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Rorschach Assessment of Ego Functioning: A Comparison of the EII and CESI

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RORSCHACH ASSESSMENT OF EGO FUNCTIONING: A COMPARISON OF THE EII AND CESI

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CHAPTER 1

INTRODUCTION

In recent years, interest has renewed in the application of psychodynamic interpretations to the Rorschach Inkblot test (Lerner, 1991). One manifestation of this interest involves attempts to use Exner's (1986) Comprehensive System variables to measure ego functions or latent ego capacities (e.g., Kleiger, 1992a; Perry & Viglione, 1991). Although Exner's scoring system does not currently use a psychodynamic framework, most of the interpretational systems before Exner's did. Moreover, such an interpretive framework remains consonant with widespread assumptions about the Rorschach Test, that it affords information about latent or internal psychological states, processes and capacities, as opposed to a test taker's self-schema and self-presentational style which self-report measures appear to measure (e.g., Shedler, Mayman & Manis, 1993).

There are numerous reasons why a standardized Rorschach measure of ego strength/ego impairment would be useful. Kleiger (1992a) has argued that ego-psychological interpretations for Comprehensive System variables would facilitate Rorschach use in clinical decision making. He

faults the standard Comprehensive System interpretations for using jargon which is "experience-distant" and conceptually vague. Kleiger also argues that the lack of an overarching theory of personality makes Rorschach information difficult to translate into clinicians' diagnostic formulations about their clients.

From a psychometric standpoint, a Rorschach ego measure could overcome some of the problems of assessing ego strength by self-report or so-called objective measures. An example of a self-report ego-strength measure is the MMPI Ego Strength scale (MMPI-Es; Barron, 1953). This scale was derived empirically by identifying those self-report items which differentiated psychotherapy subjects who improved from those who did not. Although Barron argued the Es scale to be a measure of latent ego-strength or capacity for personality integration, subsequent research has described it as a measure of the absence of specific ego deficits (Crumpton, Cantor, & Bastiste, 1960) or even, "merely as [a] measure of pathology" (Clayton & Graham, 1979).

Note that the latter interpretation represents a significant demotion for an "ego strength" scale; whereas numerous scales are available for assessing a client's self-reported distress or pathology, e.g., the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the Spielberger State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), and the clinical

scales of the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1983), it seems far more difficult to assess a client's latent coping abilities, ego capacities, or psychological maturity.

Indeed, the self-report method suffers from at least two kinds of problems when assessing these qualities in a subject. First, self-reports are challenged at differentiating between temporary distress (as elicited by a recent divorce, for instance), and trait-like ego deficits, which result in an ongoing pattern of ineffective coping; that is, a state/trait distinction. Second is the problem of differentiating between "genuine" absence of distress, and "defensive denial" of distress; this can be called the no-distress/denied-distress distinction.

Shedler, Mayman and Manis (1993) recently made a striking demonstration of the latter confound, highlighting the difference between self-reported mental health and "genuine" mental health as identified by trained clinicians. In a series of experiments, these authors demonstrated that, of subjects portrayed by self-report measures as emotionally healthy, using measures such as the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) and the BDI (Beck et al., 1961), trained clinicians analyzing responses to the Early Memory Test could identify two subgroups, which they labeled "defensive deniers" and "genuinely healthy." Under psychologically stressful conditions (such as taking the

Thematic Apperception Test) the defensive deniers showed significantly higher levels of coronary reactivity than either the genuinely healthy group or the subjects who self-reported being distressed. Moreover, whereas for the "genuinely healthy" group the self-report measure correlated positively with clinicians' judgement of distress, for the "defensive deniers" this correlation was negative!

These studies highlight the limitations of self-report measures for measuring true psychological distress, and speak favorably for the usefulness of projective methods (and psychoanalytic theory) for carrying psychometrics beyond subjects' surface presentation. If we take seriously Exner's (1986) claims regarding the Rorschach EA:es comparison, then the Rorschach Test <u>is</u> able to assess non-reported distress of this sort, revealing internally-experienced distress as well as measuring a subject's enduring psychological resources.

Other psychometric advantages of a Rorschach measure of ego include less dependence upon subjects' <u>willingness</u> to report distress. While a few Rorschach variables, such as Morbid special scores, Blood, and the number of responses (R) appear subject to dissimulation (Meisner, 1988), the Rorschach is generally viewed as more resistant to subjects' deliberate attempts to fake good or fake bad than self-report measures (Exner, 1986; Meisner, 1988; but see Perry & Kinder, 1990 for a critical review).

Finally, the availability of a standardized measure of ego capacities could greatly facilitate empirical research on psychodynamic theories of development and psychopathology. Such research might bridge the well-known gap between scientific psychological research and psychodynamic clinical work.

A number of methods have been proposed in recent years for assessing ego functioning using Comprehensive System (Exner, 1986) variables. Discussed below are two examples: the conceptual approach offered by Kleiger (1992a), and Perry & Viglione's (1991) Ego Impairment Index.

Kleiger's Approach

Kleiger (1992a) has attempted to reinterpret the Exner system EA:es comparison into ego-psychology terms, an approach he believes would offer Exner's rigorous, quantitative interpretive system a richer, more sophisticated conceptualization of the individual, and greater clinical relevance.

In his article, Kleiger (1992a) criticized the standard interpretations for the variables comprising EA (i.e., human movement, color) and es (shading and nonhuman movement); his analysis paid particular attention to C, CF, FC, and the shading variables Y, V, T, and C'. According to Exner (1992) the EA variable represents an index of "resources that are accessible to the individual and drawn on when

necessary to formulate decisions and implement those decisions into deliberate behavioral activity" (p. 298). In Kleiger's critique, he attempted to understand the EA from an ego-psychological framework, by highlighting the words Exner uses to describe EA: "The terms organized and resources connote ego-mediated process, functions or components of ego strength" (Kleiger, 1992a, p. 289). Kleiger then criticized the inconsistencies surrounding EA:es when EA is examined closely from this framework, saying, "How a set of 'organized resources' or 'meaningfully directed behaviors' can be incompatible with the construct of ego strength or adaptation is, at best, ambiguous" (p. 290).

Exner (1992) claims that Kleiger was mistaken in equating the "resources" tapped by EA with ego capacities. Despite any apparent similarity between these definitions and traditional concepts of ego resources, Exner asserts that EA is not "ego strength," nor does it represent "coping ability," "psychological maturity," or "adaptiveness." Thus, although it may be tempting to draw such a link (and indeed, Exner admits that he himself once did), it is misguided to fault the EA as a poor and inconsistent measure of ego strength (Exner, 1992).

While Exner(1992) and Kleiger(1992a, 1992b) clearly disagree over the appropriateness of an ego psychological framework for capturing the EA-es comparison, it seems

likely that some version of Exner's EA variable should remain relevant to an attempt to measure "ego" on the Rorschach. Exner's definition of EA implies that some kind of latent, trait-like resources of the subject (assessed by EA) can be assessed on the Rorschach separately from temporary or environmentally-induced stress or demands (assessed by "es"). Even if - as Exner contends - the term "ego" cannot fully capture the nature of EA:es, it will be worthwhile to clarify just how Exner's variables fail to mesh with an ego-psychological framework. Thus, Kleiger's approach to evaluating ego strength with Comprehensive System variables remains theoretically interesting.

In Kleiger's view, the responses contributing to EA (namely, M, FC, CF, and C) need to be evaluated in terms of their form quality, their level of form injection, the presence of special scores, and the presence of primary process contents. For instance, since FC is understood to reflect greater affective modulation than CF or C, Kleiger takes FC as indicative of greater ego strength. This contrasts with Exner's formula for computing EA, which includes C and CF as indicative of "organized resources," and in fact weighs C and CF more heavily than FC. In case illustrations he provides, Kleiger applies the term "poor color response" to describe those responses which are not form-dominated and/or have inaccurate form quality. In his article (1992a), Kleiger is less specific about how he would

use contents or Special Scores, although in personal communication[1] he has confirmed that color and shading responses which have Special Scores or primary-process content could also be classified as "poor."

Kleiger applies the same logic to evaluating shading responses; in contrast to Exner's System, which interprets all shading determinants as indicative of "impinging needs and forces which are not accessible to the individual" (Exner,1986), Kleiger hypothesizes that form-dominant shading responses with accurate form could reflect a capacity to endure distress, anxiety, or other negative affective states, whereas shading-dominated or poor-form-quality shading responses would imply less capacity to maintain cognitive controls under these "impinging" affects. Thus, while Kleiger and Exner are both interested in distinguishing the subject's experience of painful affects or demands from a kind of latent coping capacities or "controls", these two authors make somewhat different interpretations of shading and color responses.

Extrapolating from Kleiger's discussion, one can construct a measure of ego strength based on Kleiger's logic. For convenience, I will call this the Conceptual Ego Strength Index, or CESI. Admittedly, there could be numerous ways to operationalized Kleiger's stance. For this

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[1]September 19, 1993. James H. Kleiger, The Menninger Clinic, Topeka, Kansas 66601.

study, the following two scoring systems will be used, with emphasis placed on the former:

For the primary CESI (at times referred to as CESI1) each response in a protocol will be scored. For the second scoring system (CESI2) only responses with color, shading, or some form of movement will be scored. The latter scoring approach stays closer to Kleiger's theoretical model, by using only the responses which would contribute to either EA or es. The former scoring approach, however, should maximize the CESI's sensitivity by increasing the number of responses which contribute to it. In the results and discussion sections, the CESI1 will be treated in depth, but for the sake of reference CESI2 values will be provided in the tables as well.

In either case, these responses will be evaluated, per Kleiger's interpretive approach, for their implications about the subject's ego strength. Four dimensions of each response will be rated for their implications about ego strength: form-domination, form quality, primary process contents, and Special Scores. To obtain subjects' raw scores on these dimensions, points will be summatively added or subtracted according to whether a response characteristic implies ego strength or weakness (respectively), and no points will be earned if the implication is neutral or irrelevant to ego strength.

The following point values (summarized in table 1) will

be used to determine raw scores on each dimension. For the form-quality dimension: When a color or shading determinant is accompanied by ordinary or exceptional form quality (FQo or FQ+), 1 point is earned; for unusual form quality (FQu), no points are earned; for poor form quality (FQ-) or formless determinants, one point is subtracted.

For the dimension of form-dominance, only color or shading responses can be scored. For these responses: For each color or shading determinant, if it is form-dominant (e.g., FC, FY, etc.), one point is earned; if form-secondary (e.g., CF, YF, etc.), no points are earned; if formless (C, Y, T, etc.), one point is subtracted. For blends, the raw scores for each color or shading determinant will be averaged for that response.

For assessing primary process contents: For responses in which the contents include no primary process contents, one point is earned. If one or more of these contents are present, one point will be subtracted. Since Kleiger[2] (personal communication, July 19, 1993) has recommended Holt's (1977) scoring system for assessing primary process thinking, an attempt was made to operationalize Holt's system as adequately as possible using Comprehensive System variables. While the Comprehensive System's list of Content categories is woefully inadequate to this task (for

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[2]Personal communication, James H. Kleiger, July 19, 1993. The Menninger Clinic, Topeka, Kansas 66601.

instance, there is no way to distinguish oral contents, such as mouth or teeth, from other human details), the contents which best match Holt's approach appear to be An, Bl, Ex, Fi, Fd, Sx, and Xy contents, plus AG and MOR special scores.[3]

As a qualifier to the present study, it should be noted that Holt (1977) recommends scoring Primary Process Contents in terms of severity (Level 1 vs. Level 2); Kleiger (1993, personal communication) also has recommended rescoring the Contents of protocols in the present study for severity (Level 1 vs. Level 2). The present author agrees that this distinction could improve the precision of the Contents dimension of the CESI, but for simplicity's sake has limited the present study to using variables already scored on the Comprehensive System. Unfortunately, the Contents scores on the Comprehensive System are particularly weak for applying a psychoanalytic interpretive framework to the Rorschach, and thus this dimension of the CESI will probably be at a disadvantage.

Finally, for the Special Scores dimension: for responses with no Special Scores, one point will be earned; for responses with only Level 1 Special Scores, no points

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[3]These contents are essentially the same as those selected by Perry and Viglione (1991). Future studies might benefit from a more appropriate assessment of primary process contents by scoring additional content categories which Holt (1977) used, such as oral contents (e.g., mouth, lips, teeth) and oral action (sucking, eating, biting) as well as aggressive contents (e.g., weapons).

will be earned; and for those responses with a Level 2 Special Score, an ALOG or a CONTAM score, one point will be subtracted. The CESI raw score values are summarized in table 1.

These raw summations will be divided by the number of responses which contributed, producing a mean-raw-score-per-response value. These mean raw scores for each of the four dimensions will be assigned z-scores, based on the distribution of scores (on that dimension) by all subjects in the study. After producing z-scores for each of the four dimensions, a final CESI score will be calculated as the summation of the four z-scores (one each for form-domination, form quality, primary process contents, and Special Scores).

The approach used here for computing the CESI, in which features of a Rorschach response are assigned unitary scores (FQo is assigned a value of +1.0, for instance), and these unitary scores are then summed and transformed into standard scores, with the resulting z-scores for each dimension simply added together with equal weight, can been described as an "improper linear model" (Dawes, 1979). In spite of the intuitive notion that more "precise" weight assignments, such as those generated by multiple regression or discriminant function analyses, should augment predictive accuracy, a substantial body of evidence suggests that their impact is minimal (e.g., Dawes, 1979; Wainer, 1976). In

Wainer's (1976) article (eloquently titled, "It don't make no nevermind,") he documents surprising small losses in predictive accuracy when improper linear models (such as equal weighting) were substituted for least squares regression weights; "indeed, [equally weighted models] are frequently superior," he notes (p. 214). Among the advantages of using nonoptimal weighting methods, linear models produced this way are markedly more robust than proper linear models. Dawes(1979) also found that improper linear models consistently perform better than clinical judgement. Thus the rather unelegant method used to assign the present CESI weights, despite our intuitions, remains statistically defensible.

Perry and Viglione's Approach

In a separate endeavor, Perry and Viglione (1991) have also been working to operationalize ego functioning on the Rorschach. Their Ego Impairment Index (EII) was constructed using a combination of theoretical and empirical methods.

For its theoretical rationale, its authors applied Beres (1956) model of ego assessment. Beres identified six distinct but overlapping ego functions: (a) relation to reality, (b) regulation and control of instinctual drives, (c) object relations, (d) thought processes, (e) autonomous functions, and (f) synthetic functions. Perry and Viglione used Beres' model to select five Rorschach variables, which

relate specifically to the first four of Beres' five ego functions, as follows: **SumFQ-** assessed reality perception; Content categories of **An** (anatomy), **Bl** (blood), **Ex** (explosion), **Fi** (fire), **Fd** (food), **Sx** (sex), **Xy** (x-ray), and **AG** (aggressive movement), together assessed weakness in regulating instinctual material; **WSum6** (Sum of Special Scores) and **SumM-** assessed loose or faulty cognitive processes; and finally, to assess object relations, the authors constructed two new variables: the "Good Human Experience" (**GHX**) variable and the "Poor Human Experience" (**PHX**) variable.

The GHX and PHX were two variables constructed by Perry and Viglione (1991) specifically for the EII, as an attempt to improve upon previous measures of object relations. The GHX was calculated as the sum of those whole pure human contents (H), popular non-whole pure human contents (Hd), popular fictionalized human contents ([H]), and cooperative (COP) human movement responses, which were accurately perceived (FQo or FQ+) and had no special scores (SPSC). The PHX included human movement or content responses which were inaccurately perceived (FQ-), contained non-popular part or fictionalized human contents, had an aggressive movement (AG) score, or contained a Level 2 SPSC.

Perry and Viglione (1991) found that a beta-weighted summation of the various components provided the best measure of ego impairment. Their final formula was as

follows:

E.I.I. = .136(SumFQ-) + .050(WSum6) + .068(derepressed contents) + .208(M-) + .108(PHX) - .160(GHX) - .062(R) -.049 [a constant].

The EII has survived empirical validation with a sample of outpatient melancholic depressives (Perry & Viglione, 1991) and a mixed inpatient/outpatient schizophrenic sample (Perry, Viglione, & Braff, 1992). In the first study, Perry and Viglione (1991) administered Rorschach protocols and obtained EII scores of 46 melancholic depressed patients. Perry and Viglione charted the course of the patients' depressive symptoms (using self-report measures) over nine weeks of tricyclic antidepressant medication. They reasoned that patients who failed to improve are likely to have ego deficits as well as any physiological dysfunction which are maintaining their depression, and thus tricyclic treatment alone should be less effective for these patients.

Dividing the sample into split halves according to EII score, Perry and Viglione found that while high ego-impaired (HEI) and low ego-impaired (LEI) subjects did not differ in their baseline levels of depression (means of approximately 30 and 28, for HEI and LEI respectively as assessed by the Carroll Rating Scale), the gap between the two groups grew substantially over the 9 weeks of tricyclic medication. At 9 weeks, the HEI subjects scored a mean of approximately 22,

while the LEI subjects scored about 11. Apparently, while the self-report depression measures did not detect differences between the high and low ego-impaired groups, the EII successfully predicted different treatment outcomes for these two groups. Their results support the hypothesis that an underlying, trait-like capacity of the individual can be assessed using the Rorschach, and that what is measured "can provide unique prognostic information surpassing the ability of" self-report measures (Perry & Viglione, 1991; p. 496).

In the second study, Perry, Viglione, and Braff (1992) used a mixed inpatient/outpatient sample of schizophrenics, which they divided into a Paranoid group and a Disorganized or Undifferentiated group, using DSMIII-R diagnoses. Based on ego-psychological theory, they predicted that Paranoid Schizophrenics would have greater ego resources than Undifferentiated and Disorganized types. Indeed, the mean EII for the Paranoid group was approximately 1.0, in contrast to the Disorganized /Undifferentiated group mean of 3.0. (Each unit on the EII is equivalent to one standard deviation.) In contrast to these scores, the Melancholic depressed patients used in Perry and Viglione (1991) scored approximately 0 on the EII. In sum, a small number of studies have lent strong support to the EII as an ego impairment measure.

The Present Study

One method for assessing the efficacy of an ego measure is to compare mean scores of groups which theoretically should differ in ego impairment. This was essentially the method used by Perry, Viglione and Braff (1992). In the present study, that method will be used again to evaluate the "Conceptual Ego Strength Index" (CESI), in an attempt to evaluate Kleiger's (1992a) theoretical model of ego-assessment. At the same time, the more seasoned Ego Impairment Index (EII) will be put to the same test. While the methods used in this study do not allow for a strong direct comparison of these two ego measures, simultaneously putting both measures to a rigorous test may provide some indirect evidence about their relative efficacy.

In the present study, subjects from three diagnostic groups will be compared on the EII and CESI. The groups will be comprised as follows: (1) DSMIII-R-diagnosed Schizophrenic and Schizoaffective inpatients, (2) DSMIII-R-diagnosed Borderline Personality Disorder inpatients, and (3) a sample of non-psychotic, non-Borderline inpatients. These three groups are assumed, based on psychoanalytic theory, to differ in their degree of ego impairment, with Schizophrenics showing the greatest impairment, Borderlines showing somewhat less impairment, and non-psychotic non-Borderline inpatients showing the least severe ego impairment.

Secondary to comparing these three samples on the CESI and the EII, the two measures will be broken down and each component will be compared in a similar manner to determine which components successfully differentiate the three groups. For the CESI, four components - Form Quality, Form Dominance, Primary Process Contents and Special Scores - will be examined. For the EII, six components will be examined, including the sum of M-, the sum of FQ-, the "Good Human Experience" (GHX) variable, the "Poor Human Experience" (PHX) variable, Primitive Contents and Special Scores.

The purposes of this study, then, are several. The primary purpose of this study is to operationalize and empirically test Kleiger's conceptual model. Empirical validation of Kleiger's conceptual model could be useful in various ways. Such validation would challenge some of the assumptions about our interpretation of form-dominated and form-secondary shading and color responses. As described above, Kleiger's model modifies the Comprehensive System interpretations of shading and color responses, depending on the form level, form quality, content and presence of Special Scores. Moreover, such validation would advance our understanding of how to assess ego functioning on the Rorschach. More broadly, if the CESI receives empirical support, it will contribute to a larger theoretical debate regarding the value of psychoanalytic reasoning in present-

day Rorschach interpretation.

A second purpose of this study is to extend previous validations of the EII. To date, the only published validations of the EII have used an outpatient depressed sample and a mixed inpatient/outpatient Schizophrenic sample; no studies (to this author's knowledge) have validated the EII on adult Borderline Personality Disorder patients. Given the psychoanalytic roots of the Borderline concept, and the direct applicability of a measure of ego functioning to the study of Borderline-level pathology, this gap in the literature is significant. Moreover, because this study will make comparisons between groups of inpatients, the subjects are likely to be somewhat more impaired than those in previous studies. Thus, the present study may better assess limits to the EII such as floor effects in more ego-impaired populations.

CHAPTER II

METHOD

Subjects

Adult psychiatric inpatients who received Rorschach testing as part of their treatment planning were selected from the records of the Psychological Assessment Service at the University of Chicago Hospital. The majority of inpatients in these records received the Rorschach Test as part of a battery of personality and cognitive measures. Subjects were assigned to groups based on their billing diagnoses -- computer-stored diagnoses that corresponded to the diagnoses assigned by inpatient treatment teams. Subjects included in the study had to be diagnosed with either Borderline Personality Disorder or some form of Schizophrenia (including Paranoid, Disorganized or Undifferentiated type, Schizoaffective or Schizophreniform Disorder) or else given a non-Borderline diagnosis in which absolutely no psychotic symptoms were evident. These subjects were then assigned to either the Schizophrenic/Schizoaffective (SCZ) group, the Borderline Personality Disorder (BPD) group, or the Non-Psychotic/Non-Borderline (NPB) group.

Additional steps were taken to ensure group membership specificity. To verify the absence of psychotic symptoms in the Non-Psychotic/Non-Borderline group, these subject's inpatient admission notes were reviewed, and subjects with any history of psychotic symptoms were excluded. To ensure that these subjects did not have borderline-level ego deficits, subjects were also excluded from the Non-Psychotic/Non-Borderline group if they had been given a diagnosis of Schizotypal Personality Disorder or Personality Disorder NOS. (While theoretically the Personality Disorder NOS category should not include patients who meet all of the criteria for Borderline Personality Disorder, in practice subjects might have received this diagnosis if they met all of the criteria for more than one DSMIII-R category. Therefore, Personality Disorder NOS patients were also excluded from the Non-Psychotic/Non-Borderline group.) Other personality disorders such as Dependent or Avoidant were admitted, however.

Procedure

All subjects were administered the Rorschach Inkblot Test by a trained psychologist or psychology intern according to the standard procedure set forth by Exner (1986), and the protocols were scored according to the Comprehensive System. After subject selection was completed according to the exclusion criteria described above, the EII

and CESI were calculated from the Rorschach Structural Summary and Sequence data for each subject, and mean EII and CESI scores calculated for each of the three groups (SCZ, BPD, and NPB).

The primary research question of this study is whether the CESI or the EII (or both) can successfully differentiate between groups assumed to differ in ego impairment. To address this, a one-way ANOVA was performed on the mean CESI scores for the Schizophrenic, Borderline and Non-Psychotic groups. A separate one-way ANOVA was performed on the mean EII scores for these three groups. If significant *F* values were found from either ANOVA, post-hoc follow-up tests would be performed to determine which diagnostic groups were successfully differentiated by either ego measure. In addition, for either measure which significantly differentiated diagnostic groups, follow-up tests would be used to determine which individual components of the CESI (Form-Domination, Form Quality, Contents, Special Scores) or the EII (SumM-, FQ-, GHX, PHX, Contents and Special Scores) were effective as independent measures of ego functioning.

Finally, if both the CESI and EII demonstrated utility as ego measures, an additional aim of this study was to assess whether an optimal combination existed of the various components of each measure. To explore this, a discriminant function analysis would be performed using the components of each measure (including the four components of the CESI and

the six components of the EII) to predict group membership. All statistical analyses were performed using the statistical package SPSS/PC+ Professional Statistics, Version 5.0 (SPSS,Inc.,1992).

CHAPTER III

RESULTS

Thirty-nine subjects qualified for membership in the NPB group. Twenty-one subjects met criteria for inclusion in the BPD group. Another 20 subjects qualified for the SCZ group. However, for three subjects (two from the NPB group and one from the SCZ group), the Form Dominance component of the CESI could not be computed because no color or shading responses were given. These subjects were excluded from the analyses, leaving group sizes of 37, 21, and 19, for the NPB, BPD, and SCZ groups, respectively.

A one-way ANOVA using the CESI (i.e., CESI1) to distinguish the three groups was highly significant, $F(2,74) = 12.62$; $p < .0001$. CESI means were 1.29, -.76, and -1.88 for the NPB, BPD, and SCZ groups, respectively. Follow-up tests revealed significant CESI score differences between the NPB and BPD groups and between groups NPB and SCZ. Follow-up tests on this and all subsequent ANOVAs used Scheffe's Procedure. Follow-up tests were performed only when the overall F value was significant; therefore, $p < .05$ was taken as the standard for significant group differences.

The Levene Test for homogeneity of variance revealed

significant group differences in variances, $F(2,74) = 4.36$, $p < .02$, indicating that an assumption of the ANOVA was not met. Therefore, these results need to be interpreted cautiously.

A second one-way ANOVA revealed highly significant group differences using the EII, $F(2,77) = 13.13$, $p < .0001$. Group means on the EII were .24, 1.53, and 2.088 for the NPB, BPD, and SCZ groups, respectively. As with the CESI, group differences were found at the .05 level between the NPB and BPD groups, and between the NPB and SCZ groups. Again, Levene's test for homogeneity of variances revealed significant group differences in intra-group variance $F(2,77) = 4.1026$, $p = .02$, indicating a violation of one assumption of the ANOVA. A visual inspection of the three group variances on a boxplot suggests that the SCZ had noticeably greater intra-group variance than the other two groups.

Tables 2 and 3 are boxplots of the CESI and EII scores, respectively, by diagnostic group. For sake of reference, table 4 presents the boxplots for CESI1 raw scores prior to being transformed into standard scores; table 5 presents the boxplots for CESI2 scores by diagnostic group. In each boxplot, the asterisk (*) identifies the median value, and the upper and lower bounds of the box represent the 75th and 25th percentile values in the distribution. The bars extending away from the box illustrate the range of scores,

including the largest and smallest values for scores which are not outliers. The term "outlier" (marked by "O" on the boxplot) refers to values that are more than 1.5 box-lengths away from either the 75th or the 25th percentiles. The term "extreme score" (marked by "E" on the boxplot) refers to values which would be more than 3 box-lengths from the 75th or the 25th percentiles.

In the next part of the analysis, the individual components of the CESI and EII were subjected to individual one-way ANOVAs, in order to identify those components which successfully differentiated groups. To compensate for the increased likelihood of a Type II error stemming from the large number of ANOVAs reported here, $p < .01$ was used as the standard for statistical significance, and $p < .05$ was taken as suggestive of a nonsignificant "trend." Using this standard, two of the four CESI components produced significant F values, with one more CESI component demonstrated a trend towards significance. Of the EII components, four of the six produced significant F values, with one additional component showed a trend towards significance. The results of these ANOVAs are presented in table 6. Table 7 lists group means for each CESI and EII component, along with significant group differences found in the follow-up tests. The CESI components are discussed first.

Form Quality discriminated groups at $p = .0003$, $F(2,77)$

= 8.84. Group means were .4076, -.1663, and -.6202, for NPB, BPD and SCZ, respectively. Follow-up tests indicated that only the NPB-SCZ difference was significant. Like the overall CESI ANOVA reported above, the Form Quality ANOVA failed to meet the homogeneity of variances assumption (p = .001).

Primary Process Contents were significant at p = .024, $F(2,77)$ = 3.9350. No two groups were significantly different. This ANOVA did not significantly violate the homogeneity of variances assumption (p = .077).

Special Scores produced a highly significant F ratio p = .0001, $F(2,77)$ = 9.9931. Group means were .4123, -.1134, and -.6849 for NPB, BPD, and SCZ, respectively. Follow-up tests showed a significant difference between groups NPB and SCZ. This ANOVA, however, violated the homogeneity of variances (p = .019).

The F value for Form Dominance was not significant; p = .4448, $F(2,74)$ = .8190. This ANOVA met the homogeneity of variances assumption (p = .386).

From the EII, SumFQ- was significant at $p < .001$, $F(2,77)$ = 7.7795. Group means for SumFQ- were 4.4615, 6.8571, and 8.4000 for NPB, BPD and SCZ, respectively. Follow-up tests indicated only the NPB-SCZ difference to be significant. This ANOVA violated the homogeneity of variances assumption at the $p < .001$ level.

WSum6 was significant at p = .002, $F(2,77)$ = 6.7345.

Group means were 16.0256, 31.7143, and 33.7000, for NPB, BPD and SCZ, respectively. Scheffe's procedure revealed both the NPB-BPD and NPB-SCZ differences to be significant at $p < .05$. This ANOVA met the assumption of homogeneity of variances ($p = .127$).

Derepressed Contents also produced a significant F value, $F(2,77) = 3.4494$, $p < .05$, although no two groups were significantly different. This test failed to meet the ANOVA assumption of homogeneity of variances ($p < .001$).

SumM- produced a significant F value, $F(2,77) = 6.5726$, $p = .0023$. Group means were .7949, 2.0000, and 2.4000 for NPB, BPD and SCZ respectively, and the NPB group was found to be significantly different from both the BPD and the SCZ group. This ANOVA also violated the homogeneity of variances assumption ($p < .001$).

Poor Human Experience was highly significant, $F(2,77) = 8.2977$, $p = .0005$, with significant differences between NPB and either the BPD or the SCZ group. Group means were -.4111, .2278, and .5624, respectively. This test also failed to meet the assumption of homogeneity of variances ($p = .044$).

Of the EII components, only Good Human Experience failed to produce a significant F value, $F(2,77) = 1.1497$, $p = .3221$. The GHX ANOVA met the homogeneity of variances assumption ($p = .295$)

As a final statistical analysis, discriminant function

analyses were used to identify optimal combinations of CESI and EII components for predicting group membership in this sample. The following four stepwise methods of inclusion were applied: The first method (MAXMINF) maximized the F value corresponding to Mahalanobis distance. The second method (MAHAL) maximized Mahalanobis distance between the two closest groups. The third method (RAO) maximized the increase in RAO's V for each stepwise inclusion. The fourth method of inclusion (WILKS) minimized the overall Wilks lambda.

Each method was attempted first using a minimum F value of 1.0, and then using $p < .01$ as the minimum standard for inclusion. Each combination of inclusion method (of the four methods) and inclusion criterion (of the two criteria) was also performed once using equal weighting for each diagnostic group, and again using weights proportional to the groups' sample sizes. Thus, a total of 16 (4 x 2 x 2) discriminant functions were performed. Table 8 lists the results of each discriminant function, including the CESI and EII variables which were included and the percentage of correct assignments to each group for that method, as well as the percentage of overall correct-group assignments made by that discriminant function.

The hit-rate (percentages of correct assignment to groups) was quite consistent across methods. The Schizophrenic/ Schizoaffective subjects were correctly

identified 50-65% of the time; the Borderline subjects were identified between 42.9% and 57.1% of the time with the better methods (although as low as 9.5% using less effective approaches); and the non-psychotic non-Borderline subjects were correctly selected between 76.9 and 87.2% of the time. Overall percentages of correct placement varied from 62.5% to 71.3%.

In general, the most effective discriminant functions (not surprisingly) were those which included the greatest number of variables (i.e., when $\underline{F} = 1.0$ was the minimum standard for inclusion). Also, the functions which assumed equal likelihood of encountering any of the three diagnostic groups tended to perform slightly better. For three of the four methods (i.e., in 12 of the 16 analyses), the variables which were included and their order of entry were remarkably consistent; Form Quality (a CESI component) was entered first, followed by Special Scores (from the CESI), followed by Poor Human Experience (PHX; an EII variable), and then by the Weighted Sum of Special Scores (WSum6; from the EII), and finally Primary Process Contents (from the CESI). All three methods which used this sequence of variables, using equal weighting for all three diagnostic groups, found overall correct-placement rates of 71.3%.

One methods of inclusion (MAXMINF) arrived at a somewhat different discriminant function from the other three. This method selected variables for inclusion by

attempting to maximize the F ratio between the two closest groups. Thus, if the SCZ and BPD groups had the closest scores (as they frequently did), this method would select variables so as to maximize the distance between these two groups. The resultant equation (using F = 1.0 as the minimal standard for inclusion) began with the variable Special Scores (from the CESI), followed by SumFQ- (from the EII), followed by WSum6 (from the EII), Primary Process Contents (from the CESI), and finally PHX (from the EII). This method produced an overall correct-classification rate of 67.5%. The rates for SCZ, BPD and NPB (respectively) were 55.0%, 47.6%, and 84.6%. Interestingly, although this method was explicitly trying to maximize the distance between the two closest groups, the obtained classification rates were essentially no better than those produced by other methods of inclusion, even for the SCZ and BPD groups. The MAHAL method, for instance, produced classification rates of 65.0%, 57.1%, and 82.1%, for groups SCZ, BPD, and NPB, respectively.

Variables not permitted into any discriminant function equation (i.e., those variables which did not produce equivalent-F values greater than 1.0) included the CESI Form Dominance variable, and the total number of responses (used in the EII equation); the EII Good Human Experience (GHX) variable produced an F ratio of only 1.1017, and thus also was not used in any equation. In addition, however,

Derepressed Contents (an EII variable) and Sum of M-minus (also a component of EII) showed substantial F ratios but were not included in any equation, presumably because these variables did not provide any new diagnostic information.

CHAPTER IV

DISCUSSION

The violations of the homogeneity-of-variance assumption call into question the validity of both the one-way ANOVAs and the discriminant function analyses. Unfortunately, heterogeneity appears to be a fact of nature for the Schizophrenic disorders; thus, the heterogeneity-of-variances problem may reflect a problem in clinical reality, as well as in method. Methodologically, this problem was probably amplified by the inclusion of Schizoaffective patients into the SCZ group; subsequent studies might benefit by comparing subtypes of schizophrenia separately.

Lending support to the validity of this study's findings, however, is the fact that most of the group differences reported here were highly significant (generally above $p < .005$), and were found consistently across both the CESI and EII, and even across individual components of these measures. Two of the four CESI components, and four of the six EII components, demonstrated highly significant differences between groups, and one additional component from each measure showed a trend towards significance in differentiating the groups. Thus, it seems unlikely that

the differences reported here are artifactual.

Thus, the results of this study seem to support the validity of both the CESI and the EII as measures of ego functioning. Both measures were remarkably successful in contrasting non-psychotic non-Borderline inpatients from Borderline Personality Disordered inpatients, as well as contrasting non-psychotic non-Borderline inpatients from a mixed group of Schizophrenic and Schizoaffective patients.

On the other hand, critics may point out that neither the CESI, the EII, nor any of their subcomponents produced significant differences between the Borderline and Schizophrenic/Schizoaffective groups. While this may be seen as evidence of a psychometric weakness of the CESI and EII, a number of findings challenge such a conclusion. First, the SCZ and BPD groups used only 19 and 21 subjects, respectively, while the NPB group included 39 subjects. Thus, the SCZ-BPD comparisons were based on fewer subjects than the other group comparisons, making any actual differences more difficult to detect between these groups. Second, it is noteworthy that for every comparison, the BPD group means were found to lie between the SCZ and NPB group means; indeed, for several of the CESI and EII components (e.g., CESI Form Quality, CESI Special Scores, and EII FQ-) the BPD mean stood virtually at the midpoint between the other two groups. Thus, while the BPD and SCZ group means were not significantly different, their correct rank order

was identified in all comparisons (100% accuracy) in the predicted direction. Thus, the absence of SCZ-BPD group differences may well be a function of the present study's limited samples sizes and limited statistical power, rather than a reflection of the psychometric properties of the CESI or EII. Additional research would help to make a conclusive statement on this issue, however.

While not given primary treatment in this study, the CESI2 made a surprisingly strong performance, given its inherent limitations. The oneway ANOVA using the CESI2 produced *F* ratios which were only slightly weaker than the CESI1, and still highly significant ($p < .0001$). For the individual components of the CESI2, the exact same pattern of significant results was obtained using $p < .05$ and $p < .01$ as the standards for "trend" and "significance," respectively. Indeed, these results suggest that future clinical research could well adopt the CESI2 formula, with apparently minimal losses in diagnostic efficacy.

Aside from upholding the claims of the EII, CESI, and CESI2 as ego measures, this study also produced evidence to support several of their individual subcomponents as useful ego indicators. Specifically, the CESI indexes of Form Quality and Special Scores proved highly significant, and the CESI Contents measure showed a trend towards significance, in differentiating patient groups. From the EII, the Form Quality-Minus, Weighted Sum of Six Special

Scores, Sum of M-Minus, and Poor Human Experience variables were all highly significant, and the EII measure of Derepressed Contents showed a trend towards significance. Most of these variables were found again in the results of the discriminant function analyses.

Of the individual variables which showed discriminatory power, the variables of Form Quality (either as measured by the CESI, or as measured in FQ-minus by the EII) and Special Scores (using either the CESI scoring method or the WSum6 used by the EII) were especially prominent; these were found for each method of inclusion as the first and second discriminating variables in each equation.

Regarding the relative efficacy of CESI versus EII subcomponents, we may note that CESI Form Quality tended to be preferred over the EII FQ-Minus variable, and CESI Special Scores was consistently entered earlier than the EII WSum6 variable. While the discriminant function analysis is not designed to make judgements about the relative merit of one discriminating variable over another, these findings give indirect evidence that, at least in the present sample, these two CESI variables discriminated these groups better than the corresponding EII variables.

On the other hand, it is remarkable that, even after Special Scores (as measured on the CESI) had been entered into the equation, another Special Scores variable (WSum6, from the EII) still offered enough <u>additional</u> discriminatory

power to be entered as well, even before the CESI Contents variable had been entered. This finding suggests that the WSum6 and Special Scores variables may actually measure different things, or at least provide distinct diagnostic information. Indeed, when we examine group means for each of these variables, we can see that WSum6 significantly differentiated NPB(16.0256) from both BPD(31.7143) and SCZ(33.7000), while CESI Special Scores significantly differentiated only NPB(.4123) from SCZ(-.6849). Note, also, that in the case of the CESI, the BPD mean(-.1134) stood almost exactly between the other two groups. It may be, that the WSum6 is most useful in "detecting" severe pathology, while the CESI Special Scores variable provide a more linear index of ego functioning.

A second way we could distinguish between these two variables is in terms of their scoring. WSum6 allows for a single response with multiple Special Scores (e.g., DR2, ALOG, INCOM) to add cumulatively to the overall ego assessment. The CESI Special Scores scoring method only counts these codes once for a given response (e.g,, the highest Special Score was level 2, so that response receives a score of -1.0). Thus it may be that the WSum6 measures lapses in thought processes as a dimension across all responses, whereas CESI Special Scores measure the proportion of responses which show such lapses. Embedded in this distinction lies an important theoretical question:

Would a response-based method, rather than a dimensional method of scoring, be a more appropriate and accurate way to measure ego functioning? This question will be taken up below, when we discuss theoretical implications of this study for Kleiger's (1992a) hypotheses. In any case, it seems fair to conclude that the Comprehensive System Special Score variables (Exner, 1986) provide highly diagnostic information about ego functioning.

Also noteworthy from the CESI and EII subcomponents was the EII Poor Human Experience variable, and to a lesser extent the CESI Contents variable. These variables were used by all four discriminant function methods, suggesting that they also provided unique diagnostic or ego-metric information which the Form Quality and Special Scores variables did not provide. The PHX in particular was entered into most of the equations even when a $p = .05$ standard for inclusion was set. This standard required this variable to contribute a <u>significant</u> increase in the discriminant power of an equation in order to be included. Thus, Perry and Viglione's (1991) PHX variable also appears to contribute unique and important information to ego-assessment.

Remarkable in its absence was the Form Dominance variable of the CESI. This variable not only failed to make a significant contribution to any discriminant function, it actually produced an <u>F</u> ratio below 1.0. This finding, taken

at face value, strongly suggests that Kleiger(1992a) was incorrect in his hypothesis about the ego-implications of form level in color and shading responses. At least when computed as a dimension across color and shading responses, Form Dominance seems to offer little new information regarding ego level. While these results are compelling, an alternative explanation will be entertained below when we examine the issue of response-versus-dimensional CESI computation.

Implications for the EII

The present study finds new support for the EII as an ego-assessment measure. Previous studies have demonstrated the EII as an effective predictor of response to tricyclic medication in an outpatient depressed sample (Perry & Viglione, 1991), and as an effective differentiator of various subtypes of schizophrenia among inpatient schizophrenics (Perry, Viglione, & Braff, 1992). To date no study has examined the EII's ability to differentiate non-psychotic non-Borderline inpatients, Borderline Personality Disorder inpatients, and Schizophrenic and Schizoaffective inpatients.

The present findings indicate that the EII can differentiate non-psychotic non-Borderline subjects from Borderline Personality Disorder subjects within an inpatient setting. Indeed, this diagnostic ability proved to be

highly significant ($p < .0001$). Moreover, while the EII as a whole provided the greatest group- differentiation, four of the six EII subcomponents also performed this task significantly, and one more subcomponent presented a trend towards significance.

In addition, the mean EII scores calculated for each diagnostic group in this study were consistent with those published in previous studies. Whereas Perry and Viglione (1991) found a mean EII score of about zero for an outpatient melancholic-depressed sample, the present study found a mean EII of 0.24 for an inpatient non-psychotic non-Borderline Personality Disorder sample. Whereas Perry, Viglione and Braff (1992) found Paranoid Schizophrenics scoring a mean of about 1.0 on the EII, and an Undifferentiated Schizophrenia sample scoring around 3.0, the present study found a combined sample of Schizophrenic (including Undifferentiated, Disorganized, Schizophreniform, Paranoid) and Schizoaffective patients with a mean EII of 2.0883, and a wide range of deviation around that score, as would be expected. In future studies, it would be useful to confirm the various scores which Perry, Viglione, and Braff (1992) found for Paranoid and for Undifferentiated Schizophrenia.

Implications for Kleiger's Hypothesis

In his conceptual critique, Kleiger(1992a)argued that

the determinants comprising EA:es needed to be viewed in terms of other features of the response--form dominance, form quality, contents, and the presence of Special Scores--in order to provide an indication of ego functioning. Kleiger took a somewhat nontraditional view towards color and shading variables in this regard, arguing that the color response did not necessarily indicate "resources available to the individual," and that the shading response should not automatically mean "impingeing affects" outside of the subject's control, but rather that these responses might indicate ego control or ego weakness depending on whether the individual modulated their affects, perceived the blot accurately, showed evidence of primary process content, and/or showed looseness or disorder in the formal qualities of their thought.

Taken at face value, the results of this study seem to support the ego-metric properties of the CESI as a whole, and also of the dimensions of Form Quality and Special Scores. The Primary Process Contents dimension shows hints of some value as well. Remarkably enough, the CESI, which was based upon an "improper linear model" (i.e., a simple summation of CESI component scores) and used only the crudest assignment of scoring weights, performed on approximately equal par with Perry & Viglione's (1991) Ego Impairment Index, which employs precise beta weights culled from multiple samples and has survived several validating

investigations. Some individual components of the CESI may even have performed slightly better than those of the EII, if we make a loose inference from the results of the discriminant function analyses. On the other hand, the present study (taken at face value) seems to provide no support for the dimension of Form Dominance, taken in isolation, as an indicator of ego control in responses with color or shading. Assuming a more critical stance, however, it is important to note that Kleiger's original hypothesis remains in some respects untested. Kleiger, we recall, maintained that the response as a whole must be evaluated in terms of these various dimensions, in order to indicate whether ego lapse has occurred. Kleiger's use of the terms "poor color response" and "poor shading response" is not insignificant here; arguably, it was each individual response, rather than the response dimensions taken abstractly, which was to be evaluated.

A potential flaw of the present study, then, is that the CESI was scored and evaluated in terms of dimensions, summed independently across all responses, rather than as a measure of "organized resources" computed by taking into account the convergence of all these dimensions within each individual response. While the scoring scheme--subtracting one point from the Form Quality score for each FQminus response, for instance--was originally intended to reflect Kleiger's emphasis on individual responses, in practice

these scores were used as dimensions computed across responses. The resultant CESI formula, critics may argue, is structurally not unlike the EII. Indeed, from this perspective, the success of the CESI might amount, in part, to its structure "mimicking" that of the EII.

Future studies need to address this important theoretical issue. As mentioned above, the present study may bear indirect support for a response-based, rather than a dimensionally-based measurement of ego. Specifically, the intriguing differences between CESI Special Scores and WSum6 might reflect a difference in the strengths of these two ego-measurement approaches. Likewise, the success of Perry and Viglione's (1991) PHX variable--which is essentially response-based--also may point to the value of a response-based approach.

TABLE 1

RAW SCORE VALUES FOR COMPUTING THE CESI

Form quality:
- FQ+, FQo ..... +1
- FQu ..... +0
- FQ- ..... -1

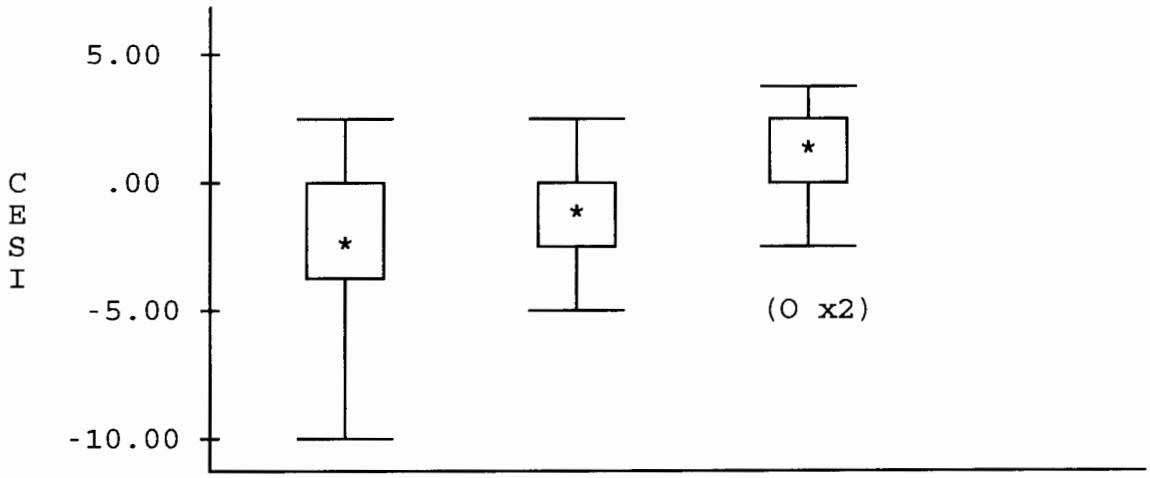
Form domination (scored only for responses with color and/or shading. In blends, the mean raw score of each color and shading determinant will be used):
- form-dominant ..... +1
- form secondary ..... +0
- formless ..... -1

Primary Process Contents (including An, Bl, Ex, Fi, Fd, Sx,Xy or AG or a MOR Special Score):
- none ..... +1
- one or more ..... -1

Special Scores:
- none ..... +1
- presence of a Lvl 1 Special Score ..... +0
- Lvl 2 Special Score, ALOG, or CONTAM ..... -1

TABLE 2

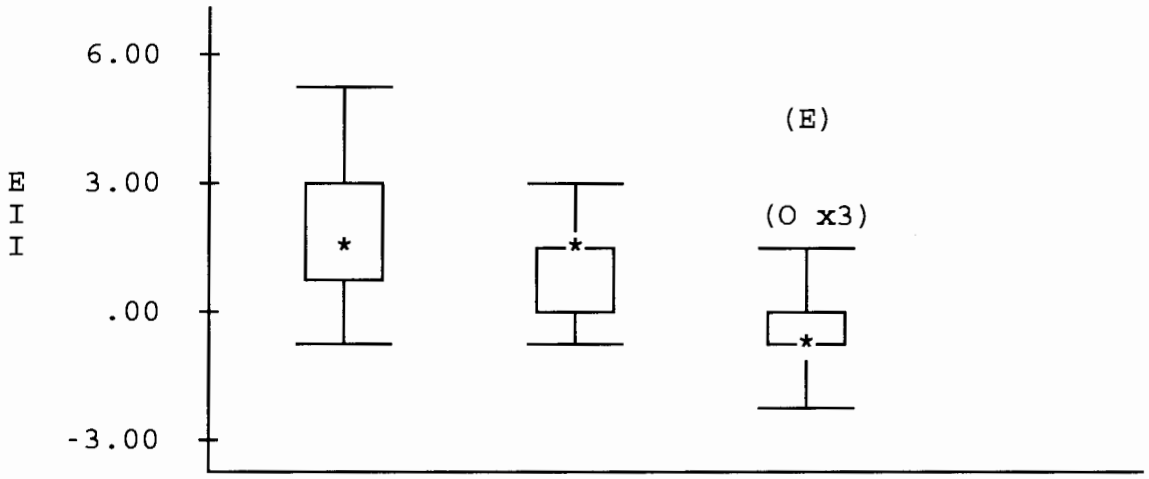
BOXPLOT OF CESI SCORES BY DIAGNOSTIC GROUP



GROUP#	SCZ	BPD	NPB
N of Cases	19.00	21.00	37.00
Symbol Key:	*Median	(O)Outlier	(E)Extreme

TABLE 3

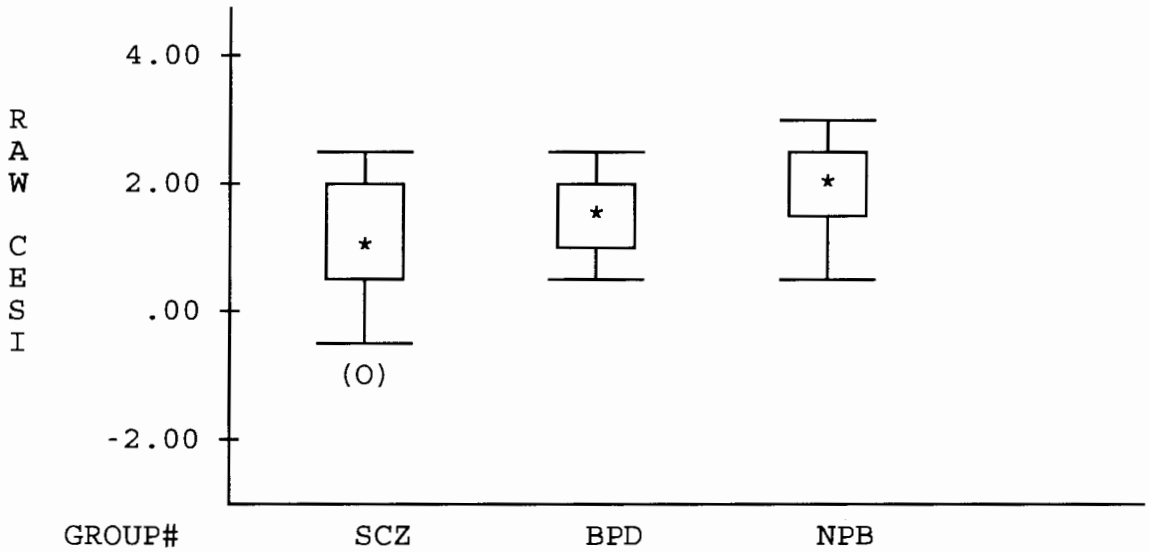
BOXPLOT OF EII SCORES BY DIAGNOSTIC GROUP



GROUP#	SCZ	BPD	NPB
N of Cases	19.00	21.00	37.00
Symbol Key:	*Median	(O)Outlier	(E)Extreme

TABLE 4

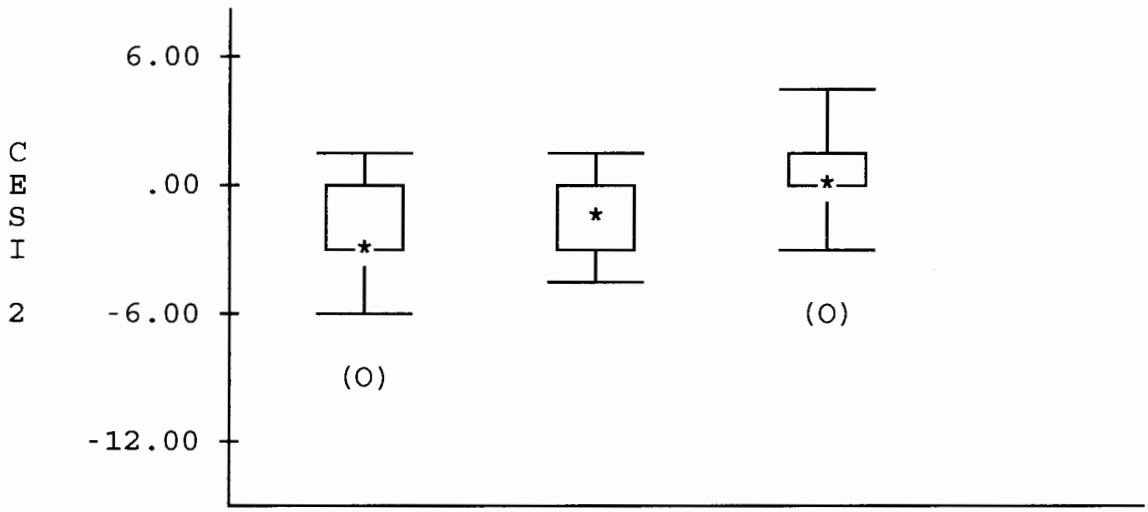
BOXPLOT OF CESI RAW (PRE-NORMALIZED) SCORES BY GROUP



GROUP#	SCZ	BPD	NPB
N of Cases	19.00	21.00	38.00
Symbol Key:	*Median	(O)Outlier	(E)Extreme

TABLE 5

BOXPLOT OF METHOD #2 CESI BY GROUP



GROUP#	SCZ	BPD	NPB
N of Cases	19.00	21.00	37.00
Symbol Key:	*Median	(O)Outlier	(E)Extreme

TABLE 6

RESULTS OF ONE-WAY ANOVAS FOR CESI, EII, AND THEIR COMPONENTS

Variable	F ratio	F probability
CESI (using all responses)	12.6236	.0000**
CESI Form Quality	8.8420	.0003**
CESI Contents	3.9350	.0236*
CESI Special Score	9.9931	.0001**
CESI Form Dominance[1]	.8190	.4448
CESI2 (used only Col, Shad, Mvmt)	11.1716	.0001**
CESI2 Form Quality	5.0225	.0089**
CESI2 Contents	3.2643	.0436*
CESI2 Special Score	10.3837	.0001**
CESI2 Form Dominance[1]	.8190	.4448
CESI raw-score method	10.6005	.0001**
EII	13.1257	.0000**
EII SumFQ-	7.7795	.0008**
EII WSum6	6.7345	.0020**
EII Derep Contents	3.4494	.0368*
EII SumM-	6.5726	.0023**
EII GHX	1.1497	.3221
EII PHX	8.2977	.0005**

*p < .05 **p < .01 [1]Used Color and Shading response only.

TABLE 7

GROUP MEANS AND FOLLOW-UP COMPARISONS FOR CESI, EII, AND THEIR COMPONENTS

Variable	NPB	BPD	SCZ	Significant Differences
CESI	1.2942	-.7641	-1.8770	NPB-BPD,NPB-SCZ
CESI Form Quality	.4076	-.1663	-.6202	NPB-SCZ
CESI Contents	.3085	-.3373	-.2474	
CESI Special Score	.4123	-.1134	-.6849	NPB-SCZ
CESI Form Dominance	.1519	-.1471	-.1333	
CESI2	1.1537	-.9423	-1.5905	NPB-BPD,NPB-SCZ
CESI2 Form Quality	.3442	-.2791	-.3782	NPB-SCZ
CESI2 Contents	.2781	-.3467	-.1781	
CESI2 Special Score	.4328	-.1694	-.6661	NPB-SCZ
CESI2 Form Dominance	.1519	-.1471	-.1333	
CESI raw-score	2.3263	1.7520	1.4472	NPB-BPD,NPB-SCZ
EII	.2426	1.5345	2.0883	NPB-BPD,NPB-SCZ
EII SumFQ-	4.4615	6.8571	8.4000	NPB-SCZ
EII WSum6	16.0256	31.7143	33.7000	NPB-BPD,NPB-SCZ
EII Derep Contents	2.6410	4.5714	5.3000	
EII SumM-	.7949	2.0000	2.4000	NPB-BPD,NPB-SCZ
EII GHX	-.0761	.2797	-.1453	
EII PHX	-.4111	.2278	.5624	NPB-BPD,NPB-SCZ

TABLE 8

RESULTS OF DISCRIMINANT FUNCTION ANALYSES
USING VARIOUS METHODS OF INCLUSION

Method	Wts	FIN/PIN	Vars Included	%SCZ	BPD	NPB	Overall
MAHAL	=	F=1.0	FormQual,SpSc, PHX,WSum6,Contents	65.0%	57.1	82.1	71.3%
MAHAL	=	p=.10	FormQual,SpSc,PHX	55.0%	42.9	76.9	62.5%
MAHAL	Size	F=1.0	FormQual,SpSc, PHX,WSum6,Contents	50.0%	47.6	87.2	67.5%
MAHAL	Size	p=.10	FormQual,SpSc,PHX	55.0%	28.6	87.2	63.8%
RAO	=	F=1.0	FormQual,SpSc, PHX,WSum6,Contents	65.0%	57.1	82.1	71.3%
RAO	=	p=.10	FormQual,SpSc,PHX	55.0%	42.9	76.9	62.5%
RAO	Size	F=1.0	FormQual,SpSc, PHX,WSum6,Contents	50.0%	47.6	87.2	67.5%
RAO	Size	p=.10	FormQual,SpSc,PHX	55.0%	28.6	87.2	63.8%
WILKS	=	F=1.0	FormQual,SpSc, PHX,WSum6,Contents	65.0%	57.1	82.1	71.3%
WILKS	=	p=.10	FormQual,SpSc,PHX	55.0%	42.9	76.9	62.5%
WILKS	Size	F=1.0	FormQual,SpSc, PHX,WSum6,Contents	50.0%	47.6	87.2	67.5%
WILKS	Size	p=.10	FormQual,SpSc,PHX	55.0%	28.6	87.2	63.8%
MAXMINF	=	F=1.0	SpSc,SumFQ-, WSum6,Contents,PHX	55.0%	47.6	84.6	67.5%
MAXMINF	=	p=.10	SpSc,SumFQ-	55.0%	42.9	79.5	63.8%
MAXMINF	Size	F=1.0	SpSc,SumFQ- WSum6,Contents,PHX	50.0%	42.9	87.2	66.3%
MAXMINF	Size	p=.10	SpSc,SumFQ-	55.0%	9.5	84.6	57.5%

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VITA

Justin David Resnick was born in Boston, Massachusettes on October 22, 1969. His parents Joel B. Resnick and Sheila Handler Resnick were fortunate in accidentally discovering his twin brother Peter in the litter. Justin grew up in Potomac, Maryland, and studied at the Mater Amoris Montessori School in Ashton, Maryland.

Mr. Resnick studied at Vassar College in Poughkeepsie, New York, beginning in September of 1987. He majored in psychology, and also spent a semester of his junior year abroad in Taiwan, R.O.C., where he completed his third year of Chinese language study. He graduated from Vassar in May, 1991, with General Honors.

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THESIS APPROVAL SHEET

The thesis submitted by Justin Resnick has been read and approved by the following committee:

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The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is, therefore, accepted in partial fulfillment of the requirements for the degree of Master of Arts.

Date	Director's Signature
4/15/94	Alan S. DeWolfe, Dir