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THE RORSCHACH AS A DIAGNOSTIC AID IN DIFFERENTIATING
THE BIPOLAR AFFECTIVE DISORDER FROM THE
SCHIZOPHRENIC DISORDER

by

Stephen James Newman

A Dissertation
Submitted to the
Faculty of The Graduate College
in Partial Fulfillment of the
Requirements for the
Degree of Doctor of Education
Department of Counseling and Personnel

Western Michigan University
Kalamazoo, Michigan
August 1985
Misdiagnosis of the bipolar affective disorder (manic type) has profound consequences including prescription of counterproductive medication, non-aggressive treatment approaches, extended hospitalizations, and poor prognosis (Fieve, 1975). Misdiagnosis is extensive and has resulted from the tendency to over diagnose schizophrenia (Fieve, 1975), the tendency to equate psychotic symptomatology with schizophrenia (Garvey & Tuason, 1980), the similarity of psychotic symptomatology of the bipolar affective and schizophrenic disorders (American Psychiatric Association, 1980), past confusion regarding diagnostic criteria of the bipolar affective disorder (Spitzer, Williams, & Wynne, 1983), and the absence of psychometric tools to differentiate the bipolar affective and schizophrenic disorders.

The purposes of this study were to determine if the bipolar affective and schizophrenic disorders were distinguishable using the Rorschach, to replicate prior research, and to survey subscores to explore possible discriminative qualities. The "Comprehensive System" (Exner, 1969) was employed for administration, scoring, and interpretation of the Rorschach.

The independent variable was the diagnostic classification...
(bipolar affective disorder, manic, or schizophrenic disorder, undifferentiated or paranoid type). Dependent variables were Rorschach subscores. Forty-nine Rorschach subscores were investigated. The sample consisted of 70 subjects, 31 with bipolar affective disorders, and 39 with schizophrenic disorders. Subjects were administered the Rorschach while evidencing psychotic symptomatology.

Statistical analyses of data revealed no significant differences of mean score or variance of the six subscores which were previously identified in the literature as having discriminative qualities. Results of this study indicate the bipolar affective disorder and the schizophrenic disorder are not distinguishable using the six investigated subscores as scored by the "Comprehensive System" (Exner, 1969). Analysis of the 43 additional subscores identified 17 subscores with unverified clinical utility which may warrant further investigation.

The consonance of symptomatology of these disorders when individuals were in psychotic states was psychometrically demonstrated. Due to the mutual psychotic symptomatology, diagnosis should not be based solely on a clinical interview or the subscores investigated. It is recommended clinicians employ a comprehensive approach in diagnosis utilizing all available clinical data.
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Western Michigan University

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I dedicate this study to my wife, Nancy, and my two children, Katherine and Jeffrey. Their sacrifice during my struggle was extensive.

Stephen James Newman
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1. Diagram of the Major Mood Disorders of the DSM-III. . . . . . 3
The misdiagnosis of the bipolar affective disorder (manic type) has extensive and devastating consequences. In the United States misleading diagnosis of the affective disorder is estimated to cost five billion dollars annually (Cancro, Shapiro, & Kesselman, 1979). Misuse of limited hospital availability, extended hospitalizations, unnecessary human anguish, monumental treatment cost, less than aggressive treatment plans, numerous personal frustrations, and the possibility of individuals' involvement in self-defeating or self-destructive behaviors (Fieve, 1975) may result from the misdiagnosis of the bipolar affective disorder. It is estimated that 0.4% to 1.2% of the adult population have been diagnosed as having bipolar disorders (American Psychiatric Association [APA], 1980). However, estimates of misdiagnosed affective disorders have been reported as high as 86% (Gurland, Fleiss, Sharpe, Simon, & Barrett, 1972).

There are several factors contributing to the extent of misdiagnosis. There is a strong tendency to over diagnose schizophrenia in the United States (Fieve, 1975) and a tendency to equate psychotic symptoms with schizophrenia (Garvey & Tuason, 1980). Actually the overlap of symptomatology between these two disorders is not widely recognized. This misconception and lack of
clarity continues to perpetuate the tendency to misdiagnose the bipolar affective disorder. This lack of clarity in differentiating between the two disorders is exemplified in prominent textbooks (Spitzer, Williams & Wynne, 1983) including the first two drafts of the Diagnostic and Statistical Manual of Mental Disorders, 3rd ed. (DSM-III), (APA, 1980). This lack of clarity is evidenced in the diagnostic criteria of the bipolar affective disorder (see Appendix A).

Preliminary attempts have been made to remedy the diagnostic ambiguity (APA, 1980) and rectify errors (Levy, 1982) of equating psychotic symptomatology and thought pathology with schizophrenic disorders. An example of the work being done to further refine diagnosis is reflected in a diagram developed by Levy (1982) pictorially demonstrating how psychotic individuals may be diagnosed and the progression of diagnostic conceptualization (See Figure 1).

Very few studies have been completed that focus specifically on the bipolar affective disorder due to the challenging definition of this disorder (Winokur, Clayton, and Reich, 1969). Additionally, since advances are recent in the conceptual understanding of psychosis (Levy, 1982), psychotic symptomatology (Shopsin, 1979; Grinker, 1977; Abrams, Taylor, & Gaztanaga, 1974; and Guze's study and Clayton's study cited in Shopsin, 1979), and bipolar affective disorders (Extein, Pottash, Gold, & Martin, 1980; Pope, Lipinski, Cohen, & Axelrod, 1980; and APA, 1980), there has not been sufficient time for research to thoroughly explore this dilemma. Given the prevalence of an estimated two and one-half million
where old categories now become

ALL ORGANIC MENTAL DISORDER

organic amnestic dementia
delirium
organic personality syndrome
drug intoxication syndromes
drug withdrawal syndromes

organic affective syndromes

organic delusional syndrome
organic hallucinosis
dementia with psychosis
(delusions)

major depression without psychosis
bipolar disorder without psychosis
dysthmic disorder (old depressive neurosis)
cyclothymic disorder (old cyclothymic personality)
some atypical depressions
some atypical bipolar disorders

schizophreniform psychosis
schizophrenia
brief reactive psychosis
atypical psychosis

affective disorders
with psychosis
manic syndromes and
major depressive syndromes

Figure 1. Diagram of the Major Mood Disorders of the DSM-III (Levy, 1982 p. 179).

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bipolar affective disorders within the United States (APA, 1980), the extent of misdiagnosis, and the unnecessary social and human cost resulting from misdiagnosis, the need for further research is pressing.

Psychiatric diagnosis usually occurs as the result of a clinical interview supported by diagnostic aids which include diagnostic criteria, semi-structured interviews, and psychometric assessment to increase the accuracy of psychiatric diagnosis (Singer, 1978). However, there has been no specific refinement of diagnostic aids to aid in the discrimination of the bipolar affective disorder from the schizophrenic disorder.

Statement Of The Problem

There is a need for refinement of existing psychometric tools to assist in more accurate differentiation of the bipolar affective disorder from schizophrenic disorders. Diagnostic aids must be researched to improve the validity and reliability of accurate identification of bipolar affective disorders.

Purpose

The purpose of this study is to analyze the distinctions and similarities between two homogenous inpatient psychiatric diagnostic groups in an attempt to furnish information to aid in differential diagnosis of the bipolar affective disorder and the schizophrenic disorder.
Significance of the Study

Developments in psychopharmacology and biological psychiatry have necessitated advancement of accuracy and precision of diagnosis of bipolar affective disorders. With the availability of lithium carbonate as the standard pharmacological approach (Shopsin, 1979) to treatment of the manic phase of the bipolar affective disorder, flawless diagnosis is required.

The present study may be a preliminary step to the development of specific criteria to identify a bipolar affective disorder. This research will attempt to assess the discriminative and descriptive qualities of various Rorschach subscores. Analysis of the Rorschach characteristics of each diagnostic category could furnish valuable information to aid in the accurate diagnosis of bipolar affective disorders. Through utilization of a standardized approach to the administration, scoring, and interpretation of the Rorschach test the results of this study have the potential to be employed in future analysis. This research may also provide findings which may be used to assist in improving definitions, developing more precise diagnostic criteria, and advancing conceptual understanding of these disorders.

Advancement of diagnostic accuracy of the bipolar affective disorder may result from this research. Significant advances in the treatment of the bipolar affective disorder may emerge from improved diagnostic capability. Additionally, this study may assist in the theoretical refinement of knowledge of psychotic individuals.
diagnosed with the bipolar affective disorder and the schizophrenic disorder.

It is assumed that future research investigating this disorder is more likely if the bipolar disorder is diagnosed with greater reliability. Clinical and theoretical advancements in the diagnosis and treatment of the bipolar affective disorder may follow. With further research the tendency to diagnose bipolar affective disorders as schizophrenic disorders may decrease. Psychiatric diagnosis may then be more precise and therefore psychiatric care may become more appropriate and effective.

Summary

In this chapter, a statement of the background, the problem, the purpose, and the significance of the study were presented. The extent and detrimental consequences of misdiagnosis of the bipolar affective disorder were explored. The background of this disorder and tendency of clinicians to equate psychotic symptomatology with a schizophrenic disorder were described. The necessity to improve psychometric tools to aid clinicians in making accurate diagnoses, was also presented. The hypothesis of improving accuracy of diagnosis through employment of sensitive psychometric tools, specifically the Rorschach, was posed. Comparison of Rorschach results of homogeneous inpatient groups of bipolar affective disorders and schizophrenic disorders was proposed. This comparison may aid in differential diagnosis, a broadening of the conceptualization of these disorders, and the advancement of the
diagnostic capability of the Rorschach. It was proposed that research advancements, theoretical development, and improved clinical application could result from the development of the diagnostic reliability of the Rorschach.
The review of literature and research pertinent to this study is focused upon the following relevant areas: diagnostic classification, the nature and the consequences of misdiagnosis of the bipolar affective disorder, clinical and psychometric assessment, projective testing and use of the Rorschach as an aid in differential diagnosis of the bipolar affective disorder from the schizophrenic disorder.

Classification And Diagnosis

The advancement of knowledge and technology essential to decrease the misdiagnosis of the bipolar affective disorder must be structured upon refined diagnosis. Classification of a mental disorder is a prerequisite to any concept of epidemiology, etiology, pathophysiology, treatment, and prognosis (Cancro et al. 1979). Diagnostic classification, identification, categorization, and labeling are essential components of research and clinical endeavors (Grinker, 1977). Both clinical practice and research require a common language and nomenclature for professional communication and improved comprehension. Hoch (1972) emphasizes that accurate diagnosis is of paramount importance for the selection of appropriate therapy and ultimately client prognosis. Further developments in treatment and theory are related to the accuracy of
diagnosis. Grinker (1977) views diagnosis as one of the most important issues confronting modern psychiatry. He cites the goal as being the development of reliable and valid diagnostic categories with specific etiology, symptomatology, prognosis, and treatment. Singer (1977) poses that in psychological and psychiatric research and patient care, valid diagnostic categories and accurate assessment procedures are necessary for administrative purposes, treatment planning, and research purposes. She holds that with better diagnostic classification and clearer delineation of the significant psychological dimensions that more specific and purposeful information will be produced.

Psychiatric disorders lack historical, pathological, or biochemical evidence to validate diagnoses. Therefore, psychiatry must rely upon observable interpersonal and behavioral symptomatology for validating criteria to make psychiatric diagnoses (Pope et al. 1980). Diagnostic criteria have been developed to assist in accuracy of diagnosis and six sets of diagnostic criteria for the bipolar affective disorder have been proposed (Abrams et al. 1974, APA 1968 and 1980; and Feighner et al., Spitzer, Endicott, & Robins, and Taylor and Abrams, as cited in Shopsin, 1979) (see Appendix A). However, considerable work needs to be done on refinement of these six sets of diagnostic criteria. For example, only four of these six sets of diagnostic criteria of the bipolar affective disorder include psychotic symptomatology, providing clear evidence of the need for further development. Recently there has been evidence that this critical theoretical change has been taking
place. For example, the first and second draft of the DSM-III (APA, 1980) did not discriminate effectively between an affective disorder and schizophrenic disorder (Spitzer et al. 1983). However, the final edition of DSM-III (APA, 1980) has broadened the conceptualization of the affective disorder diagnosis to include psychotic symptomatology.

Bipolar Affective Disorder

Historically, the bipolar affective disorder was referred to as manic-depression. Originally, Krapelin (cited in Winokur et al. 1969) differentiated the manic-depressive illness from schizophrenia. Arieti (1959) describes the diagnosis of bipolar affective disorder "as variable as the clinical picture, as unconfirmed as its dynamic interpretation ... as controversial as its etiology continues to be," (p. 419) and captures the difficult nature of diagnosis of this disorder. He views this disorder as a functional psychosis in which an emotional transformation has occurred. This transformation becomes the disordered individual's way of relating to people and of interpreting the world.

Gibson, Cohen, and Cohen (1959) describe the bipolar affective disorder as a defense against the basic depressive pattern. They describe individuals with a bipolar affective disorder as having the following characteristics: concerned with social approval, striving for social approval, envious, and tending not to use their abilities.

Levy (1982) expresses the current conceptualization of a bipolar
disorder as a biochemical disturbance that affects the passage of impulses throughout the brain and central nervous system. An individual with a bipolar disorder has shifts of mood that fluctuate between mania and either normal or depressed mood. Psychotic behavior may be evidenced in the manic and depressive phases of this disorder.

In addition to the bipolar disorder, many other disorders may evidence psychotic symptomatology (Levy, 1982) (See Figure 1). A psychotic condition may be the result of any of the following disorders: an organic delusional syndrome, an organic hallucinosis, an organic personality syndrome, an organic affective syndrome, a brief reactive psychotic disorder, a schizophreniform disorder, a schizophrenic disorder, a schizoaffective disorder, a paranoid disorder, a major affective disorder, or an atypical psychotic disorder (APA, 1980). The goal of psychiatric diagnosis is to accurately distinguish between these disorders, to allow for the implementation of appropriate treatment.

Historically, the reliability of psychiatric diagnosis has not been impressive (Spitzer and Fleiss, 1974). Singer (1978) poses that a significant amount of the variability among diagnoses was due to ambiguities and inherent weaknesses in the nomenclature as well as differences in how information was elicited and evaluated. In an attempt to facilitate differential diagnosis, a "Decision Tree" (APA, 1980) has been developed to assist in assessment of the classification of psychotic features (see Appendix B). In spite of improved diagnostic criteria ambiguities, weaknesses, and
Inconsistencies still exist making accurate diagnosis difficult.

As indicated previously, the bipolar disorder is typically misdiagnosed as a schizophrenic disorder. Differentiation is difficult due to the similar clinical presentation and mutual symptomatology (Extein et al. 1980). Shopsin (1979) reports that 20–50% of Schneiderian first rank (psychotic) symptoms of schizophrenia are manifest in well validated manic-depressive disorders. Grinker, 1977, reports that 20% of manics have some form of thought disorder and many schizophrenics present elevated and excited moods resembling mania. Bipolar affective disorders have been identified with the following symptomatology: 73% of those diagnosed as bipolar evidenced delusions, 77% evidenced ideas of reference, 40% evidenced passivity, 53% evidenced depersonalization or derealization (Clayton, P., Pitts, F.N. Jr., & Winkur, G., as cited in Shopsin, 1979), 53% evidenced delusions or hallucinations (Guze's, study cited in Shopsin, 1979), 55% evidenced delusions, and 44% evidenced hallucinations (Abrams et al. 1974, Abrams & Taylor, 1976 and 1981).

According to the DSM III, no single feature is omnipresent within the schizophrenic disorder, yet several of the following psychological processes are invariably present and are manifested intermittently and to a varying degree: content of thought, form of thought, perception, affect, sense of self, volition, psychomotor behavior, and relationship to the external world. Symptoms of these psychological processes as described in the DSM-III (APA, 1980), follow:
Content of thought - overvalued ideas; marked illogical thinking; delusions of reference; thought broadcasting; thought insertion; thought withdrawal; delusions of being controlled; multiple, fragmented, somatic, grandiose, religious, persecutory, and nihilistic delusions.

Form of thought - loosening of associations, incoherence, incomprehensible speech, poverty of content of speech, neologisms, perseverations, thought blocking, changing associations.

Perception - auditory, command, gustatory, olfactory, tactile, visual hallucinations.

Affect - blunting, flattening or inappropriateness of affect.

Sense of self - extreme perplexity about one's own identity and meaning of existence.

Volition - pronounced ambivalence, disturbance is self-initiated, goal directed activity which may grossly impair work or other role functioning.

Psychomotor behavior - purposeless, stereotyped, excited motor movements; waxy flexibility; catatonic rigidity; and marked decrease in reactivity to the environment.

Relationship to the external world - tendency to withdraw from involvement with external world, become preoccupied with egocentric and illogical ideas and fantasies in which objective facts are obscured, distorted, or excluded, autism when severe.

These symptoms are not exclusive to schizophrenic disorders. As
identified in Appendix A, an individual with a bipolar affective disorder may demonstrate varying degrees of those psychological processes by manifesting the following symptoms: hallucinations, grandiose delusions, persecutory delusions, delusions of thought insertion or thought control, lack of judgement, pressured speech, loosening of associations, changing associations, incomprehensible speech, inappropriate (elevated, expansive, or irritable) affect, incoherence, etc.

Each disorder may present gross impairment of reality testing. Due to this mutual overlap of symptomatology, the ability to make an accurate diagnosis becomes difficult.

Extensive genetic, biological, clinical, and pharmacological research data support the distinction between the bipolar affective disorder and the schizophrenic disorder. Differentiation has been attempted through various means with variable results. Exttein et al. (1980) found no significant difference between a magnitude of release of thyroid-stimulating hormone (TSH) to differentiate the bipolar affective disorder from schizophrenia. Significant differences were found between individuals with schizophrenic disorders and bipolar affective disorders in terms of family history and short term treatment response (Pope et al. 1980). In light of the current theoretical development of diagnosis of these disorders, further research is mandated.

Consequences of Misdiagnosis

With advances in psychopharmacological and biological psychiatry
came the introduction of lithium in the United States in 1970. This development has significantly increased the requirement for accurate diagnosis of the bipolar affective disorder (Shopsin, 1979). There is a heightened necessity to resolve diagnostic ambiguities since psychosis resulting from a bipolar affective disorder can be placed in remission within seven to ten days using lithium (Johnson, Gershon, & Hekimian, as cited in Shopsin, 1979). Prior to the use of lithium, psychotic patients with bipolar affective disorders remained ill for the typical three to six month cycle (Levy, 1982). Lithium cannot be indiscriminately prescribed to psychotic individuals since lithium treatment may contribute to toxic confusional states with further disorientation and deterioration when prescribed to individuals with schizoaffective disorders (Johnson et al. as cited in Shopsin, 1979).

Misdiagnosis may lead to significant clinical consequences. The treatment (length of hospitalization, prescription of psychotropic medication, and focus and type of psychotherapy) varies significantly for a bipolar affective disorder and a schizophrenic disorder. An individual with a bipolar affective disorder misdiagnosed with a schizophrenic disorder may receive: an extended hospitalization, a less than aggressive treatment plan, neglect due to a poor prognosis, electroconvulsive therapy, receipt of tranquilizers (Fieve, 1975), or psychotropic medication which may aggravate or prolong the psychosis (Johnson et al. as cited in Shopsin, 1979). If appropriately diagnosed, a bipolar affective disorder may receive a good prognosis, no hospitalization (unless
acutely manic, severely depressed, or suicidal), and only outpatient prophylactic lithium carbonate treatment (Fieve, 1975).

The magnitude of misdiagnosis of the bipolar disorder as a schizophrenic disorder and the consequences are profound. Garvey & Tuason (1980) report that 56% of bipolar affective disorders have been misdiagnosed as schizophrenic disorders on prior admissions due to the presentation of psychotic symptoms and display of irritability rather than euphoria.

Misdiagnosis of the affective disorders in terms of national cost is estimated at five billion dollars annually by Bertram Brown, Director of the National Institute of Mental Health (cited in Fieve, 1979). This annual cost includes the price of the misuse of treatment and one's loss of productivity. Affective disorders constitute the single most encountered mental health problem (Fieve, 1975). An estimated two and one-half million bipolar affective disorders exist within the adult population (APA, 1980). Multiplying the number of bipolar disorders (two and one-half million) by the estimates of misdiagnosis (86%) demonstrates the monumental and widespread consequences.

Clinical and Psychometric Assessment

A clinical interview has traditionally been used to arrive at a psychiatric diagnosis of bipolar affective disorder. Due to the extent of misdiagnosis from the clinical interview various techniques have been employed to facilitate more accurate diagnosis. Singer (1978) recommends that the clinical interview be
characterized by the collection of historical and observational material, selective organization of portions of this data in terms of current diagnostic classification and disorders, and subsequent choice of the closest matching diagnostic category. However, psychiatric diagnosis tends to be the result of a clinical interview since effective means to identify specific disorders do not exist. Employment of diagnostic criteria, semi-structured interviews, and psychometric assessment, (Singer, 1978) have also been employed to improve the validity and reliability of psychiatric diagnosis.

One type of psychometric assessment is projective testing. Projective testing is based upon dynamic theory which assumes that the psychological structure of individuals governs their behavior. Further, this psychological structure is manifested in actions, choices, products, and creations. Therefore, the performance on the projective test should demonstrate the subjects' psychological structures (Rapaport, Gill, and Schafer, 1968). Projective testing assumes that the psychological structure of subjects is not consciously experienced or known (Rapaport et al. 1968). Therefore, projective techniques are viewed as more appropriate than the self report questionnaire form of psychometrics.

Projective tests require subjects to actively and spontaneously structure ambiguous material and thereby project their "private worlds" (Frank's study cited in Rapaport et al. 1968). The major strength of these tests is due to subjects' lack of sophistication with the method of evaluation of their productions, thereby insuring their productions will not be influenced in a systematic way.
Historically, psychiatric diagnosis and projective testing have been under "a storm of criticism" (Singer, 1978). Blah; Buros; Frank; Goldfried, Stricker, and Weiner; Holt; Jensen; Mayman; Weiner; Zubin; and Zubin et al. (cited in Singer, 1978) have made critical reviews of psychiatric diagnosis and projective testing techniques. Grossly inappropriate use of projective techniques and misuse of psychiatric diagnosis underlie much of the past research (Singer, 1978). Singer, (1978) poses that future research must avoid past conceptual problems, employ relevant assessment techniques, and attempt to correlate psychiatric constructs with psychometric constructs. It is important to continue this research with the knowledge from previous errors in an attempt to gain greater clarity of concepts that will identify psychiatric disorders more accurately and reliably.

Rorschach

The Rorschach is the projective test most widely used by clinicians interested in determining a client's cognitive and perceptual operations (Exner and Weiner, 1982). Rapaport (et al. 1968) identifies the Rorschach as the most useful tool in diagnostic personality testing. The Rorschach has been used primarily to evaluate the structure of the individual's personality, to identify characteristic way of coping with certain motives, and to aid in the descriptive diagnosis of mental hospital patients (Wittenborn and Holzberg, 1975). However, standardization and validation remain as formidable problems (Rapaport cited in Rapaport et al. 1968).
In general, much of the Rorschach research which has yielded unreliable, invalid, or negative findings has been characterized by problems in methodology, data interpretation difficulties, misinterpretation of data, and design flaws (Exner, 1974). In spite of these reported flaws, however, the Rorschach has continued to be widely utilized for numerous years. Exner (1974) reports that the extent of utilization of the Rorschach indicates the psychometric's clinical utility and worth although this posture is certainly disputable.

Findings generated by past Rorschach research may not be generalizable due to the lack of a standardized administration, scoring, and interpretation. Past research has employed portions of five exclusively different systems to interpret Rorschach responses. This, coupled with researchers' idiosyncratic techniques (Exner cited in Exner, 1974) makes it impossible to compare research results or integrate data from different systems. Exner (1969) claims to have remedied this failure to develop one system for incorporating the strengths of previous systems and allowing for systematic research efforts.

Exner (1969) developed a "Comprehensive System" of administration, scoring, and interpretation of the Rorschach. The "Comprehensive System" is purported to satisfy the demands for reliability, validity, logical appropriateness, capacity for standardization, and replication for diagnosis of various disorders (Exner, 1974). The "Comprehensive System" was developed by drawing
from the strengths of the other five systems and their respective theories which underly the system, surveying psychologists employing the Rorschach, and building upon data collected from 835 Rorschach protocols and past research completed with the Rorschach (Exner, 1969).

Response trends of Rorschach subscores of various diagnostic groups may be an extremely useful tool for differential diagnosis. If the different subscore response patterns (in terms of the location scores, determinant scores, content scores, frequency of pairs, number of popular responses, Z-score, and special scores) can be associated with different diagnostic categories, a more accurate diagnosis may be made. It is assumed that different homogenous diagnostic categories will differ systematically in terms of their Rorschach protocol. For example, using the "Comprehensive System", Exner (1978) collected normative data on three homogeneous inpatient groups (See Appendix C). The diagnostic groups in Exner's study include inpatient character problem disorders, inpatient depressive disorders, and inpatient schizophrenic disorders. Means and standard deviations of subscores were calibrated for each diagnostic group. From this research, Exner and Weiner (1982) developed the Depression Index (DEPI) and the Schizophrenic Index (Sciz) (See Appendix D) to aid in the diagnosis of these disorders. Employment of the "Comprehensive System" (Exner, 1978) with numerous diagnostic groups may provide a common methodology for the identification of response trends of various disorders.

In the past there has been limited research employing the
Rorschach in the differential diagnosis of the bipolar affective disorder. This was due to the rigorous nature of diagnosis of the bipolar affective disorder (Winokur et al. 1969) and the purposeless nature of this distinction prior to the emergence of lithium (Kobler and Stiel, 1955).

The subscores identified previously as manifesting discriminative qualities between the bipolar affective disorder and the schizophrenic disorder, follow:

**Sum G**
The bipolar affective disorder is likely to produce a greater number of responses which involve color determinants (Beck, Gurvitz, Rorschach, Singer cited in Ogdon, 1981).

**M**
The bipolar affective disorder is likely to produce a greater number of responses which involve human movement determinants (Piotrowski and Lewis, 1950).

**Zf**
The bipolar affective disorder is likely to produce a greater number of responses which involve organizational activity (Schmidt and Fonda, 1954).

**F+%**
The bipolar affective disorder is likely to produce a decreased level of form quality on the pure form responses (Beck and Molish; Beck; Korchin; and Rapaport, Gill, and Schafer cited in Ogdon, 1981; and Pope and Scott, 1967).
The bipolar affective disorder is likely to produce a greater number of responses (Alcock, Allen, Beck, and Rorschach cited in Ogdon, 1981 and Pope and Scott, 1967).

The bipolar affective disorder is likely to produce a decreased score on the schizophrenic index (Exner and Weiner, 1982).

Summary

The extent of misdiagnosis of the bipolar affective disorder was described. The factors which contribute to misdiagnosis include: the tendency to over diagnose schizophrenia (Fieve, 1975), the tendency to equate psychotic symptomatology with schizophrenia (Garvey & Tuason, 1980), the consonance of psychotic symptomatology of the bipolar affective disorder and schizophrenia, (APA, 1980), the past theoretical confusion regarding the possibility that bipolar affective disorders may evidence psychotic symptomatology (Spitzer, Williams, and Wynne, 1983), and the absence of a psychometric tool to increase the accuracy of diagnosis of the bipolar affective disorder.

The divergent treatment of the bipolar affective disorder, since the introduction of lithium carbonate, and detrimental consequence of misdiagnosis was described. The characteristics of clinical interviews and psychometric assessment through the use of the Rorschach were discussed with six Rorschach subscores identified.
which were demonstrated to aid in the differential diagnosis of the bipolar affective disorder. As a result of a review of research and existing literature it is evident that the six subscores identified have not had rigorous empirical investigation. There is a need to validate prior research with the subscores identified as having discriminative qualities and to further investigate the Rorschach as a psychometric tool to discriminate the bipolar affective disorder from the schizophrenic disorder.
CHAPTER III

METHOD

Population and Sample

Population

The population for this study was defined as all of the volitionally and involitionally admitted hospitalized patients diagnosed with either a bipolar affective disorder or a schizophrenic disorder (paranoid or undifferentiate type) admitted to the Kent Oaks Psychiatric Unit of the Kent Community Hospital in Grand Rapids, Michigan between April 12, 1984 and September 28, 1984. The Kent Oaks Psychiatric Unit is a public acute care psychiatric unit providing psychiatric care to the county of Kent in western Michigan. The patients at Kent Oaks Psychiatric Unit include members of all socio-economic classes. Kent County, with a population area of 500,000 may be considered representative of a national sample, in that the continuum of rural to urban culture exists within the county's boundary. The psychiatric patients are hospitalized at their request or as a result of application and certification being filed due to their being dangerous to self or others and unable to care for basic needs.

Sample

The sample was drawn from the available population as
individuals were admitted into the hospital until 22 undifferentiated schizophrenic disorders and 20 paranoid schizophrenic disorders were identified using the DSM-III (APA, 1980) diagnostic criteria. Thirty-six bipolar affective disorder subjects were identified and psychometrically assessed prior to the termination of data collection. Attrition of subjects occurred due to diagnostic changes, the development of medical problems, or to the unscorable nature of the Rorschach responses. In total five bipolar affective disorders and three schizophrenic disorders were eliminated from this study. As a result of the selection and review procedures, the final sample for this study consisted of 31 subjects diagnosed as bipolar affective disorders, 20 subjects diagnosed as schizophrenic disorders, paranoid type, and 19 subjects diagnosed as schizophrenic disorder, undifferentiated type.

For the purpose of this study bipolar affective disorders and schizophrenic disorders (paranoid or undifferentiated type) were defined by the respective diagnosis they received by the clinical multidisciplinary team: psychologist, psychiatrist, chief psychologist, and other therapist. The diagnosis was made based upon clinical interviews, the collection of historical and observational material, family consultation, individual psychotherapy, and additional psychometric evaluation. Rigorous review (clinical interviews, assessment of symptomatic changes, multidisciplinary team reviews, consensus of clinical opinion, and review of the subjects' response to treatment) was conducted to improve the accuracy of diagnosis and increase the likelihood of the
creation of homogeneous diagnostic groups.

The professionals conducting assessment of the subjects were affiliated with the Kent Oaks Psychiatric Unit for an average of four and one half years. Educationally they either had completed a medical degree with a specialty in psychiatry, or a masters or doctoral degree in clinical or counseling psychology. Assessments were completed by a licensed psychologist, limited licensed psychologists, or licensed psychiatrists. Confidentiality was preserved, liability issues were not engendered, and extensive experience and expertise were employed through the use of this staff.

No attempts were employed to modify the prescription or the effects of the antipsychotic medication the patient received. Attempting to withhold medication with these subjects was not pursued due to the ethical and legal concerns as well as possible personal injury to self and or others that could have been caused by withholding psychotropic medication. In an attempt to compensate for possible confounding effects of medication, subjects were interviewed or relevant staff consulted daily to determine when they were able to complete the assessment procedure.

Demographic information (age, marital status, ethnic origin, sex, and last grade completed) was collected to determine if significant differences existed between the diagnostic groups. Differences between the two diagnostic groups in ethnic origin, marital status, and gender were analyzed using the Chi-square statistical test. No statistically significant differences were
found (See Appendix F). Similarly, the $t$-test was used to analyze the differences between the two diagnostic groups in age and last grade completed. No statistically significant differences were found (See Appendix F).

**Procedures**

The data were collected under the conditions and procedures developed and standardized by Exner (1969). When unanimous diagnosis was provided, prospective subjects were surveyed daily for preparedness for assessment. The psychometric assessment was completed when the subjects were assessed to have adequate impulse control and appropriate reality testing. Subjects were informed that the test was administered for therapeutic purposes. They were not informed of the specific purpose of the research. Due to the extensive time commitment and professional skills required for the administration of the 78 Rorschachs as well as the confidentiality, privacy, and ethical issues, all of the Rorschachs were administered by the experimenter. The Rorschach protocol was then dictated and reviewed for accuracy by the experimenter.

The only deviation from the "Comprehensive System" was that the typed protocols were separated by a research assistant according to the subject's response to each of the 10 cards. The individual location sheet was attached to the subject's response. Responses to each card were separated and an identification number was assigned to each card to insure confidentiality, to provide an anonymous nature to the subject's disorder, and to reduce possible confounding.
from the scoring of prior responses. The responses to each card were randomly shuffled and provided to the scorers. When returned by the scorers the protocols were reassembled. The dependent variables values were then calculated by the research assistant, compiled, and statistically analyzed. Typing, separation, randomization, scoring, reassembling, and calibration of the dependent variables were completed by individuals other than the experimenter.

The subjects' verbal responses during the free association and inquiry of the Rorschach protocol were converted to subscores as developed by the "Comprehensive System" (Exner, 1969). The scorers were informed to employ the "Comprehensive System" and were provided the most recent advancements (Exner, 1983 & 1984) of the "Comprehensive System." This scoring system is similar to the coding of data rather than the typical scoring employed by psychometric measures (Exner, 1974). A nomothetic basis (Exner, 1974) of measurement exists with this scoring system. Due to the extensive nature of the description of the scoring of the Rorschach through the "Comprehensive System," a specific description is not provided here. Further information related to Rorschach scoring using the "Comprehensive System" can be obtained through a variety of sources, (Exner, 1969, 1974, 1976, 1983, and 1984).

Two Western Michigan University doctoral candidates were employed to score the responses. The doctoral candidates were Michigan Limited Licensed Psychologists with extensive experience in the scoring of the Rorschach by the "Comprehensive System". They
were not informed of the subscores of interest (the dependent variables) nor the diagnostic groups (independent variables) involved in the study. A reliability index of interscorer reliability was computed on their independent scoring of a total of 20 randomly selected responses using all of the 10 Rorschach cards. The percent of agreement of each type of subscore follows: location, 85%; developmental quality, 70%; determinant, 70%; type of movement, 100%; content, 75%; form quality, 70%; popular score, 100%; pair, 90%; Z-score, 75%; special score 60%; and number of responses 80%. The rate of agreement with the above scores was 78%.

**Statistical Hypotheses**

Twelve research hypotheses were generated. They are stated here in the null form.

**Hypothesis One**

The bipolar affective disorder diagnostic group will not demonstrate a greater mean number of responses which involve color determinants (Sum C) than the schizophrenic disorder diagnostic group.

**Hypothesis Two**

The subscore of the number of responses which involve color determinants (Sum C) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.
Hypothesis Three

The bipolar affective disorder diagnostic group will not demonstrate a greater mean number of responses which involve human movement determinants (M) than the schizophrenic disorder diagnostic group.

Hypothesis Four

The subscore of the number of responses which involve human movement (M) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

Hypothesis Five

The bipolar affective disorder diagnostic group will not demonstrate a greater mean number of responses which involve organizational activity (Zf) than the schizophrenic disorder diagnostic group.

Hypothesis Six

The subscore of the number of responses which involve organizational activity (Zf) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.
Hypothesis Seven

The schizophrenic disorder diagnostic group will not demonstrate a greater mean score on form quality on the pure form responses (F+%) than the bipolar affective disorder diagnostic group.

Hypothesis Eight

The subscore on form quality on the pure form responses (F+%) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

Hypothesis Nine

The bipolar affective disorder diagnostic group will not demonstrate a greater mean number of total responses (R) than the schizophrenic disorder diagnostic group.

Hypothesis Ten

The subscore of the total number of responses (R) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

Hypothesis Eleven

The schizophrenic disorder diagnostic group will not demonstrate a higher score on the Schizophrenic Index (Sciz) than the bipolar
affective disorder.

Hypothesis Twelve

The score on the Schizophrenic Index (Sciz) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

Statistical Analyses

Dependent Variables

The dependent variables that were analyzed were the 49 Rorschach subscores. Twelve hypotheses were generated regarding the following six subscores: Sum of responses containing a color determinant (Sum C); responses involving human movement (M); the number of responses involving organizational activity (Zf); percent of pure form responses demonstrating good form (F+%) ; the total number of responses (R); and the Schizophrenic Index (Sciz). In addition, the remaining 43 subscores, determinants, and critical ratios (See Appendix G) were investigated. They represented the majority of subscores or critical ratios of the Structural Summary. Ratio conversions were made when required to permit statistical analysis. The subscores were assumed to meet the basic assumptions for parametric analysis.

Statistical tests were carried out to determine if the dependent variables were related to the bipolar affective disorder -
schizophrenic disorder diagnostic classification. The t-test was employed to compare the bipolar affective and schizophrenic groups on mean Rorschach subscores. The homogeneity of variance F-test was used to compare the variances of the two groups on each subscore and the Mann-Whitney U test was used to compare the mean rank performance of the two groups on each subscore.

The conventional .05 alpha level was designated as the level of significance. One-tailed significance tests were used with the six hypotheses concerning mean differences since previous research results indicated specific directional differences. Two-tailed significance tests were used with the hypotheses on variance differences and in the survey component of this research.

Summary

The present research was directed to investigate the differences between bipolar affective disorders and schizophrenic disorders in a psychiatric setting on six Rorschach subscores scored by the "Comprehensive System" (Exner, 1969). The remaining 43 Rorschach subscores were investigated for their practical utility in differentiating the bipolar affective disorder from the schizophrenic disorder.

Subjects were acutely psychotic individuals receiving either a bipolar affective disorder or schizophrenic disorder (paranoid or undifferentiated type) diagnosis. They were volitionally and involutionally admitted to the Kent Oaks Psychiatric Unit of the Kent Community Hospital in Grand Rapids, Michigan between April 12,
1984 and September 28, 1984. Strict inclusion criteria, unanimous agreement of staff, and weekly review of subjects' symptomatology was employed to increase the likelihood of accuracy of diagnosis and to maximize homogeneity of the diagnostic groups. Subjects whose diagnosis changed during their inpatient hospitalization or outpatient treatment, were excluded from the sample. One diagnostic group included 31 bipolar affective disorders. The other included 39 schizophrenic disorders. Rigorous diagnostic procedures were utilized to increase the homogeneity of diagnostic groups. Statistical analysis of the demographic characteristics demonstrated no statistically significant differences in ethnic origin, marital status, gender, age, and education between the two diagnostic groups.

In total, 49 \( t \)-tests, \( F \)-tests and Mann-Whitney \( U \) Tests were completed. To compensate for the investigation of numerous variables, the Bonferroni \( t \) and the Bonferroni \( F \) were used (Huitema, 1980). Three Chi-squares and two \( t \)-tests were conducted to assess if statistical differences existed between the diagnostic groups on demographic characteristics. A reliability estimate of scoring subscores was obtained through the rescoring of a random sample of 20 responses.
CHAPTER IV

RESULTS

The general purpose of this study was the assessment of the usefulness of the Rorschach in the differential diagnosis of the bipolar affective and schizophrenic disorders. Data were gathered for the purpose of testing 12 hypothesis which were generated to test six Rorschach subscores. In addition, the remaining 43 Rorschach subscores were also analyzed. These analyses are presented in this chapter.

The Data and Their Analyses

Hypothesis One

The bipolar disorder diagnostic group will not demonstrate a greater mean number of responses which involve color determinants (Sum C) than the schizophrenic disorder diagnostic group.

This hypothesis was tested using a $t$-test. The analysis of data for this test is shown in Table 1.
Table 1

The t-test of the Difference Between the Mean Score of the Schizophrenic and the Bipolar Affective Disorder Diagnostic Groups on the Number of Color Responses (Sum C)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Mean</th>
<th>Bipolar Disorder Mean</th>
<th>Difference of Means</th>
<th>$t$ obtained</th>
<th>One Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2051</td>
<td>4.2581</td>
<td>1.053</td>
<td>-.40</td>
<td>.344</td>
</tr>
</tbody>
</table>

No statistical significant difference between the means was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

**Hypothesis Two**

The subscore of the number of responses which involve color determinants (Sum C) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

This hypothesis was tested using the homogeneity of variance $F$-test. The variance for each diagnostic group, difference between each variance, $F$ obtained, and probability level are listed in Table 2.
The Homogeneity of Variance F-test on the Number of Color Responses (Sum C)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Variance</th>
<th>Bipolar Disorder Variance</th>
<th>Difference of Variance</th>
<th>$F$ obtained</th>
<th>Two Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>90.06</td>
<td>153.26</td>
<td>63.20</td>
<td>1.70</td>
<td>.121</td>
</tr>
</tbody>
</table>

No statistical significant difference between the variance was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

Hypothesis Three

The bipolar affective disorder will not demonstrate a greater mean number of responses which involve human movement determinants ($M$) than the schizophrenic disorder diagnostic group.

This hypothesis was tested using the $t$-test. The frequency of human movement responses for each diagnostic group were compared. The analysis of data to test this hypothesis is shown in Table 3.
Table 3

The t-test of the Difference Between the Mean Score of the Schizophrenic Disorder and the Bipolar Affective Disorder Diagnostic Groups on the Number of Responses Which Involve Human Movement (M)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Mean</th>
<th>Bipolar Disorder Mean</th>
<th>Difference of Means</th>
<th>t Obtained</th>
<th>One Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7692</td>
<td>2.1935</td>
<td>.4243</td>
<td>-1.03</td>
<td>.1535</td>
</tr>
</tbody>
</table>

No statistical significant difference between the means was indicated at the .05 alpha level of significance. Therefore the null hypothesis may not be rejected.

Hypothesis Four

The subscore of the number of responses which involve human movement (M) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

This hypothesis was tested using the homogeneity of variance F-test. The analysis of data (variance for each diagnostic group, difference between the groups, F score obtained, and probability level) is shown in Table 4.
The Homogeneity of Variance F-test on the Number of Responses Which Involve Human Movement (M)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Variance</th>
<th>Bipolar Disorder Variance</th>
<th>Difference of Variance</th>
<th>F obtained</th>
<th>Two Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6569</td>
<td>3.2942</td>
<td>.6373</td>
<td>1.24</td>
<td>.525</td>
</tr>
</tbody>
</table>

No statistical significant difference between the variances was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

Hypothesis Five

The bipolar affective disorder will not demonstrate a greater mean number of responses which involve organizational activity (Zf) than the schizophrenic disorder diagnostic group.

The frequency of responses that involve organizational activity for each diagnostic group were compared through employment of the t-test. The analysis of data is shown in Table 5.
Table 5

The $t$-test of the Difference Between the Mean Score of the Schizophrenic Disorder and the Bipolar Affective Disorder Diagnanostic Groups on the Number of Responses Which Involve Organizational Activity ($Z_f$)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Mean</th>
<th>Bipolar Disorder Mean</th>
<th>Difference of Means</th>
<th>$t$ obtained</th>
<th>One Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1282</td>
<td>10.9355</td>
<td>.8073</td>
<td>-.78</td>
<td>.219</td>
</tr>
</tbody>
</table>

No statistical significant difference between the means was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

Hypothesis Six

The subscore of the number of responses which involve organizational activity ($Z_f$) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

This hypothesis was tested using the homogeneity of variance $F$-test. The analysis of data is shown in Table 6.
The Homogeneity of Variance F-Test on the Number of Responses Which Involve Organizational Activity (Zf)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Variance</th>
<th>Bipolar Disorder Variance</th>
<th>Difference of Variance</th>
<th>F obtained</th>
<th>Two Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.6411</td>
<td>14.5924</td>
<td>7.0487</td>
<td>1.48</td>
<td>.269</td>
</tr>
</tbody>
</table>

No statistical significant difference between the variances was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

Hypothesis Seven

The schizophrenic disorder diagnostic group will not demonstrate a greater mean score on form quality on the pure form responses (F+%) than the bipolar affective disorder diagnostic group.

This hypothesis was tested using a t-test. The amount of form quality on the pure form responses for each diagnostic group were compared. The analysis of data is shown in Table 7.
Table 7

The $t$-test of the Difference Between the Mean Score of the Schizophrenic Disorder and the Bipolar Affective Disorder Diagnostic Groups on the Amount of Form Quality on the Pure Form Responses ($F+\%$)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Mean</th>
<th>Bipolar Disorder Mean</th>
<th>Difference of Means</th>
<th>$t$ obtained</th>
<th>One Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>.6010</td>
<td>.5816</td>
<td>.0194</td>
<td>.41</td>
<td>.3405</td>
</tr>
</tbody>
</table>

No statistical significant difference between the means was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

Hypothesis Eight

The subscore on form quality on the pure form responses ($F+\%$) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

This hypothesis was tested using the homogeneity of variance $F$-test. The analysis of data is shown on Table 8.
The Homogeneity of Variance F-Test on the Amount of Form Quality on the Pure Form Responses (F+%) Schizophrenic Bipolar Disorder Disorder Difference Two Tailed Variance Variance of Variance 2 obtained Probability

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Variance</th>
<th>Bipolar Disorder Variance</th>
<th>Difference of Variance</th>
<th>( F ) obtained</th>
<th>Two Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0361</td>
<td>.0412</td>
<td>.0051</td>
<td>1.14</td>
<td>.691</td>
</tr>
</tbody>
</table>

No statistical significant difference between the variance was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

Hypothesis Nine

The bipolar affective disorder will not demonstrate a greater mean number of total responses (R) than the schizophrenic disorder diagnostic group.

This hypothesis was tested using a \( t \)-test. The total number of responses for each diagnostic group were compared. The analysis of data is shown in Table 9.
Table 9

The t-test of the Difference Between the Mean Score of the Schizophrenic Disorder and the Bipolar Affective Disorder Diagnostic Groups on the Number Total Responses (R)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Mean</th>
<th>Bipolar Disorder Mean</th>
<th>Difference of Means</th>
<th>t obtained</th>
<th>One Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.8205</td>
<td>20.0968</td>
<td>1.2763</td>
<td>-.67</td>
<td>.2525</td>
</tr>
</tbody>
</table>

No statistical significant difference between the means was indicated at the .05 alpha level of significance. Therefore the null hypothesis may not be rejected.

Hypothesis Ten

The subscore of the total number of responses (R) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

This hypothesis was tested using the homogeneity of variance F-test. The variance for each diagnostic group difference between each variance, $F$ obtained, and probability level are listed on Table 10.
The Homogeneity of Variance $F$-Test on the Number of Total Responses (R)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Variance</th>
<th>Bipolar Disorder Variance</th>
<th>Difference of Variance</th>
<th>$F$ obtained</th>
<th>Two Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>77.9336</td>
<td>43.2964</td>
<td>34.6372</td>
<td>1.80</td>
<td>.100</td>
</tr>
</tbody>
</table>

No statistical significant difference between the variance was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

**Hypothesis Eleven**

The schizophrenic disorder diagnostic group will not demonstrate a higher score on the Schizophrenic Index (Sciz) than the bipolar affective disorder diagnostic group.

This hypothesis was tested using a $t$-test. The analysis of data is shown in Table 11.
Table 11

The t-test of the Difference Between the Mean Score of the Schizophrenic Disorder and the Bipolar Affective Disorder Diagnostic Groups on the score of the Schizophrenic Index (Sciz)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Mean</th>
<th>Bipolar Disorder Mean</th>
<th>Difference of Means</th>
<th>t obtained</th>
<th>One Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1795</td>
<td>1.6774</td>
<td>.5021</td>
<td>1.65</td>
<td>.0515</td>
</tr>
</tbody>
</table>

No statistical significant difference between the means was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

Hypothesis Twelve

The score on the Schizophrenic Index (Sciz) will not demonstrate group related differences of variance between the bipolar affective disorder diagnostic group and the schizophrenic disorder diagnostic group.

This hypothesis was tested using the homogeneity of variance F-test. The analysis of data (the variance for each diagnostic group difference between each variance, F obtained, and probability level) is shown in Table 12.
Table 12

The Homogeneity of Variance F-test on the Score on the Schizophrenic Index (Sciz)

<table>
<thead>
<tr>
<th>Schizophrenic Disorder Variance</th>
<th>Bipolar Disorder Variance</th>
<th>Difference of Variance</th>
<th>F obtained</th>
<th>Two Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6770</td>
<td>1.4932</td>
<td>.1838</td>
<td>1.12</td>
<td>.748</td>
</tr>
</tbody>
</table>

No statistical significant difference between the variance was indicated at the .05 alpha level of significance. Therefore, the null hypothesis may not be rejected.

Results of the Forty-Three Subscores Surveyed

The t-test results and F-test results of the 43 subscores are located in Table 13 and Table 14, respectively. The six subscores involved in the hypotheses testing were included for comparison.
Table 13

The Results of the $t$-tests on the Difference Between the Mean Score of the 49 Subscores of the Schizophrenic Disorder and the Bipolar Affective Disorder Diagnostic Groups

<table>
<thead>
<tr>
<th>Subscore</th>
<th>Schizophrenic Disorder Mean</th>
<th>Bipolar Disorder Mean</th>
<th>Difference of Mean</th>
<th>F obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>18.8205</td>
<td>20.0968</td>
<td>1.2763</td>
<td>-.67</td>
</tr>
<tr>
<td>W</td>
<td>7.8718</td>
<td>8.4516</td>
<td>.6336</td>
<td>-.64</td>
</tr>
<tr>
<td>D</td>
<td>9.2564</td>
<td>10.0968</td>
<td>1.2304</td>
<td>-.55</td>
</tr>
<tr>
<td>Dd</td>
<td>1.6410</td>
<td>1.5484</td>
<td>.0926</td>
<td>.20</td>
</tr>
<tr>
<td>S</td>
<td>1.2564</td>
<td>1.1935</td>
<td>.0629</td>
<td>.19</td>
</tr>
<tr>
<td>M</td>
<td>1.7692</td>
<td>2.1935</td>
<td>.4243</td>
<td>-1.03</td>
</tr>
<tr>
<td>FM</td>
<td>1.5641</td>
<td>2.0645</td>
<td>.5235</td>
<td>-1.11</td>
</tr>
<tr>
<td>m</td>
<td>.4872</td>
<td>.7742</td>
<td>.287</td>
<td>-1.24</td>
</tr>
<tr>
<td>FC</td>
<td>.4872</td>
<td>.8710</td>
<td>.3838</td>
<td>-1.84</td>
</tr>
<tr>
<td>CF</td>
<td>.4615</td>
<td>.5161</td>
<td>.0546</td>
<td>-.28</td>
</tr>
<tr>
<td>C</td>
<td>.3590</td>
<td>.5484</td>
<td>.1894</td>
<td>-.88</td>
</tr>
<tr>
<td>CN</td>
<td>.2564</td>
<td>.1290</td>
<td>.1274</td>
<td>.87</td>
</tr>
<tr>
<td>FC-CF+C</td>
<td>-.4359</td>
<td>-.1935</td>
<td>.2424</td>
<td>-.64</td>
</tr>
<tr>
<td>FC'+C'F+C'</td>
<td>.5641</td>
<td>.8065</td>
<td>.2424</td>
<td>-.122</td>
</tr>
<tr>
<td>FT+TF+T</td>
<td>.3333</td>
<td>.6452</td>
<td>.3119</td>
<td>-.79</td>
</tr>
<tr>
<td>FY+YF+Y</td>
<td>.1538</td>
<td>.6452</td>
<td>.4914</td>
<td>-2.88</td>
</tr>
<tr>
<td>FV+VF+V</td>
<td>.1282</td>
<td>.0645</td>
<td>.0637</td>
<td>.76</td>
</tr>
<tr>
<td>FD</td>
<td>.1282</td>
<td>.0645</td>
<td>.0637</td>
<td>.87</td>
</tr>
<tr>
<td>Fr+rF</td>
<td>.0256</td>
<td>.1290</td>
<td>.1034</td>
<td>-1.39</td>
</tr>
<tr>
<td>(2)</td>
<td>5.7949</td>
<td>6.4516</td>
<td>.6567</td>
<td>-.64</td>
</tr>
<tr>
<td>F</td>
<td>13.1795</td>
<td>12.5161</td>
<td>.6634</td>
<td>.44</td>
</tr>
<tr>
<td>P</td>
<td>4.4615</td>
<td>4.8387</td>
<td>.3772</td>
<td>-.67</td>
</tr>
<tr>
<td>F/R-F</td>
<td>4.0362</td>
<td>2.5939</td>
<td>1.4423</td>
<td>1.65</td>
</tr>
<tr>
<td>X+X</td>
<td>.5964</td>
<td>.6148</td>
<td>.0184</td>
<td>-.46</td>
</tr>
<tr>
<td>F+F</td>
<td>.6010</td>
<td>.5816</td>
<td>.0194</td>
<td>.41</td>
</tr>
<tr>
<td>ZD</td>
<td>-1.1154</td>
<td>-1.4194</td>
<td>.304</td>
<td>.25</td>
</tr>
<tr>
<td>AZ</td>
<td>.4210</td>
<td>.4810</td>
<td>.06</td>
<td>-1.47</td>
</tr>
<tr>
<td>APR</td>
<td>.4941</td>
<td>.4965</td>
<td>.0024</td>
<td>-.04</td>
</tr>
<tr>
<td>3r+(2)/R</td>
<td>.2987</td>
<td>.3374</td>
<td>.0387</td>
<td>-.90</td>
</tr>
<tr>
<td>EB</td>
<td>.0256</td>
<td>.3226</td>
<td>.297</td>
<td>-.49</td>
</tr>
<tr>
<td>D2</td>
<td>.3590</td>
<td>-.1290</td>
<td>.4880</td>
<td>1.41</td>
</tr>
<tr>
<td>H+HD</td>
<td>2.9744</td>
<td>3.1935</td>
<td>.2191</td>
<td>-.36</td>
</tr>
<tr>
<td>Blends/R</td>
<td>.0697</td>
<td>.0881</td>
<td>.0184</td>
<td>-.60</td>
</tr>
<tr>
<td>DV+ALOG+INCOM+CONTAM+FABCOM</td>
<td>2.8462</td>
<td>2.6774</td>
<td>.1688</td>
<td>.23</td>
</tr>
<tr>
<td>PSV</td>
<td>.4359</td>
<td>.4839</td>
<td>.048</td>
<td>-.24</td>
</tr>
</tbody>
</table>

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Table 13 - Continued

<table>
<thead>
<tr>
<th>Subscore</th>
<th>Schizophrenic Disorder Mean</th>
<th>Bipolar Disorder Mean</th>
<th>Difference of Mean</th>
<th>t Obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-D</td>
<td>-0.3846</td>
<td>-1.6526</td>
<td>1.2606</td>
<td>0.71</td>
</tr>
<tr>
<td>W-M</td>
<td>5.2564</td>
<td>6.2581</td>
<td>1.0017</td>
<td>-0.88</td>
</tr>
<tr>
<td>Schiz</td>
<td>2.1795</td>
<td>1.6774</td>
<td>0.5021</td>
<td>1.65</td>
</tr>
<tr>
<td>DEPI</td>
<td>1.0256</td>
<td>0.9355</td>
<td>0.0901</td>
<td>0.50</td>
</tr>
<tr>
<td>Cont/R</td>
<td>0.3728</td>
<td>0.3465</td>
<td>0.0263</td>
<td>0.91</td>
</tr>
<tr>
<td>Per</td>
<td>2.6410</td>
<td>4.5806</td>
<td>1.9396</td>
<td>-0.68</td>
</tr>
<tr>
<td>ZF</td>
<td>10.1282</td>
<td>10.9355</td>
<td>0.8073</td>
<td>-0.78</td>
</tr>
<tr>
<td>Sum C</td>
<td>3.2051</td>
<td>4.2581</td>
<td>1.053</td>
<td>-0.40</td>
</tr>
<tr>
<td>DV</td>
<td>1.6667</td>
<td>2.4839</td>
<td>0.8172</td>
<td>-0.80</td>
</tr>
<tr>
<td>ALOG</td>
<td>0.1795</td>
<td>0.3548</td>
<td>0.1753</td>
<td>-1.26</td>
</tr>
<tr>
<td>INCOM</td>
<td>0.8205</td>
<td>0.4516</td>
<td>0.3689</td>
<td>1.10</td>
</tr>
<tr>
<td>CONTAM</td>
<td>0.5128</td>
<td>0.1290</td>
<td>0.3838</td>
<td>1.23</td>
</tr>
<tr>
<td>A-P</td>
<td>2.0256</td>
<td>1.9032</td>
<td>0.1224</td>
<td>0.19</td>
</tr>
<tr>
<td>Ma-Mp</td>
<td>0.8462</td>
<td>0.6452</td>
<td>0.201</td>
<td>0.52</td>
</tr>
</tbody>
</table>
### Table 14
The Results of the F-Test on the 49 Subscores for the Schizophrenic Disorder and the Bipolar Disorder Diagnostic Groups

<table>
<thead>
<tr>
<th></th>
<th>Variance of the Schizophrenic Group</th>
<th>Variance of the Bipolar Group</th>
<th>Difference Between the Group Variance</th>
<th>F Value Obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>77.9336</td>
<td>43.2964</td>
<td>34.6372</td>
<td>1.80</td>
</tr>
<tr>
<td>W</td>
<td>14.5848</td>
<td>13.7864</td>
<td>0.7984</td>
<td>1.06</td>
</tr>
<tr>
<td>D</td>
<td>46.4579</td>
<td>33.5588</td>
<td>12.8991</td>
<td>1.38</td>
</tr>
<tr>
<td>Dd</td>
<td>4.9729</td>
<td>2.2560</td>
<td>2.7169</td>
<td>2.20</td>
</tr>
<tr>
<td>S</td>
<td>2.5632</td>
<td>1.1621</td>
<td>1.4011</td>
<td>2.21</td>
</tr>
<tr>
<td>m</td>
<td>.5198</td>
<td>1.4472</td>
<td>.9274</td>
<td>2.79</td>
</tr>
<tr>
<td>FM</td>
<td>3.0415</td>
<td>4.1290</td>
<td>-1.0875</td>
<td>1.36</td>
</tr>
<tr>
<td>M</td>
<td>2.6569</td>
<td>3.2942</td>
<td>-.6373</td>
<td>1.24</td>
</tr>
<tr>
<td>FC</td>
<td>.6241</td>
<td>.9158</td>
<td>-.2917</td>
<td>1.47</td>
</tr>
<tr>
<td>CF</td>
<td>.5715</td>
<td>.7921</td>
<td>-.2206</td>
<td>1.39</td>
</tr>
<tr>
<td>C</td>
<td>.5520</td>
<td>1.1236</td>
<td>.5716</td>
<td>2.03</td>
</tr>
<tr>
<td>CN</td>
<td>.5512</td>
<td>1.1831</td>
<td>.6281</td>
<td>2.80</td>
</tr>
<tr>
<td>FC-CF+C</td>
<td>2.515</td>
<td>2.4932</td>
<td>-.0226</td>
<td>1.01</td>
</tr>
<tr>
<td>Fc'CF'+F+C</td>
<td>.4624</td>
<td>.9604</td>
<td>-.498</td>
<td>2.08</td>
</tr>
<tr>
<td>FT+TF+T</td>
<td>.5432</td>
<td>.5027</td>
<td>.0405</td>
<td>1.08</td>
</tr>
<tr>
<td>FY+YF+Y</td>
<td>.3445</td>
<td>.7039</td>
<td>-.3594</td>
<td>2.04</td>
</tr>
<tr>
<td>FV+VF+V</td>
<td>.1149</td>
<td>.1289</td>
<td>-.041</td>
<td>1.12</td>
</tr>
<tr>
<td>FD</td>
<td>.1149</td>
<td>.0625</td>
<td>.0524</td>
<td>1.84</td>
</tr>
<tr>
<td>Fr+TF</td>
<td>.0256</td>
<td>.1832</td>
<td>-.1576</td>
<td>7.13*</td>
</tr>
<tr>
<td>(2)</td>
<td>33.5809</td>
<td>41.6231</td>
<td>8.0422</td>
<td>1.09</td>
</tr>
<tr>
<td>F</td>
<td>51.5668</td>
<td>24.4629</td>
<td>27.1039</td>
<td>2.11</td>
</tr>
<tr>
<td>P</td>
<td>5.2533</td>
<td>5.8709</td>
<td>-.6176</td>
<td>1.12</td>
</tr>
<tr>
<td>F/R-F</td>
<td>17.0238</td>
<td>8.1853</td>
<td>8.8385</td>
<td>2.08</td>
</tr>
<tr>
<td>X+Z</td>
<td>.3557</td>
<td>.4119</td>
<td>-.0562</td>
<td>1.02</td>
</tr>
<tr>
<td>P+Z</td>
<td>.0361</td>
<td>.0412</td>
<td>-.0051</td>
<td>1.14</td>
</tr>
<tr>
<td>ZD</td>
<td>27.8573</td>
<td>23.6170</td>
<td>4.2403</td>
<td>1.18</td>
</tr>
<tr>
<td>A</td>
<td>.0309</td>
<td>.0262</td>
<td>.0047</td>
<td>1.19</td>
</tr>
<tr>
<td>AFR</td>
<td>.0992</td>
<td>.0436</td>
<td>.0556</td>
<td>2.26</td>
</tr>
<tr>
<td>3R+2/R</td>
<td>.0296</td>
<td>.0346</td>
<td>-.005</td>
<td>1.16</td>
</tr>
<tr>
<td>EB</td>
<td>5.3130</td>
<td>7.9242</td>
<td>-2.6112</td>
<td>1.49</td>
</tr>
<tr>
<td>D2</td>
<td>2.8157</td>
<td>1.1151</td>
<td>1.7006</td>
<td>2.52</td>
</tr>
<tr>
<td>H+HD</td>
<td>5.0805</td>
<td>7.9836</td>
<td>-2.8831</td>
<td>1.57</td>
</tr>
<tr>
<td>Blends/R</td>
<td>.0237</td>
<td>.0059</td>
<td>.0178</td>
<td>4.01*</td>
</tr>
<tr>
<td>DV+ALOG+INCOM+CONTAM+FABCOM</td>
<td>10.5957</td>
<td>8.2254</td>
<td>2.3703</td>
<td>1.30</td>
</tr>
</tbody>
</table>

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When numerous dependent variables are statistically investigated there is an increased chance of making a Type I error. To reduce this propensity the conservative Bonferroni $t$ and Bonferroni $F$ critical levels (Huitema, 1980) were employed. Using the conventional .05 alpha level of significance the critical value of $t$ was 3.44 and the critical value of $F$ was 3.40. No statistically significant differences were identified with the $t$-test. A statistically significant difference between variances was identified on the Fr+rF, Blend/R, DV, INCOM, and CONTAM subscores.

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Additional Analyses

In addition to tests on mean differences and differences between variances, tests on differences between the mean ranks of each group were computed using the Mann-Whitney U Test. The results of these analyses are presented in Table 15 for the six subscores of major interest; the results of the Mann-Whitney U tests for the remaining 43 subscores are located in Appendix H. The subscores are presented in order of the value of the respective probability value.

Table 15

The Mann-Whitney U Test Computed on the Variables Involved in the Hypotheses Tested

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Dependent Variables</th>
<th>U</th>
<th>Z-score</th>
<th>One Tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Sum C</td>
<td>560.5</td>
<td>-0.5316</td>
<td>.2975</td>
</tr>
<tr>
<td>III</td>
<td>M</td>
<td>520.0</td>
<td>-1.0207</td>
<td>.1537</td>
</tr>
<tr>
<td>V</td>
<td>Zf</td>
<td>514.0</td>
<td>-0.7532</td>
<td>.22565</td>
</tr>
<tr>
<td>VII</td>
<td>F+Z</td>
<td>599.5</td>
<td>0.0592</td>
<td>.4764</td>
</tr>
<tr>
<td>IX</td>
<td>R</td>
<td>467.5</td>
<td>-1.6241</td>
<td>.0522</td>
</tr>
<tr>
<td>XI</td>
<td>Sciz</td>
<td>487.5</td>
<td>1.4257</td>
<td>.0770</td>
</tr>
</tbody>
</table>

Summary

The results of the data analysis were presented in this chapter. The statistical analysis and results of the hypothesis tests were described. The 12 null hypothesis were not rejected. No statistically significant difference exists with the following subscores: the total number of responses that have color involved
determinants (Sum C), the number of human movement responses (M),
the number responses that involved organizational activity (Zf), the
quality of form with the pure form (F+%), the number of total
responses (R), and the Schizophrenic Index (Sciz).

A survey approach of investigation of 43 additional Rorschach
subscores was completed. Significant differences between variances
were identified on the Fr+rF, Blend/R, DV, INCOM, and CONTAM
subscores on the Homogeneity of Variance F-test. No significant
mean differences were identified on the Rorschach subscores.
CHAPTER V
DISCUSSION, RECOMMENDATIONS AND SUMMARY

Discussion

Prior research had indicated that six Rorschach subscores (Sum of color responses, Sum C; human movement responses, M; responses which involve organizational activity, Zf; percent of form quality on the pure form responses, F+%; number of responses, R; and the score on the Schizophrenic Index, Sciz) were able to distinguish the bipolar affective and the schizophrenic disorders. The results of this study, however, indicated that these six subscores were not able to distinguish these disorders when the "Comprehensive System" (Exner, 1969) was used for administration, scoring, and interpretation of the Rorschach. Statistical significant mean differences of responding between the two diagnostic groups were not indicated for the 49 subscores investigated. In addition to the six subscores experimentally investigated, the depression scale DEPI (Exner, 1974), which was described as an index to identify major depression and bipolar affective disorders (manic, mixed, or depressed type) demonstrated poor discriminative qualities in the survey portion of this study.

The absence of confirmation of previous results may be due to various factors. The immediacy of assessment following psychiatric hospitalization, the reliability, validity, and appropriateness of the Rorschach, the use of the "Comprehensive System" (Exner, 1969),

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methodological problems in previous research, the level of interscorer reliability, the small sample size in this study, the medication effects upon the subjects, and the heterogeneity of subject groups may have obscured or confounded the results.

The nature of instrumentation may have contributed to the lack of replication of past research. Regardless of the Rorschach's usefulness and eminence, it has never gained the statistical acceptance that is associated with intelligence testing and personality questionnaires (Rapaport et al. 1976). The results of this study may have been impacted greatly by the degree of reliability, validity, and logical appropriateness of the Rorschach and the "Comprehensive System" (Exner, 1969). Five of the subscores analyzed were identified using different systems of administration, scoring, and interpretation of the Rorschach. This may have contributed to the lack of replication of the prior results. In addition to the characteristics of the Rorschach psychometric instrument, the interscorer reliability suggests caution in the interpretation of this study's results even though an overall 78% agreement occurred with the selected responses. This level of interscorer reliability may have been due to the psychosis of the subjects, the skills of the scorers, or the ambiguity of the "Comprehensive System" of scoring. It should be noted that at the time of assessment all of the subjects were hospitalized, prescribed psychotropic medication, and administered the Rorschach as soon as they were assessed as having adequate impulse control. Though these characteristics may have contributed to difficulty in scoring and
interscorer reliability, this proximity of assessment is viewed as clinically relevant.

The complexity of the disorders investigated in this study may have obscured the results. There is a wide range of characteristics that exist within both of the diagnostic categories. A progressive deteriorating course of illness exists with each disorder. Therefore, the duration of the illness also becomes a compounding variable contributing to a divergent Rorschach response. The subjects' performance may have been compounded by personal factors. For example, a defensive, guarded protocol may result from a belief that a poor performance would result in commitment and/or an extended hospitalization. Therefore, significant heterogeneity existed within each disorder.

Due to the documented extent of misdiagnosis and the tendency to view all individuals with bipolar affective disorders as having schizophrenic disorders (Fieve, 1975), this study employed various procedures in an attempt to overcome misdiagnosis. Concerted diagnosis, weekly review of diagnosis by a multidisciplinary staff, and use of the DSM-III diagnostic criteria were employed to ameliorate accuracy of diagnosis. However, the effectiveness of these procedures cannot be ascertained. The literature and research have concluded that misdiagnosis is rampant and factors affecting one's perception and diagnosis are numerous. For example, even the desirability of a subject's name has been shown to have a significant effect upon the psychopathology assessed (Cowan, 1983).

The survey portion of this study demonstrated that the bipolar...
affective disorder and the schizophrenic disorder responded with unequal variance on five subscores: the number of reflection responses, Fr+rF; the use of more than one determinant per response divided by the number of total responses, Blends/R; the number of deviant verbalizations, DV; the number of inappropriate combinations, INCOM; and the number of contaminations, CONTAM. The bipolar affective disorder responded with greater variance on the Fr+rF and the DV subscores and with decreased variance on the Blends/R, INCOM, and CONTAM subscores.

These performance differences could be interpreted to mean that: the bipolar affective disorder demonstrates an increased amount of preoccupation with self yet this quality varies within this diagnostic classification (Fr+rF); the schizophrenic disorder demonstrates a reduced amount of emotional expression yet this quality varies greatly within the diagnostic classification (Blends/R); the bipolar affective disorder demonstrates an increased amount of distorted language or idiosyncratic mode of expression that impedes communication yet this quality varies greatly within the diagnostic classification (DV); the schizophrenic disorder demonstrates an increased amount of perceptual errors and incongruent images yet this quality varies greatly within the diagnostic classification (INCOM); also, the schizophrenic disorder demonstrates a greater amount of peculiar or bizarre verbalizations which violate reality yet this quality varies greatly within this diagnostic category (CONTAM). Differential diagnosis may be aided by the evaluation of an individual's performance in terms of these
results.

In addition to these demonstrated differences there is a possibility that three of the subscores would possess discriminative qualities if a directional approach were employed. Shading responses, (FY+YF+Y), form dominated color responses, (FC), and texture responses, (FT+TF+T), occurred more frequently in the bipolar affective disorder diagnostic group. Since the majority of subjects in each diagnostic group demonstrated an absence of responses of these subscores, it would be of limited usefulness to employ these subscores as discriminators due to their scarcity.

Nine other subscores indicated trends with two-tailed probability of less than .20 on the Mann-Whitney U Test or the t-test. The characteristics of the bipolar affective disorder are: a lower score on the Lambda subscore (F/R-F); a lower score on the Schizophrenic Index (Sciz); a greater amount of animal content (A%); a greater amount of reflection responses (Fr+rF); a greater amount of autistic logic (ALOG); a greater value when the number of Blends are divided by the number of responses (Blend/R); a greater number of responses (R); a greater number of common detail responses (D); and a lower value on the current level of stress tolerance score (D2). However, since these are merely trends, limited clinical utility for these subscores is implied. Two of these subscores, the amount of reflection responses (Fr+rF) and the value when the number of Blends divided by the number of responses (Blends/R) were also identified as subscores with significant differences of variance.
The interpretive qualities of the performance of the diagnostic groups on these twelve subscores, follows. The bipolar affective disorders demonstrated a greater amount of painful affect (FY+YFY), a greater expression of emotion in a controlled fashion (FC), a need for interpersonal warmth (FTY+TY), a decreased amount of emotional constriction (F/R-F), a lower score on the variables correlated with schizophrenic disorders (Sciz), a greater amount of fantasy (AZ), an increased amount of preoccupation with self (Fr+rF), a greater expression of autistic logic and bizarre comments (ALOG), a greater amount of complex psychological processing (Blend/R), a greater amount of productiveness (R), a greater amount of psychological efficiency (D), and a decreased amount of stress tolerance (D2).

Recommendations

Results from this study indicate that clinicians should become aware of the extent of mutual symptomatology of the bipolar affective disorder and the schizophrenic disorder when assessing psychotic individuals. Also, results of this study illustrate the similarity of these disorders. In differential diagnosis psychometric data should be viewed with caution and as only one facet of a comprehensive psychological assessment. Psychometric data should be appraised in conjunction with other clinical data such as current life circumstances, observed behavior, biographic history, interview responses, and information from other tests (Millon, Green, & Meagher, 1982). Diagnosis should not be based
upon the nature of the symptomatology due to the overlap of characteristics of the bipolar affective disorder and schizophrenic disorder when psychotic. Due to the difficulty of differentiation when the subjects are psychotic, increased focus should be placed upon the premorbid characteristics.

Though individuals with either of these disorders can experience psychotic states which are quite similar, the nature of the disorder outside of the psychotic state may be very different. Differential diagnosis can be improved with access to reliable information regarding the psychotic individual's premorbid functioning, course of illness, family history of psychiatric illness, nature of stressors, onset of psychosis, etc.

When using the "Comprehensive System" with Rorschach in differential diagnosis of these disorders considerable caution should be employed when interpreting the six subscores identified in the literature with discriminative qualities. Further empirical analysis of these six scores investigated and the 15 subscores identified is recommended. Additional validation studies may establish a specific index of subscores to aid in differential diagnosis.

Additional research is warranted to replicate the differences of variance identified with following subscores: the number of reflection responses, Fr+rF; the use of more than one determinant per response divided by the number of total responses, Blends/R; the number of deviant verbalizations, DV; the number of inappropriate combinations, INCOM; and the number of contaminations, CONTAM. The
greater frequency in the bipolar affective disorder's performance identified in this study should be replicated for the following subscores: shading responses, FY+YF+Y; form dominated color responses, FC; and texture responses (FT+TF+T). Future research should include the exploration of the nine additional response trends characteristic of the bipolar affective disorder (a lower score on the Lambda subscore, F/R=F; a lower score on the Schizophrenic Index, Sciz; a greater amount of animal content, A%; a greater amount of reflection responses, Fr+rF; a greater amount of autistic logic, ALOG; a greater value when the number of Blends are divided by the number of responses, Blends/R; a greater number of responses, R; a greater number of common detail, D; and a lower value on the current level of stress tolerance score, D2.

Integration of additional testing information may enhance the discriminative abilities of the Rorschach. For example, it is recommended that the amount of client verbage per card or the psychotic symptomatology (pressed speech, looseness of associations, etc.) evidenced in the client's response could be calibrated to determine if there were possible discriminative qualities. Holzman (1984) reports to have developed the ability to discriminate these disorders employing his scoring system. It is also recommended that additional analysis of Rorschach constructs and response characteristics be conducted to aid in the development of the Rorschach as a tool in differentiating the two disorders.
Summary

The purposes of this study were to determine if the bipolar affective disorder and the schizophrenic disorders were distinguishable using the Rorschach; to seek to replicate and validate prior research and theoretical hypotheses; and to survey various subscores to explore their possible discriminative qualities. It was expected that through investigation of the symptomatology of these disorders that the problem of misdiagnosis might be ameliorated. The issues which generated the need for the present study included the extent of misdiagnosis due to the lack of theoretical clarification and the overlap of psychotic symptomatology, the distinct differences of treatment since the availability of lithium carbonate, and the need to validate psychometric tools used in diagnosis.

The present study conceptualized the absence of a diagnostic aid. For the purpose of this study the "Comprehensive System" (Exner, 1969) was employed for administration, scoring and interpretation of the Rorschach. The six subscores identified in the literature to have discriminative qualities were empirically investigated. Forty-three other Rorschach subscores were surveyed.

This research involved the administration of the Rorschach to 70 subjects, 31 bipolar affective disorders, manic type, and 39 schizophrenic disorders, undifferentiated and paranoid type. The independent variable was the diagnostic classification of either the bipolar affective disorder or the schizophrenic disorder. The
dependent variables were the Rorschach subscores of the "Comprehensive System" (Exner, 1969). The six subscores previously identified as having discriminative qualities in the literature were not found to have discriminative qualities.

The results of this study indicated that the bipolar affective disorder and the schizophrenic disorder respond differently on only five of the 43 surveyed subscores using the Rorschach and the "Comprehensive System" (Exner, 1969). The subscores identified in the literature with discriminative qualities were not confirmed in this study.

In the survey of 43 subscores this study demonstrated differences of variance of responding between the two disorders on the following five subscores: the number of reflection responses, Fr+rF; the use of more than one determinant per response divided by the number of total responses, Blends/R; the number of deviant verbalizations, DV; the number of inappropriate combinations, INCOM; and the number of contaminations, CONTAM. A greater frequency of three subscores (shading responses, FY+YF+Y; form dominated color responses, FC; and texture responses, FT+TF+T) was identified if a directional approach was employed. Nine additional response trends were identified. These response trends of the bipolar affective disorder follow: a lower score on the Lambda subscore, F/R-F; a lower score on the Schizophrenic Index, Sciz; a greater amount of animal content, A%; a greater amount of reflection responses, Fr+rF; a greater amount of autistic logic, ALOG; a greater value when the number of Blends are divided by the number of responses, Blends/R; a
greater number of responses, R; a greater number of common detail, D; and a lower value on the current level of stress tolerance, D2. Although the latter 12 subscores did not evidence a statistically significant difference, possible, clinical usefulness may be demonstrated based on further research.

It is recommended that clinicians should make differential diagnosis after review of all available data rather than relying upon only the clinical interview. Continued exploration is recommended upon the 17 Rorschach subscore identified for usefulness of diagnosis of the bipolar affective disorder and the schizophrenic disorder.
REFERENCES


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APPENDICES
Appendix A

Diagnostic Criteria of the Bipolar Affective Disorder
Abrams et al. (1974)
First-rank symptoms
Poor prognostic signs
Auditory hallucinations
Other hallucinations
Thought disorder
Apophenous (delusional) phenomenon
Alcoholism

Diagnostic and Statistical Manual of Mental Disorders - Second Edition (APA, 1968)
Elated and/or irritable mood, talkativeness, accelerated speech, accelerated motor activity, flight of ideas.

DSM-III (APA, 1980)
Currently (or more recently) in a manic episode (If there has been a previous manic episode, the current episode need not meet the full criteria for a manic episode). Diagnostic criteria for a manic episode.

A. One or more distinct periods with a predominantly elevated, expansive, or irritable mood. The elevated or irritable mood must be a prominent part of the illness and relatively persistent, although it may alternate or intermingle with depressive mood.

B. Duration of at least one week (or any duration if hospitalization is necessary), during which, for most of the time, at least three of the following symptoms have persisted/four if the mood is only irritable) and have been present to a significant degree:
   (1) increase in activity (either socially, at work, or sexually) or physical restlessness
   (2) more talkative than usual or pressure to keep talking
   (3) flight of ideas or subjective experience that thoughts are racing
   (4) inflated self-esteem (grandiosity, which may be delusional)
   (5) decreased need for sleep
   (6) distractibility, i.e., attention is too easily drawn to unimportant or irrelevant external stimuli
   (7) excessive involvement in activities that have a high potential for painful consequences which is not recognized, e.g., buying sprees, sexual indiscretion, foolish business investments, reckless driving

C. Neither of the following dominate the clinical picture when an affective syndrome (i.e., criteria A and B above) is not present, that is, before it developed or after it has remitted.
   (1) preoccupation with a mood-incongruent delusion or hallucination
   (2) bizarre behavior

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D. Not superimposed on either Schizophrenia, Schizophreniform Disorder, or a Paranoid Disorder.

E. Not due to any Organic Mental Disorder, such as Substance Intoxication.

Mood-congruent Psychotic Features:
Delusions or hallucinations whose content is entirely consistent with the themes of inflated worth, power, knowledge, identity, or special relationship to a deity or famous person; flight of ideas without apparent awareness by the individual that the speech is not understandable.

Mood-incongruent Psychotic Features:
Either (a) or (b):
(a) Delusions or hallucinations whose content does not involve themes of either inflated worth, power, knowledge, identity, or special relationship to a deity or famous person. Included are such symptoms as persecutory delusions, thought insertion, and delusions of being controlled, whose content has no apparent relationship to any of the themes noted above.
(b) Any of the following calonic symptoms: stupor, mutism, negativism, posturing.


All of the following:
1. Duration - at least two weeks
2. Mood - elated or irritable
3. Behavior - three of the following:
   a. hyperactivity
   b. push of speech
   c. grandiosity
   d. flight of ideas
   e. decreased sleep
   f. distractibility

4. Excluding:
   a. syndromes due to any other psychopathology

There are patients who fulfill the above criteria, but also have a massive or peculiar alteration of perception and thinking as a major manifestation of their illness. These patients are considered by some to have a "schizophreniform" or "atypical" psychosis, i.e., an illness of acute onset (less than six months) in a patient with good premorbid psychosocial adjustment, with prominent delusions and hallucinations in addition to the affective symptoms. Clinical studies of this disorder indicate that from 60% to 90% of cases have a remitting illness and return to premorbid levels of psychosocial adjustment with a longitudinal course consistent with primary affective disorder."
Research Diagnostic Criteria (Spitzer et al. 1975 cited in Shopsin, 1979)

All of the following:
1. Duration - one week
2. Mood - elated or irritable
3. Behavior - three of the following:
   a. hyperactivity
   b. push of speech
   c. grandiosity
   d. flight of ideas
   e. decreased sleep
   f. distractibility
   g. poor judgment
4. Severity - as shown by any of the following:
   a. social incapacitation
   b. inability to communicate meaningfully
   c. hospitalization
5. Excluding:
   a. drug-induced states, or
   b. syndromes with schizophrenic symptoms
None of the following which suggest schizophrenia is present. (Do not include is apparently due to alcohol or drug use).
(1) Delusions of being controlled (or influenced), or thought broadcasting, insertion, or withdrawal.
(2) Non-affective hallucinations of any type throughout the day for several days or intermittently throughout a one week period.
(3) Auditory hallucinations in which either a voice keeps up a running commentary on the subject's behaviors or thoughts as they occur, or two or more voices converse with each other.
(4) At some time during the period of illness had more than one week when he exhibited no prominent depressive or manic symptoms but had delusions or hallucinations.
(5) At some time during the period of illness had more than one week when he exhibited no prominent manic symptoms but had several instances of marked formal thought disorder, accompanied by either blunted or inappropriate affect, delusions, or hallucinations of any type, or grossly disorganized behavior.

Mood disorder
Irritable
Expansive
Euphoric
Labile, with depression
Hyperactivity
Rapid/pressured speech
Flight of ideas

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Grandiose delusions
Assaultive/threatening behavior
Incomplete auditory hallucinations
Persecutory delusions
Confusion
Singing/dancing
Head decoration
Autochthonous ideas
Visual hallucinations
Nudity/sexual exposure
Fecal incontinence/smearing
Olfactory hallucinations
Catatonia (posturing, mannerisms, stereotypes, automatic cooperation)
First-rank symptoms of Schneider
APPENDIX B

Decision Tree for Psychotic Features
# Differential Diagnosis of Psychotic Features

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Symptoms/Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Delusional Syndrome</td>
<td>Known organic factor by history or medical laboratory examination</td>
</tr>
<tr>
<td>Hallucinosis or other organic brain syndromes</td>
<td></td>
</tr>
<tr>
<td>Malingering</td>
<td>Goal obviously recognizable</td>
</tr>
<tr>
<td>Duration less than two weeks</td>
<td>No</td>
</tr>
<tr>
<td>Brief Reactive Psychosis</td>
<td>Psychosis immediately following profoundly upsetting environmental event</td>
</tr>
<tr>
<td>Schizoaffective Disorder</td>
<td>The full depressive or manic syndrome is either not present, developed after any psychotic symptoms, or was brief in duration relative to the duration of the psychotic symptoms</td>
</tr>
<tr>
<td></td>
<td>Differential between Schizophrenia and Affective Disorder cannot be made, e.g., preoccupation with a mood-incongruent delusion or hallucination that dominates the clinical picture when an affective syndrome is not present</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>Presenory delusions or delusions of jealousy clinically predominant</td>
</tr>
<tr>
<td></td>
<td>Impaired routine daily functioning and onset before age 45</td>
</tr>
<tr>
<td>Atypical Psychosis</td>
<td>Duration at least six months</td>
</tr>
<tr>
<td></td>
<td>Prominent hallucinations, incoherence or marked loosening of associations</td>
</tr>
<tr>
<td>Atypical Schizophreniform Disorder</td>
<td>Onset in childhood of grossly impaired emotional relationships and bizarre behavior</td>
</tr>
<tr>
<td></td>
<td>Onset prior to 30 months of lack of responsiveness to others and gross impairment in language development</td>
</tr>
<tr>
<td>Infantile Autism</td>
<td>Onset of full syndrome involving sustained disturbance in emotional relationships and multiple bizarre behaviors after 30 months and before age 12</td>
</tr>
<tr>
<td>Childhood Onset Pervasive Developmental Disorder</td>
<td></td>
</tr>
</tbody>
</table>

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Appendix C

Normative Data on Three Homogeneous Inpatient Groups
### Table: Inpatient Character Problems (N = 90), Inpatient Depressive (N = 155), and Inpatient Schizophrenic (N = 210)

<table>
<thead>
<tr>
<th>Category</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>( R )</td>
<td>22.35</td>
<td>4.8</td>
<td>16.50</td>
<td>4.3</td>
<td>24.20</td>
<td>7.2</td>
</tr>
</tbody>
</table>

#### LOCATION HISTOGRAMS

| \( W \)  | 8.23 | 3.7 | 5.29 | 2.4 | 7.38 | 3.2 |
| \( D \)  | 13.22 | 5.2 | 9.42 | 3.2 | 11.49 | 4.1 |
| \( Dd \) | 0.91 | 0.6 | 1.79 | 0.8 | 5.33 | 2.7 |
| \( S \)  | 3.48 | 1.3 | 1.26 | 0.9 | 1.74 | 1.2 |

#### DETERMINANTS

<p>| ( M )  | 1.85 | 0.9 | 2.13 | 1.1 | 3.92 | 1.9 |
| ( FM ) | 3.95 | 1.2 | 2.07 | 1.3 | 2.96 | 1.2 |
| ( m )  | 1.23 | 1.1 | 1.35 | 0.9 | 1.18 | 0.8 |
| ( FM + m ) | 5.18 | 2.2 | 3.42 | 1.6 | 4.14 | 1.9 |
| ( FC ) | 1.41 | 1.2 | 0.87 | 1.1 | 1.87 | 1.3 |
| ( CF ) | 3.22 | 1.8 | 1.93 | 1.2 | 3.31 | 1.6 |
| ( C + Cn ) | 1.50 | 1.3 | 0.56 | 0.8 | 1.56 | 0.9 |
| ( \sum C ) | 6.13 | 4.3 | 3.36 | 1.4 | 6.74 | 2.9 |
| ( \sum \text{weighted } C ) | 6.18 | 3.9 | 3.21 | 1.8 | 6.58 | 3.7 |
| ( FC' + CF + C' ) | 0.94 | 0.7 | 1.91 | 1.1 | 1.18 | 1.2 |
| ( FT + TF + T ) | 1.05 | 0.8 | 1.78 | 1.0 | 2.36 | 1.4 |
| ( FY + VF + Y ) | 0.82 | 0.9 | 2.16 | 1.1 | 0.94 | 0.8 |
| ( TV + VF + F ) | 0.21 | 0.4 | 1.89 | 0.8 | 0.64 | 0.9 |
| ( \sum \text{grey black} ) | 3.02 | 1.4 | 7.74 | 2.9 | 5.12 | 2.6 |
| ( 'F D ) | 0.36 | 0.9 | 2.61 | 1.1 | 0.47 | 0.9 |
| ( F r + r F ) | 1.41 | 0.8 | 0.21 | 0.6 | 1.24 | 0.8 |
| ( (2) ) | 10.44 | 3.9 | 5.38 | 1.6 | 10.74 | 4.1 |
| ( F ) | 7.13 | 2.8 | 5.61 | 2.4 | 7.29 | 3.8 |</p>
<table>
<thead>
<tr>
<th>( p )</th>
<th>6.83</th>
<th>3.1</th>
<th>4.94</th>
<th>2.3</th>
<th>2.48</th>
<th>1.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambda</td>
<td>0.47</td>
<td>0.4</td>
<td>0.52</td>
<td>0.3</td>
<td>0.43</td>
<td>0.2</td>
</tr>
<tr>
<td>( X + \gamma )</td>
<td>0.75</td>
<td>0.14</td>
<td>0.73</td>
<td>0.09</td>
<td>0.57</td>
<td>0.14</td>
</tr>
<tr>
<td>( F + \gamma )</td>
<td>0.85</td>
<td>0.11</td>
<td>0.77</td>
<td>0.10</td>
<td>0.62</td>
<td>0.08</td>
</tr>
<tr>
<td>( Zf )</td>
<td>8.74</td>
<td>3.4</td>
<td>7.71</td>
<td>2.7</td>
<td>9.63</td>
<td>2.8</td>
</tr>
<tr>
<td>( A %)</td>
<td>0.51</td>
<td>0.08</td>
<td>0.46</td>
<td>0.07</td>
<td>0.31</td>
<td>0.10</td>
</tr>
<tr>
<td>( Afr )</td>
<td>0.96</td>
<td>0.13</td>
<td>0.61</td>
<td>0.08</td>
<td>0.93</td>
<td>0.12</td>
</tr>
<tr>
<td>( Jr + (2)/R )</td>
<td>0.66</td>
<td>0.18</td>
<td>0.33</td>
<td>0.14</td>
<td>0.59</td>
<td>0.14</td>
</tr>
<tr>
<td>( EA &gt; ep )</td>
<td>19</td>
<td>68</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( H + Hd )</td>
<td>3.77</td>
<td>1.4</td>
<td>2.36</td>
<td>0.92</td>
<td>3.14</td>
<td>1.1</td>
</tr>
<tr>
<td>Blends</td>
<td>3.67</td>
<td>1.2</td>
<td>5.84</td>
<td>1.6</td>
<td>4.38</td>
<td>2.7</td>
</tr>
<tr>
<td>( DV )</td>
<td>0.43</td>
<td>0.2</td>
<td>0.47</td>
<td>0.2</td>
<td>1.01</td>
<td>0.9</td>
</tr>
<tr>
<td>ALOG</td>
<td>0.76</td>
<td>0.4</td>
<td>0.39</td>
<td>0.2</td>
<td>1.75</td>
<td>0.8</td>
</tr>
<tr>
<td>INCOM</td>
<td>0.97</td>
<td>0.6</td>
<td>0.65</td>
<td>0.4</td>
<td>1.18</td>
<td>0.7</td>
</tr>
<tr>
<td>FABCOM</td>
<td>0.58</td>
<td>0.3</td>
<td>0.53</td>
<td>0.3</td>
<td>0.99</td>
<td>0.7</td>
</tr>
<tr>
<td>CONTAM</td>
<td>0.02</td>
<td>0.01</td>
<td>0.012</td>
<td>0.01</td>
<td>0.14</td>
<td>0.08</td>
</tr>
<tr>
<td>Sum special scores</td>
<td>2.74</td>
<td>1.3</td>
<td>2.07</td>
<td>0.9</td>
<td>5.08</td>
<td>2.2</td>
</tr>
<tr>
<td>( PSV ) (within)</td>
<td>0.14</td>
<td>0.3</td>
<td>0.18</td>
<td>0.2</td>
<td>0.20</td>
<td>0.2</td>
</tr>
<tr>
<td>( PSV ) (across)</td>
<td>0.18</td>
<td>0.2</td>
<td>0.07</td>
<td>0.03</td>
<td>0.18</td>
<td>0.1</td>
</tr>
</tbody>
</table>

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Appendix D

Rorschach Indices of Schizophrenia and Affective (Depressive) Disorders
Schizophrenic Index
1. X+% < .70
2. FQx->FQxw
3. Sum 5 Critical Special Scores > 4
4. Sum FACBOM + ALOG + CONTAM > SUM DV + INCOM
5. M- > 0

Depression Index
1. Vista > 0
2. Color-Shading blend > 0
3. 3r+(2)/R less than average
4. C' > 2
5. MOR > 3
(Exner, 1982)
Appendix E

DSM-III Diagnostic Criteria of the Schizophrenic Disorder (Paranoid and Undifferentiated Type)
In the DSM-III (APA, 1980) the following criteria of the paranoid and undifferentiated type of Schizophrenic disorders are identified.

At least one of the following during a phase of the illness

1. bizarre delusions, such as delusions of being controlled, thought broadcasting, thought insertion, or thought withdrawal
2. somatic, grandiose, religious, nihilistic, or other delusions without persecutory or jealous content
3. delusions with persecutory or jealous content if accompanied by hallucinations of any type
4. auditory hallucinations in which either a voice keeps up a running commentary on the individual's behavior or thoughts, or two or more voices converse with each other
5. auditory hallucinations on several occasions with content of more than one or two words, having no apparent relation to depression or elation
6. incoherence, marked loosening of associations, marked illogical thinking, or marked poverty of content of speech if associated with at least one of the following:
   a. blunted, flat, or inappropriate affect
   b. delusions or hallucinations
   c. catatonic or other grossly disorganized behavior

PARANOID TYPE
1. persecutory delusions
2. grandiose delusions
3. delusional jealousy
4. hallucinations with persecutory or grandiose content

UNDIFFERENTIATED TYPE
1. A type of schizophrenia in which there are:
   prominent delusions, hallucinations, incoherence, or grossly disorganized behavior
2. Does not meet the criteria for any other type of schizophrenic disorder or meets the criteria for more than one

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Appendix F

Statistical Analysis of Demographic Characteristics
Statistical Analysis of the Ethnic Origin Demographics

<table>
<thead>
<tr>
<th>Race</th>
<th>Schizophrenic Disorder</th>
<th>Bipolar Affective Disorder</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>27</td>
<td>26</td>
<td>53</td>
<td>75.7</td>
</tr>
<tr>
<td>Black</td>
<td>11</td>
<td>5</td>
<td>16</td>
<td>22.9</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>31</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td>55.7%</td>
<td>44.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi Square</td>
<td>within 2.38574</td>
<td>Degrees of freedom 2</td>
<td>Significance .3033</td>
<td></td>
</tr>
</tbody>
</table>

Statistical Analysis of the Marital Status Demographics

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Schizophrenic Disorder</th>
<th>Bipolar Affective Disorder</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>5</td>
<td>9</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>Single</td>
<td>22</td>
<td>11</td>
<td>33</td>
<td>47.1</td>
</tr>
<tr>
<td>Divorced</td>
<td>10</td>
<td>6</td>
<td>16</td>
<td>22.9</td>
</tr>
<tr>
<td>Separated</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Widowed</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>7.1</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>31</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td>55.7%</td>
<td>44.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi Square</td>
<td>within 7.18914</td>
<td>Degrees of freedom 4</td>
<td>Significance .1262</td>
<td></td>
</tr>
</tbody>
</table>

The statistical analysis completed on the sexual identity of the subjects demonstrated no significant difference between the diagnostic groups.
**Statistical Analysis of the Gender Demographic**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Schizophrenic Disorder</th>
<th>Bipolar Affective Disorder</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>22</td>
<td>13</td>
<td>35</td>
<td>50</td>
</tr>
<tr>
<td>Female</td>
<td>17</td>
<td>18</td>
<td>35</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>31</td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>

Chi Square 1.44748  Significance Level .2289  Degrees of freedom = 1

The t-test was employed to assess the difference between the age demographic of the diagnostic groups, no significant difference exists between the two diagnostic groups.

**Statistical Analysis of the Age Demographic**

<table>
<thead>
<tr>
<th>Diagnostic Group</th>
<th>Number of Subjects</th>
<th>Number of Subjects</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenic Disorder</td>
<td>39</td>
<td>36.0256</td>
<td>10.999</td>
<td>1.761</td>
</tr>
<tr>
<td>Bipolar Affective Disorder</td>
<td>31</td>
<td>38.3226</td>
<td>15.256</td>
<td>2.740</td>
</tr>
</tbody>
</table>

Pooled Variance Estimate F value 1.92 two-tail probability .057  Degrees of Freedom 68  T-value -.73 two-tail probability .467

The t-test statistical analysis of the last grade completed demographic demonstrated no significant difference between the diagnostic groups.
Appendix G

Forty-Three Rorschach Subscores

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W  Whole responses
D  Common detail responses
Dd  Unusual detail responses
S  Space response
PM  Animal movement response
m  Inanimate movement response
FC  Form-color response
CF  Color-form response
C  Pure color responses
Cn  Color naming responses
FC+CF+C  Liability Index
FC'+C'+C'  Achromatic color responses
FT+TF+T  Texture responses
FY+YF+Y  Shading responses
FV+VF+V  Vista responses
FD  Form based dimensional response
Fr+rF  Reflection responses
(2)  Pair responses
P  Pure form
F  Popular response
F/R-F  Lambda
X+Z  Reality perception accuracy with affect
ZD  Difference between Z Sum and Z estimate
AZ  Animal content percent
Afr  Affective Ratio
3R+(2)/R  Egocentricity Index
EB  Human movement minus weight color responses
Blends/R  Use of more than one determinant divided by number of responses
DV  Deviant verbalizations
ALOG  Autistic logic
INCOM  Inappropriate combinations
CONTAM  Contaminations
Sum Special score  Sum of DV + ALOG + INCOM + FABCOM + CONTAM
PSV  Perservation within the card and across cards
DEPI  Depression Index
D2  Stress Tolerance
H+Hd  Sum of Human responses
W-D  Whole responses minus common detail responses
W-M  Whole responses minus human movement responses
A-P  Active responses minus passive responses
Ma-Mp  Active human movement responses minus passive human movement responses
Cont/R  Number of different content scores divided by number of total responses
Per  Personalization score

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Appendix H

Mann-Whitney U Test Results on Forty-Three Subscores
<table>
<thead>
<tr>
<th>Rank</th>
<th>Dependent Variable</th>
<th>Symbol</th>
<th>U</th>
<th>Z</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sum of Shading responses</td>
<td>FY+YF+Y</td>
<td>403.5</td>
<td>-3.2384</td>
<td>.0012</td>
</tr>
<tr>
<td>2</td>
<td>Sum of Texture responses</td>
<td>FT+TF+T</td>
<td>434.0</td>
<td>-2.3853</td>
<td>.0171</td>
</tr>
<tr>
<td>3</td>
<td>Number of Blends/number of responses</td>
<td>Blends/R</td>
<td>430.5</td>
<td>-2.1153</td>
<td>.0344</td>
</tr>
<tr>
<td>4</td>
<td>Number of Form-Color responses</td>
<td>FC</td>
<td>456.5</td>
<td>-1.9531</td>
<td>.0508</td>
</tr>
<tr>
<td>5</td>
<td>Difference between EB and eb</td>
<td>D</td>
<td>479.5</td>
<td>1.8246</td>
<td>.0681</td>
</tr>
<tr>
<td>6</td>
<td>Number of responses involving Austic Logic</td>
<td>ALOG</td>
<td>507.0</td>
<td>-1.6567</td>
<td>.0976</td>
</tr>
<tr>
<td>7</td>
<td>Percent of response that include animal content</td>
<td>AZ</td>
<td>474.5</td>
<td>-1.5382</td>
<td>.1240</td>
</tr>
<tr>
<td>8</td>
<td>Number of common detail responses</td>
<td>D</td>
<td>479.0</td>
<td>-1.4883</td>
<td>.1367</td>
</tr>
<tr>
<td>9</td>
<td>Sum of Vista responses</td>
<td>FV+VF+V</td>
<td>549.0</td>
<td>1.3525</td>
<td>.1762</td>
</tr>
<tr>
<td>10</td>
<td>Sum of reflection responses</td>
<td>Fr+Fr</td>
<td>561.0</td>
<td>-1.2788</td>
<td>.2010</td>
</tr>
<tr>
<td>11</td>
<td>Number of whole responses minus number of responses with common detail</td>
<td>W-D</td>
<td>497.5</td>
<td>1.2677</td>
<td>.2049</td>
</tr>
<tr>
<td>12</td>
<td>Number of animal movement responses</td>
<td>FM</td>
<td>510.0</td>
<td>-1.1481</td>
<td>.2509</td>
</tr>
<tr>
<td>13</td>
<td>Number of responses given on cards VIII+IX+X divided by number of responses on cards I through VII</td>
<td>AFR</td>
<td>508.0</td>
<td>-1.1422</td>
<td>.2534</td>
</tr>
<tr>
<td>14</td>
<td>Lambda</td>
<td>F/R-F</td>
<td>510.5</td>
<td>1.1118</td>
<td>.2662</td>
</tr>
<tr>
<td>15</td>
<td>Number of times Perservation occurred</td>
<td>PSV</td>
<td>529.5</td>
<td>-1.0998</td>
<td>.2714</td>
</tr>
<tr>
<td>16</td>
<td>Number of responses that involved personalization</td>
<td>PER</td>
<td>519.5</td>
<td>-1.0584</td>
<td>.2899</td>
</tr>
<tr>
<td>17</td>
<td>Number of responses that involved contaminations</td>
<td>CONTAM</td>
<td>551.0</td>
<td>1.0401</td>
<td>.2983</td>
</tr>
<tr>
<td>18</td>
<td>Sum of color naming determinants</td>
<td>Cn</td>
<td>556.0</td>
<td>.9442</td>
<td>.3451</td>
</tr>
<tr>
<td>19</td>
<td>Number of different content areas divided by number of responses</td>
<td>Cont/R</td>
<td>525.5</td>
<td>.9250</td>
<td>.3498</td>
</tr>
<tr>
<td>20</td>
<td>Sum of form based dimensionality determinants</td>
<td>FD</td>
<td>566.0</td>
<td>.8760</td>
<td>.3811</td>
</tr>
<tr>
<td>21</td>
<td>Sum of whole responses minus sum of human movement responses</td>
<td>W-M</td>
<td>532.5</td>
<td>-.8546</td>
<td>.3928</td>
</tr>
<tr>
<td>22</td>
<td>Egocentricity index</td>
<td>3r+(2)/R</td>
<td>533.0</td>
<td>-.8460</td>
<td>.3975</td>
</tr>
<tr>
<td>Rank</td>
<td>Dependent Variable</td>
<td>Symbol</td>
<td>U</td>
<td>Z</td>
<td>P (two tailed)</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------</td>
<td>--------</td>
<td>---------</td>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td>23</td>
<td>Sum of inanimate movement responses</td>
<td>m</td>
<td>543.5</td>
<td>-0.8243</td>
<td>0.4098</td>
</tr>
<tr>
<td>24</td>
<td>Number of deviant verbalizations</td>
<td>DV</td>
<td>542.0</td>
<td>-0.7889</td>
<td>0.4302</td>
</tr>
<tr>
<td>25</td>
<td>Sum of achromatic color responses</td>
<td>FC'+C'F+C'</td>
<td>547.5</td>
<td>-0.7430</td>
<td>0.4575</td>
</tr>
<tr>
<td>26</td>
<td>Number of pair responses (2)</td>
<td></td>
<td>542.5</td>
<td>-0.7365</td>
<td>0.4614</td>
</tr>
<tr>
<td>27</td>
<td>Quality of form of all responses</td>
<td>X+Z</td>
<td>544.0</td>
<td>-0.7157</td>
<td>0.4742</td>
</tr>
<tr>
<td>28</td>
<td>Liability Index</td>
<td>FC-CF+C</td>
<td>546.5</td>
<td>-0.7199</td>
<td>0.4716</td>
</tr>
<tr>
<td>29</td>
<td>Number of pure form determinants</td>
<td>F</td>
<td>546.0</td>
<td>-0.6945</td>
<td>0.4874</td>
</tr>
<tr>
<td>30</td>
<td>Number of whole responses</td>
<td>W</td>
<td>547.5</td>
<td>-0.6772</td>
<td>0.4983</td>
</tr>
<tr>
<td>31</td>
<td>Number of popular responses</td>
<td>P</td>
<td>548.0</td>
<td>-0.6756</td>
<td>0.4993</td>
</tr>
<tr>
<td>32</td>
<td>Number of human movement responses</td>
<td>EB</td>
<td>548.0</td>
<td>-0.6705</td>
<td>0.5025</td>
</tr>
<tr>
<td></td>
<td>minus total weighted color responses M-.5FC+CF+1.5Cn+1.5C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Difference between Sum Z and Z-estimate</td>
<td>ZD</td>
<td>553.5</td>
<td>0.6036</td>
<td>0.5461</td>
</tr>
<tr>
<td>34</td>
<td>Number of incongruous combinations</td>
<td>INCOM</td>
<td>563.0</td>
<td>0.5715</td>
<td>0.5676</td>
</tr>
<tr>
<td>35</td>
<td>Difference between the number of active human movement responses and passive human movement responses</td>
<td>Ma-Mp</td>
<td>561.5</td>
<td>0.5320</td>
<td>0.5948</td>
</tr>
<tr>
<td>36</td>
<td>Number of unusual detail location response</td>
<td>Dd</td>
<td>562.0</td>
<td>-0.5192</td>
<td>0.6036</td>
</tr>
<tr>
<td>37</td>
<td>Sum of critical scores</td>
<td></td>
<td>566.0</td>
<td>-0.4629</td>
<td>0.6434</td>
</tr>
<tr>
<td>38</td>
<td>Depression Index</td>
<td>Depi</td>
<td>570.0</td>
<td>0.4571</td>
<td>0.6476</td>
</tr>
<tr>
<td>39</td>
<td>Number of responses that involve space response</td>
<td>S</td>
<td>572.0</td>
<td>-0.4018</td>
<td>0.6878</td>
</tr>
<tr>
<td>40</td>
<td>Difference between the number of total active responses and total passive responses</td>
<td>a-p</td>
<td>587.0</td>
<td>-0.2089</td>
<td>0.8346</td>
</tr>
<tr>
<td>41</td>
<td>Number of pure color responses</td>
<td>C</td>
<td>592.5</td>
<td>-0.1819</td>
<td>0.8556</td>
</tr>
<tr>
<td>42</td>
<td>Number of color-form responses</td>
<td>CF</td>
<td>593.0</td>
<td>-0.1623</td>
<td>0.8711</td>
</tr>
<tr>
<td>43</td>
<td>Total number of human content responses</td>
<td>H+Hd</td>
<td>597.0</td>
<td>0.0899</td>
<td>0.9283</td>
</tr>
</tbody>
</table>

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