less

differentiated than reactive schizophrenics, (2) schizophrenics primarily hallucinatory are significantly less differentiated than schizophrenics primarily delusional, and (3) among the process-hallucinatory (P-H), process-delusional (P-D), reactive-hallucinatory (R-H), and reactive-delusional (R-D) schizophrenics, the P-H would be least differentiated, while the R-D would be most differentiated, with the P-D and R-H schizophrenics falling somewhere between them in terms of differentiation. Caution is therefore indicated in assuming the validity of those notions, especially when the variables are operationally defined in the manner of this study.

SUMMARY AND CONCLUSIONS

On the basis of several reported studies, it was suggested that (1) process schizophrenics are functioning at a lower level of psychological differentiation than are reactive schizophrenics, and (2) schizophrenics primarily hallucinatory are functioning at a lower level of differentiation than are schizophrenics primarily delusional. Since other sources indicated that the symptoms of delusions and hallucinations appear to be independent of the prognostic classification of process and reactive schizophrenia, patients were classified into the four groups of process-hallucinatory (P-H), process-delusional (P-D), reactive-hallucinatory (R-H), and reactive-delusional (R-D), for the purpose of assessing extent of differentiation among each group. Based on the above notions, it was hypothesized that the P-H group would be least differentiated and the R-D group would be most differentiated, while the P-D and R-H groups would fall somewhere between these two extremes.

A total population of 128 male hospitalized schizophrenics were rated on both the Phillips scale and the Taylor scale for classifying patients along the process-reactive and delusional-hallucinatory dimensions respectively. A final sample of forty patients were selected from that group, consisting of 10 P-H, 10 P-D, 10 R-H, and 10 R-D patients. Each of these forty patients were then

individually administered the EFT, RFT and the WAIS vocabulary subtest (if a WAIS score was already on file, it was not re-administered). The design of the present study therefore allowed testing of three experimental hypotheses. In null form, they were:

1. There is no significant difference between schizophrenics rated as being primarily delusional and those schizophrenics rated as being primarily hallucinatory (Rows) on either EFT or RFT performances.
2. There is no significant difference between process schizophrenics and reactive schizophrenics (Columns) on either EFT or RFT performances.
3. There is no significant interaction effect between the prognostic (process-reactive) and symptom (delusional-hallucinatory) variables on either EFT or RFT performances.

The obtained results did not permit rejection of any of the three null hypotheses, although, in general, trends in the expected directions were found to exist. Several factors were discussed which were felt to have possibly contaminated these results. The more prominent of these factors were: (1) the small *N* utilized in the sample, (2) the Taylor scale ratings may have been contaminated by a lack of information regarding past hospitalizations, and (3) medication may have confounded EFT and RFT performances.

On the other hand, it was also suggested that the obtained trends in this study might have been primarily attributable to the effects of differences noted in general intelligence. Although this line of reasoning was only speculative, the results of the present study did demonstrate that general intelligence (as assessed by WAIS vocabulary subtest scaled scores) was significantly related to both RST and RFT performances.

In final analysis, the results of the present study gave no conclusive evidence to the past notions regarding the relationships between the prognostic or symptom classifications of schizophrenia. Rather, the present results tended only to indicate the need for more research in this area to help clarify the relationships among these variables.

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APPENDIX 1

PHILLIPS PREMORBID SCALE

APPENDIX I

PHILLIPS PREMORBID SCALE

I. Premorbid History

A. Recent Sexual Adjustment

1. Stable heterosexual relation and marriage. 0
2. Continued heterosexual relation and marriage but unable to establish home. 1
3. Continued heterosexual relation and marriage broken by permanent separation 2
4. (a) Continued heterosexual relation and marriage but with low sexual drive. 3
- (b) Continued heterosexual relation with deep emotional meaning but emotionally unable to develop it into marriage. 3
5. (a) Casual but continued heterosexual relations, i.e., "affairs," but nothing more. 4
- (b) Homosexual contacts with lack of or failure in heterosexual experience 4
6. (a) Occasional casual heterosexual or homosexual experience with no deep emotional bond 5
- (b) Solitary masturbation with no active attempt at homosexual or heterosexual experiences. 5
7. No sexual interest in either men or women. 6

B. Social Aspects of Sexual Life During Adolescence and Immediately Beyond

1. Always showed a healthy interest in girls with a steady girl friend during adolescence. 6
2. Started taking girls out regularly in adolescence. 1
3. Always mixed closely with boys and girls 2

4.	Consistent deep interest in male attachments with restricted or no interest in girls.	3
5.	(a) Casual male attachments with inadequate attempts at adjustment to going out with girls.	4
	(b) Casual contacts with boys and girls.	4
6.	(a) Casual contacts with boys and with lack of interest in girls.	5
	(b) Occasional contacts with girls	5
7.	No desire to be with boys and girls; never went out with girls	6
C.	<u>Social Aspects of Recent Sexual Life: 10 Years of Age and Above</u>	
1.	Married and has children, living as a family unit.	0
2.	Married and has children but unable to establish or maintain a family home.	1
3.	Has been married and had children but permanently separated.	2
4.	(a) Married but considerable marital discord	3
	(b) Single, but has had engagement or deep heterosexual relationships but emotionally unable to carry it through to marriage	3
5.	Single, with short engagements or relationships with women which do not appear to have had much emotional depth for both partners, i.e., "affairs".	4
6.	(a) Single, has gone out with a few girls but without other indications of a continuous interest in women.	5
	(b) Single, consistent deep interest in male attachments, no interest in women.	5

- 7. (a) Single, occasional male contacts, no interest in women. 6
- (b) Single, interested in neither men nor women. 6

D. Social Aspects of Recent Sexual Life: Below 30 Years of Age

- 1. Married, living as a family unit, with or without children. 0
- 2. (a) Married, with or without children, but unable to establish or maintain a family home. 1
- (b) Single but engaged or in a deep heterosexual relationship (presumably leading towards marriage) 1
- 3. Single, has had engagement or deep heterosexual relationships but has been emotionally unable to carry it through to marriage. 2
- 4. Single, consistent deep interest in male attachments, with restricted or lack of interest in women. 3
- 5. Single, casual male relationships with restricted or lack of interest in women. 4
- 6. Single, has gone out with a few girls casually but without other indications of a continuous interest in women. 5
- 7. (a) Single, never interested in or never associated with either men or women 6
- (b) Antisocial. 6

E. Personal Relations: History

- 1. Always has had a number of close friends but did not habitually play a leading role. 1
- 2. From adolescence on had a few close friends 3
- 3. From adolescence on had a few casual friends. 3
- 4. From adolescence on stopped having friends. 4

2. (a) No intimate friends after childhood.	5
(b) Casual but never any deep intimate mutual friendships.	5
6. Never worried about boys or girls; no desire to be with boys and girls.	6
F. <u>Recent Premorbid Adjustment in Personal Relations</u>	
1. Habitually mixed with others, but not a leader . . .	1
2. Mixed only with a close friend or group of friends.	3
3. No close friends; very few friends; had friends but never quite accepted by them	4
4. Quiet; aloof; seclusive; preferred to be by self . .	5
5. Antisocial.	6

APPENDIX 2

TAYLOR SCALE

APPENDIX 2

TAYLOR SCALE

1. Does (or did) he report or admit to hearing hallucinatory sounds or voices, to what extent does he believe in their independent existence:

C.No evidence of hallucinations from patient	1.Realizes they do not exist	2. Thinks they probably do exist	3.Certain they exist
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2. How frequently does (or did) he speak, mutter, or mumble to himself seemingly to carry on conversations with hallucinatory voices?

C.Not at all	1.Occasionally	2. Fairly frequently	3. Most of the time
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3. How frequently does (or did) he appear to look, gesticulate, speak to or shy away from invisible (hallucinatory) persons or objects?

C.Not at all	1.Occasionally	2.Fairly frequently	3.Most of the time
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4. Is (or was) there evidence of false ideas or beliefs? If present, are these ideas or beliefs (0) not at all; (1) sufficiently plausible to be accepted by a normal person uninformed as to the facts; (2) implausible but not impossible; (3) impossible or bizarre, (i.e. "mind control by neighbor's radio waves," "heart removed," or dead).

5. Does (or did) he tend to suspect or believe on slight evidence or without good reason that people and external forces are trying to or now do influence his behavior and control his thinking?

C.No unjustified suspicions	1.Inclined to suspect	2.Believes others are trying to control him	3.Believes he is influenced or controlled
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6. Does (or did) he tend to suspect or to believe on slight evidence or without good reason that some people are against him (persecuting, conspiring, cheating, depriving, punishing), in various ways?

C.No unjustified suspicions	1.Inclined to suspect	2.Inclined to believe	3.Has firm belief
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7. Does (or did) he tend to suspect or to believe on slight evidence or without good reason that some people talk about, refer to, or watch him?

0. No unjustified suspicions 1. Inclined to suspect 2. Inclined to believe 3. Has firm belief

8. Does (or did) he tend to believe that he is endowed with special powers (i.e., supernatural, reads minds, etc.) great wealth or that he has a mission to spread a new idea to the world?

0. No unusual beliefs 1. Rarely has such beliefs and later denies them 2. Frequently believes but later denies beliefs 3. Has firm belief

APPENDIX 3

SUMMARY TABLES OF THE ANALYSIS OF
VARIANCE FOR AGE, EDUCATION
AND INTELLIGENCE

APPENDIX 3

Table VIII.-
Summary of the Analysis of Variance for Age.

Source of Variation	SS	df	MS	F	F ₀₁	F ₀₅
Symptoms	72.4	1	72.4	.8	7.56	4.17
Prognosis	36.4	1	36.4	.4	7.56	4.17
Symptom x Prognosis	96.3	1	96.3	1.1	7.56	4.17
Within	3246.0	36				
Total	3445.1	39				

Table II.-
Summary of the Analysis of Variance for Education.

Source of Variation	SS	df	MS	F	F ₀₁	F ₀₅
Symptoms	3.6	1	3.6	.4	7.56	4.17
Prognosis	.1	1	0.0	.0	7.56	4.17
Symptom x Prognosis	23.3	1	23.3	2.7	7.56	4.17
Within	310.6	36	8.6			
Total	337.6	39				

Table X.-
Summary of the Analysis of Variance for WISC Vocabulary
Subtest Scaled Scores.

Source of Variation	SS	df	MS	F	F ₀₁	F ₀₅
Symptoms	24.0	1	24.0	2.6	7.56	4.17
Prognosis	15.6	1	15.6	1.7	7.56	4.17
Symptom x Prognosis	21.1	1	21.1	2.3	7.56	4.17
within	329.1	36	9.1			
Total	389.8	39				

APPENDIX 4

ABSTRACT OF

Extent of Psychological Differentiation Among Hospitalized
Male Schizophrenics Classified Along the Process-Reactive
and Delusional-Hallucinatory Dimensions

APPENDIX 4

ABSTRACT OF

Extent of Psychological Differentiation Among Hospitalized Male Schizophrenics Classified Along the Process-Reactive and Delusional-Hallucinatory Dimensions¹

This study was carried out to investigate three hypotheses regarding the process-reactive and delusional-hallucinatory classifications of schizophrenia and extent of psychological differentiation. In null form, the hypotheses were: (1) there is no significant difference between schizophrenics rated as being primarily delusional and those schizophrenics rated as being primarily hallucinatory (Rows) on either EFT or RFT performances; (2) there is no significant difference between process schizophrenics and reactive schizophrenics (Columns) on either EFT or RFT performances; and (3) there is no significant interaction effect between the prognostic (process-reactive) and symptom (delusional-hallucinatory) variables on either EFT or RFT performances.

Forty male hospitalized patients with a diagnosis of schizophrenia were selected for the final sample on the basis of independent ratings by two judges on both the Taylor scale for symptoms and the Phillips scale for pre-morbid history.

¹ David T. Hellkamp, doctoral thesis presented to the Faculty of Psychology and Education of the University of Ottawa, Ontario, February 1967, viii-104 p.

These forty patients were classified as follows: 10 process-hallucinatory, 10 process-delusional, 10 reactive-hallucinatory, and 10 reactive-delusional. Each of these patients were then tested on Witkin's EFT and RFT, with the variables of age, education, and WAIS vocabulary subtest scaled scores also being studied.

The results did not permit rejection of any of the three hypotheses, although trends in the expected directions were obtained. Several factors could possibly have accounted for the lack of positive findings in this study. Some of the more prominent of these factors were: (1) the small N of the sample, (2) the lack of information regarding past symptoms in previous hospitalizations, and (3) the effects of medication on EFT and RFT performances. In contrast, the obtained trends were also discussed as perhaps reflecting primarily differences in extent of general intelligence rather than differences in extent of differentiation. Although this line of reasoning was only speculative, the results of this study did demonstrate a significant relationship between general intelligence and psychological differentiation, as assessed by WAIS vocabulary subtest scaled scores, EFT and RFT scores respectively.

On the basis of these results, it was concluded that no conclusive evidence was obtained regarding the nature of the relationship between the prognostic (process-reactive) and symptom (delusional-hallucinatory) classifications of schizophrenia and extent of psychological differentiation. Caution was emphasized in assuming the validity of past generalizations regarding the relationships among these variables.