

**DIFFERENTIAL DIAGNOSTIC FACTORS OF THE
BENDER VISUAL MOTOR GESTALT TEST**

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THE BENDER VISUAL MOTOR GESTALT TEST**

THESIS

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CHAPTER I

INTRODUCTION

Background Knowledge and Theory

The Bender Visual Motor Gestalt Test, introduced by Laretta Bender (2) in 1938, is based on the general theory of Gestalt psychology. According to Gestalt principles, perception is affected not only by the characteristics of what is being perceived, but also by the condition of the perceiving organism as a whole. The process of perception is in a constant state of flux due to the dynamic characteristics of the organism, and any change in the organism will change that organism's perception of an object or situation. Thus, a pathological state affecting the organism would tend to change the perception of a stimulus. With these principles in mind, Bender selected nine of Wertheimer's designs to be used as stimulus figures for the Bender Visual Motor Gestalt Test.

Since its introduction, the Bender Gestalt Test has become a widely used instrument in psychological testing. It is used by many clinicians and institutions as part of a battery of instruments for psychological evaluation. In general the test is regarded as a good screening device, especially in the area of organic brain pathology. However, Nadler, Fink, Shentz, and Brink (14) have indicated that when

extreme cases are removed, the validity of the Bender Gestalt Test for predicting brain damage disappears..

Paschal and Suttell (15, p.71), in developing an objective scoring method for the Bender Gestalt, concluded that the test is a measure of some aspect of ego strength. Individuals who manifest extreme deviations in their reproduction of the design are felt to be those who possess little ego strength, and are considered to be suffering from more severe pathology than those who reproduce the figures with minor deviations. Curnutt and Lewis (5) conducted an investigation designed to determine if the Bender Gestalt and the F + % factor on the Rorschach measure the same phenomenon of ego strength. Their study consisted of administering the Bender Gestalt Test and the Rorschach to twenty-five psychiatric patients of mixed diagnosis. Correlations between Bender Gestalt Z scores and F + % values on the Rorschach were not significant. It was concluded that the two factors were not measuring the same thing, and that it could not be assumed that ego strength was the primary variable measured by the Bender Gestalt. The Bender Gestalt and the F + % factor on the Rorschach may measure different functions in different groups, or even between different individuals.

The Bender Visual Motor Gestalt Test has been described as a test which is unaffected by cultural and other factors which plague many other tests. However, Peixotta (16) administered the Bender Gestalt to thirty-five persons of

seven cultural groups. The results indicated that variations in reproduction of the designs will occur between cultural groups. Investigating a different factor, the motor technique by which the test is executed, McPherson and Pepin (13) found that in their sample, performance on the Bender Gestalt was independent of motor technique. These findings were interpreted as indicating that reproduction of the Bender Gestalt figures is more influenced by covert perceptual responses than by motor technique.

Another factor which could confound diagnostic inferences made from the Bender Gestalt is that of practice. Rosenthal and Imber (18) found that simple practice alone, without concomitant clinical improvement could improve the Bender Gestalt performance of psychiatric patients. However, the learning curve for the group varied considerably from patient to patient, with some patients even reversing the direction of the learning curve. Similar results were found by Addington (1) in a test-retest study of forty-three schizophrenic patients with a period of fourteen to seventeen days between Bender Gestalt administrations. Patients reproduced the Bender Gestalt figures with fewer deviations on the second testing as measured by both Hutt's diagnostic signs and the Paschal and Suttell scoring system. These findings could be of importance in considering retest improvement as a sign of clinical improvement of the patients, as is often done.

Another capacity in which the Bender Gestalt is used is

that of an indication of the tendency toward or probability of improvement in psychiatric patients. Paschal and Suttell (15,p.82), feel that low scores on the Bender Gestalt may be related to a tendency to recover. Similar conclusions were drawn by Swensen and Paschal (19). In their study, psychiatric patients of different diagnosis were administered the Bender Gestalt. These same patients were evaluated a year later and rated as "improved" or "unimproved". Patients rated as "improved" had a lower initial score on the Bender Gestalt than those who rated as "unimproved".

Related Studies

In the process of becoming a popular psychometric instrument, the Bender Gestalt Test has given rise to considerable disagreement and debate. This disagreement has centered around the ability of the test to differentiate between psychogenic disorders. The debate as to the Bender Gestalt Test's value in differential diagnosis resulted from its use as a projective technique by some clinicians. Max L. Hutt (11, p. 53), in his analytical interpretation of Bender Gestalt protocols, assigns considerable symbolic meaning to the stimulus figures. For example, in Figure 8, he feels that the internal diamond represents a sexual (more specifically a vaginal) symbol.

Other clinicians, such as Paschal and Suttell, use a scoring procedure yielding quantitative results which are converted into Z scores. Many studies have grown out of the

controversy of systematic observation using certain diagnostic factors or signs versus objective scoring. Bowland and Deabler (4) found that both methods successfully differentiated between groups of normals, neurotics, schizophrenics, and organics significantly better than chance. Nadler et al. (14) concluded that for their group, a simple ranking was as effective as objective scoring in differentiating between psychotic and nonpsychotic. Lonstein (12) also successfully distinguished between a psychotic and nonpsychotic group, using the Paschal and Suttell scoring method.

Using both Hutt's diagnostic signs and the Paschal and Suttell scoring method, Addington (1) found the difference between means for a schizophrenic and a normal group to be significant, but not sufficiently great or reliable to allow for individual prediction. The Bender Gestalt was successful in differentiating between groups, but could not answer the question: "Is the patient psychotic?" Addington suggests the Bender Gestalt should be used as a screening device.

In a study comparing the Bender Gestalt protocols of twenty-five normals (social drinkers but non-A.A. members), Curnutt (6) found alcoholics to have higher Bender Gestalt scores, using the Paschal and Suttell method. Group means were also significantly different. Curnutt also empirically derived certain signs which were successful in differentiating between alcoholics and normals. Similar results were obtained by Robinson (17), using paretics, schizophrenics, and normals.

Results of this study indicated that the Bender Gestalt was successful in differentiating psychotic from normals, and was sensitive to cortical defect. However, overlap precluded the use of a score in differentiation of schizophrenia or organic deterioration in an individual patient.

In yet another study, Zolik (22) found significant differences between Bender Gestalt scores of delinquent, and non-delinquents, using the Pascal and Suttell scoring system. Certain scoring factors were found to be significant. The factor of asymmetry was found to be significant on designs three, five and six, as was the item of dots, dashes and circles on two of the three figures where it is scored (figures three and five). Tremor was found to be significant on two of four figures, four and seven, where it is scored. The scoreable item of second attempt, scored on all figures, was found to be significant only on figure four. The item of dashes and wavy lines was significant on figure one, and extra angles was found to be a significant item on figure seven.

In a study conducted in 1951, Hanvik (9) obtained negative results using nineteen factors as a basis of scoring Bender Gestalt Protocols. These factors consisted of characteristics such as erasing of the figure, retracing of the figure, rotation of the figure, perseveration, and changes in size. Subjects for this study comprised two groups, a neurotic group consisting of patients with a functional

backache complaint, and a normal group consisting of patients with a proven organic disease of the back. The groups were compared by judging on the basis of presence or absence of the nineteen scoring factors. Only two significant differences were found in the factors, those being erasure of figures and retracing of figures. The functional group of subjects exhibited fewer of both of these factors. All four judges combined were unable to differentiate the protocols of the two types of patients in a manner significantly different from chance.

In an attempt to separate depressed and non-depressed patients, Tucker and Spielberg (21) also found negative results. Using the Pascal and Suttell scoring system, Bender Gestalt protocols of the two groups were evaluated. The sample included psychotics, psychoneurotics and patients with a character disorder. Subjects were compared on twenty separate Bender Gestalt item scores. Of the twenty, only two, tremor and distortion, were significant at the .05 level, and none at the .01 level. It was concluded that the Bender Gestalt scored by the Pascal and Suttell method did not seem to offer clinical usefulness in detecting emotional depression for the sample studied.

In a similar study, also using psychotics, neurotics and patients with character disorders, Tamkin (20) could not differentiate between the clinical groups. For his sample, the Bender Gestalt was of dubious effectiveness in

differentiating between functional psychiatric disorders, as it failed to separate hospital patients with a functional psychosis from those hospitalized with neurosis.

It is obvious from the research in the area that the effectiveness of the Bender Gestalt in differential diagnosis is not a question on which there is total agreement. Nor is there total agreement as to what method of interpreting design reproductions is the best. Similarly, there is disagreement as to the significance and validity of scoring items and factors used in the interpretation of Bender Gestalt protocols.

The factor of rotation is felt to be of significance by both Pascal and Suttell (15) and Hutt and Brisken (10), and is used as a scorable deviation in both systems. Griffith and Taylor (7) compared the number of records of schizophrenics, neurotics and patients with character disorders in which the factor of rotation of the figure occurred. Rotation was found to have occurred in the records of twenty percent of the schizophrenic patients, and sixteen percent of the records of neurotic patients. These results led the experimenters to conclude that rotation was of diagnostic significance.

Hannah (8) attempted to show that factors other than mental pathology tend to produce abnormalities in the way Bender Gestalt designs are reproduced. It was suggested by Hannah that rotation is produced by the manner in which the

stimulus figures are presented rather than by something within the person. On Bender Gestalt cards, designs are oriented horizontally and copied by the subject on paper that has horizontal sides much shorter than the vertical sides. This requires that the person rotate the reproduction ninety degrees in order to preserve the orientation of the design on the card. It was hypothesized by Hannah that comparable populations would produce fewer rotations if the stimulus card was presented to them with the design oriented to the short edge of the cards as it normally is to the long edge. A new set of cards was constructed to meet the above requirements. Two groups of psychiatric patients were administered the Bender Gestalt, one group receiving the standard set of stimulus cards and the other receiving the experimental cards. The average number of rotations produced by the group receiving the standard set of cards was approximately three times as great as the average number of rotations produced by the group receiving the experimental cards. The results demonstrated one way in which abnormalities can be produced by the manner in which the design is oriented on the card on which it is presented.

Reviewing the literature available, Billingslea (3) concluded that the Bender Gestalt seems to discriminate between psychotic, nonpsychotic and nonpsychiatric subjects, whether objective scoring or systematic inspection is used. However, it seems that if both methods of interpretation are equally valid,

a quick inspection of the protocol for presence or absence of certain diagnostic signs or factors would be of more use than a quantitative index representing scores on a test such as the Bender Gestalt. Many clinicians use an inspection of the Rorschach rather than a laborious scoring procedure in order to save time by picking out the factors which they consider to be of diagnostic significance.

Secondly, difficulty arises in attempting to assign a particular cut-off point for determining the need for psychiatric treatment. Pascal and Suttell (15,p.35-36) set a cut-off point of sixty for distinguishing between patient and nonpatient groups. This procedure seems valuable for use in screening, but in differential diagnosis the value of a quantitative index is lessened. In addition, the conversion of test results to a quantified index using standard scores as do Pascal and Suttell is necessarily based on group information. Pascal and Suttell state: ". . . the burning question often put to psychological examiners -- 'Is he psychotic?' -- is not very well answered by a quantitative score except in extreme cases." (15,p.39)

Thirdly, clinicians must deal with individuals, not groups, which would seem to argue against quantification of scores. Also, the psychologist functioning in a clinical setting must integrate information from many sources and instruments, and again quantitative scores are of dubious value in this task.

As in any quantitative scoring procedure, the variability and reliability of the scorer is also an important extraneous variable which must be considered. Pascal and Suttell (15) provide a self teaching method for their scoring procedure, consisting of scoring a series of Bender Gestalt protocols provided in their manual. After this practice, they feel the novice should be able to score records within three to four points of their scoring. However, a total raw score variation of only one point will result in a slight but discernible change of one point in the standard score. This variation becomes very important in the many borderline cases encountered. Pascal and Suttell themselves report a variability between their scoring of from four to five points (15,p.15).

In addition, many factors used in one procedure are also used in the other. For example, Pascal and Suttell (15) list rotation and variability in angulation as do Hutt and Briskin (10). Therefore, it would seem that an inspection system would yield the same general type of factors to be considered as would an objective scoring system.

Pascal and Suttell (15,p.92) state that their system makes no attempt at psychiatric diagnosis or at relating specific deviations to diagnostic categories. They feel that in clinical practice the subject is usually a patient; thus, the need for psychiatric assistance is a "given" (15,p.77). However, clinicians are often called on for such information. Hutt and Briskin (10,p.88-91) attempt to relate specific

deviations to diagnostic classification, which if effective would seem to increase the usefulness of the Bender Gestalt in clinical practice.

Statement of Problem

It is obvious from the research studies cited that there is some dispute as to the effectiveness of the Bender Visual Motor Gestalt Test in differential diagnosis. The purpose of this study is to investigate the value of the Bender Gestalt in this area.

The primary purpose of the study is to evaluate the ability of the Bender Gestalt to differentiate between two groups of psychiatric patients. The study attempts to separate the patients on the basis of Bender Gestalt protocols scored for the presence of certain diagnostic signs listed by Hutt and Briskin (10, p. 88-91). This is done to determine whether the presence or absence of particular signs is indicative of a pathological state of schizophrenia or psychoneurosis, as proposed by Hutt and Briskin (10).

A second aspect of the study concerns itself with the ability of the Bender Gestalt to differentiate between psychiatric patients and normals. This is to be done by examining the Bender Gestalt protocols of normal subjects for the presence or absence of Hutt and Briskin's (10) diagnostic signs and comparing them to protocols of psychiatric patients which have also been scored for these signs.

Hypotheses

The Bender Gestalt has become a widely used diagnostic instrument despite the fact its usefulness in this capacity has been questioned.

If the Bender Gestalt is a useful instrument for use in differential diagnosis, and if the diagnostic signs proposed by Hutt and Briskin (10,p.88-91) are diagnostically valid, a difference in the frequency of occurrence of these signs should occur in the protocol of psychiatric patients with different diagnoses. In this case, the frequency of occurrence of these signs is an index of diagnostic categorization.

In order to study the effectiveness of the Bender Gestalt in differential diagnosis, the following hypotheses were proposed:

1. Significant differences exist between the Bender Visual Motor Gestalt Test protocols of psychiatric patients diagnosed as schizophrenic and those psychiatric patients diagnosed as psychoneurotic, on the basis of the frequency of occurrence of various diagnostic signs proposed by Hutt and Briskin (10,p.88-91).

2. Significant differences exist between the Bender Visual Motor Gestalt Test protocols of psychiatric patients and those of normal subjects in the frequency of occurrence of the diagnostic signs proposed by Hutt and Briskin (10, p.88-91).

CHAPTER BIBLIOGRAPHY

1. Addington, Milton C., "A Note on the Pascal and Suttell Scoring System of the Bender Gestalt Test," Journal of Clinical Psychology, VIII. (1952), 312-313.
2. Bender, Laretta, A Visual Motor Gestalt Test and Its Clinical Use, Research Monograph Number 3, American Orthopsychiatric Association, 1938.
3. Billingslea, Fred Y., "The Bender Gestalt: A Review and a Perspective," Psychological Bulletin, LX. (March, 1963), 233-251.
4. Bowland, John A. and Herdis L. Deabler, "A B C Diagnostic Validity Study," Journal of Clinical Psychology, XII, (1956), 82-84.
5. Curnutt, Robert H. and William B. Lewis, "The Relationship Between Z Scores on the Bender Gestalt and F % on the Rorschach," Journal of Clinical Psychology, X. (1954), 96-97.
6. _____, "The Use of the Bender Gestalt With an Alcoholic and Non-Alcoholic Population," Journal of Clinical Psychology, IX, (1953), 287-290.
7. Griffith, Richard M. and Vivian H. Taylor, "Incidence of B-G Figure Rotations," Journal of Consulting Psychology, XXIV, (February, 1960), 189-190.
8. Hannah, Lewis D., "Causative Factors in the Production of Rotation on the G-B Designs," Journal of Consulting Psychology, XXII, (May, 1958), 398-399.
9. Hanivk, Leo J., "Note on the Limitations of the Use of the Bender Gestalt Test as a Diagnostic Aid in Patients With a Functional Complaint," Journal of Clinical Psychology, VII, (1951), 194.
10. Hutt, Max L. and G. J. Briskin, The Clinical Use of the Revised Bender Gestalt Test, New York, Grune and Stratton, 1960.

11. _____, The Prediction of Overt Behavior Through the Use of Projective Techniques, edited by Molly Harrower, Springfield, Illinois, Charles C. Thomas Co., 1960.
12. Lonstein, Murry, "A Validation Study of a Bender Gestalt Scoring System," Journal of Consulting Psychology, XVIII, (1954), 377-379.
13. McPherson, Marian W. and Loretta A. Pepin, "Consistency of Reproductions of Bender Gestalt Designs," Journal of Clinical Psychology, XI, (1955), 163-166.
14. Nadler, Eugene B. and Others, "Objective Scoring Vs Clinical Evaluation of the Bender Gestalt," Journal of Clinical Psychology, XV, (1959), 39-41.
15. Pascal, Gerald R. and Barbara J. Suttell, The Bender Gestalt Test, New York, Grune and Stratton, 1951.
16. Peixrotta, H. E., "The Bender Gestalt Motor Test as a Culture Free Test of Personality," Journal of Clinical Psychology, X, (1954), 369-372.
17. Robinson, Nancy M., "Bender Gestalt Performance of Schizophrenics and Paretics," Journal of Clinical Psychology, IX, (1953), 291-293.
18. Rosenthal, David and Stanley D. Imber, "The Effects of Mephenesin and Practice on the Bender Gestalt Performance of Psychiatric Outpatients," Journal of Clinical Psychology, XI, (1955), 90-92.
19. Swensen, C. H. and G. R. Pascal, "A Note on the Bender Gestalt Test as a Prognostic Indicator in Mental Illness," Journal of Clinical Psychology, IV, (1953), 398.
20. Tamkin, Arthur S., "The Effectiveness of the Bender Gestalt Test in Differential Diagnosis," Journal of Consulting Psychology, XXI, (1957), 355-357.
21. Tucker, John E. and Mimi J. Spielberg, "Bender Gestalt Test Correlates of Emotional Depression," Journal of Consulting Psychology, XXII, (January, 1958), 56.
22. Zolik, Edwin S., "A Comparison of the Bender Gestalt Reproductions of Delinquents and Non-Delinquents," Journal of Clinical Psychology, XIV, (1958), 24-26.

CHAPTER II

METHODOLOGY

Subjects

Two groups of subjects, clinical and normal, were used in this study. The normal group was composed of thirty-nine students enrolled in freshman or sophomore psychology courses at North Texas State University. The group consisted of twenty-one males and eighteen females. The age range for subjects in this group was from eighteen to forty-seven years, with a mean age of 21.5.

The clinical group consisted of thirty-seven patients at the Wichita Falls State Hospital, Wichita Falls, Texas. These patients were diagnosed as either schizophrenic or psychoneurotic by a hospital staff. The schizophrenic group consisted of twenty-two patients diagnosed as simple, catatonic, paranoid, and chronic undifferentiated schizophrenics. The psychoneurotic patients were diagnosed as obsessive compulsive, conversion reaction, mixed, depressive, or hysterical psychoneurosis. Ages for the clinical group ranged from fifteen to forty-nine, with a mean age of 28.1. Fourteen males and twenty-three females made up the group. Education of the group ranged from the ninth grade to the bachelor's degree, with a mean education of 11.7 years.

Instruments and Measures

The instrument used in this investigation was the Bender Visual Motor Gestalt Test described in CHAPTER ONE. The instrument consists of nine stimulus designs which are presented to the subject for him to copy. This is usually done on a plain white sheet of paper 8 1/2 by 11 inches. The designs are presented one at a time in a specific order. The test was the standard revised form of the original test published in 1938 by Lauretta Bender (1). Only designs one through eight were scored.

The Bender Gestalt protocols were used on twelve factors which are felt to be of diagnostic significance by Hutt and Briskin (3,p.88-91). A summary of these diagnostic signs is presented below:

1. Position of the First Drawing

Any placement of figure A other than the following is atypical: (1) in a rectangular area 1 inch from left margin and top of page extending to 1 inch from the right margin and then down two inches; (2) the upper left-hand corner of the page.

2. Use of Space I
a. excessive

Space between 2 drawings is more than 1/2 of the corresponding axis of either figure.

b. constricted

Space between 2 drawings is less than 1/4 of the corresponding axis of either figure.

c. normal

Less space than a but more than b.

- | | |
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| 3. Collision | A figure actually running into one or more figures. |
| 4. Use of Margin | Placing 7 or more figures within 1/4 inch of the margin. |
| 5. Isolated Increase or Decrease in Size
(Dilation or Cohesion) | An increase or decrease, in size of a figure, of at least 1/4 of the corresponding axis in the stimulus, by 1/4 more or less of the dimensions used in the rest of the figure, or by 1/4 more or less of the dimensions used in the preceding or subsequent drawing. |
| 6. Closure Difficulty | Gaps, overworking, erasures, increased pressure at points where parts of the design join one another. |
| 7. Crossing Difficulty | Redrawing, sketching, erasures, increase of pressure at the point of line crossings in any figure. |
| 8. Curvature Difficulty | Any changes in the curves in a figure, such as increased amplitude, spiking, flattening, irregularity, changes in size. |
| 9. Change in Angulation | Any change of more than 5 degrees in the reproduction of an angle. |
| a. increased | Increased acuity. |
| b. decreased | Decreased acuity. |
| 10. Rotation | Rotation of the major axis of a figure. |
| a. mild | 5 to 15 degrees |
| b. moderate | 15 to 80 degrees |
| c. severe | 80 to 180 degrees |

- | | |
|-----------------------------|---|
| 11. Fragmentation | Reproduction of a figure by breaking it into parts or reproducing an incomplete figure. |
| 12. Elaboration or Doodling | Adding to the original Gestalt by elaboration or doodling. |

These factors are taken from those which Hutt and Brislin feel are essential for diagnostic classification. They state: ". . .the presence of five or more of the phenomena in the essential group is sufficient to merit the diagnostic categorization of that group." (3,p.88). However, for this study the frequency of occurrence for each factor in each diagnostic group will not be required to meet the criterion stated above. This is necessary because not all of these essential factors were scored. The factors which were scored were those which were distinguishable by simple inspection, in keeping with the purpose of the study, which was to determine whether these evident factors will be useful in differential diagnosis.

Procedure

The procedures for administration of the Bender Gestalt to the two groups were not identical, for the normal group was administered the Bender Gestalt designs in a group situation. This procedure involved projecting the Bender Gestalt cards on a white screen in a darkened room by using an opaque projector. No limit was placed on the time each design was exposed to the subjects. The designs were presented in order, one through eight, and subjects were given ample time to reproduce each

design. The designs were to be copied on a sheet of plain white 8 1/2 by 11 inch paper. Paper and pencil for reproducing the designs were provided. Standard instructions for administering the Bender Gestalt Test were followed. Subjects were volunteers and were told nothing about the nature of the study being conducted. The procedure of administering the Bender Gestalt Test in a group testing situation was used to conserve time, for Bowland and Deabler (2) found the technique of administration to have no effect on test performance.

The Bender Gestalt Test protocol for each subject was examined for the presence of the twelve diagnostic factors listed above. Frequencies of occurrence were recorded and tabulated for the group.

The Bender Gestalt Test protocols for the clinical group were obtained from the files of patients at the Wichita Falls State Hospital, Wichita Falls, Texas. These protocols were produced by the patients during regular testing at the hospital, in which the Bender Gestalt Test was a part of the test battery administered there for evaluation and diagnostic purposes. Although the tests were administered by various members of the regular staff at the hospital, it was assumed that the examiner did not influence the test performance. In cases where more than one protocol was available for a patient, the earliest administered record was used. Psychiatric diagnosis for each patient was obtained from the files, and subjects were placed either in the neurotic or schizophrenic group according to

that diagnosis. Each protocol was then scored for the same factors as were those in the normal group, and the frequencies for each factor were recorded.

The statistical procedure for the study was a two by twelve chi square design. Two chi square tables were constructed to test the two hypotheses proposed. The first was constructed to test the relationship between diagnostic classification of neurotic or psychotic, and twelve diagnostic signs. The second table was to test the relationship between these same signs and classification of normal or abnormal, using the psychotic and neurotic groups combined to form the abnormal or psychiatric patient group. The .05 level of significance was required for rejection of the null hypothesis.

CHAPTER BIBLIOGRAPHY

1. Bender, Lauretta, A Visual Motor Gestalt Test and Its Clinical Use, Research Monograph Number 3, American Orthopsychiatric Association, 1938.
2. Bowland, John A. and Herdis L. Deabler, "A B C Diagnostic Validity Study, Journal of Clinical Psychology, XII (1956), 82-84.
3. Hutt, Max L. and G. J. Briskin, The Clinical Use of the Revised Bender Gestalt Test, New York, Grune and Stratton, 1960.

CHAPTER III

RESULTS AND DISCUSSION

In order to test two hypotheses concerned with the effectiveness of the Bender Visual Motor Gestalt Test in differential diagnosis, two preliminary chi square distributions were constructed. After preliminary construction of two chi square tables, the expected frequencies for four scoring factors were not sufficiently large for use in statistical treatment. Consequently, these four factors were omitted from the design, resulting in a two by eight chi square design. The factors omitted were collision, use of margin, fragmentation, and elaboration or doodling.

The first chi square distribution computed was designed to test the hypothesis that the Bender Gestalt Test could distinguish between normal and clinical groups. The analysis yielded a chi square value of 18.56, which with seven degrees of freedom yields a significance level of less than .01. This value is sufficient to reject the null hypothesis. This finding indicated that significant differences do exist between Bender Gestalt records of normals and psychiatric patients on the eight scoring factors used in the study.

A second chi square distribution was computed to test the second hypothesis, which stated that significant differences exist between the neurotic and schizophrenic subgroups of the

clinical group, on the frequency of occurrence of the eight scoring factors. The chi square value obtained was 4.09, which was not significant at the required level. For this group, the Bender Gestalt failed to separate between neurotic and psychotic patients.

As a result of the negative findings derived from testing the second hypothesis, two additional chi square distributions were computed. These were constructed to determine if differences exist between normals and patients in the two subgroups of the clinical group on the basis of the eight scoring factors used.

The first of these two additional distributions composed the normal group and the psychotic subgroup of the clinical group. This comparison yielded a chi square value of 14.87, which, with seven degrees of freedom, was significant beyond the .05 level. This difference was great enough to warrant rejection of the null hypothesis. The significant difference obtained indicates that the Bender Gestalt was able to successfully differentiate between normals and psychotics.

Using the same two by eight chi square design, a chi square value of 10.33 was obtained by comparing the normal group and the neurotic subgroup of the clinical group. This chi square value was not significant at the necessary level established for this study. For this sample the Bender Gestalt, scored for eight diagnostic signs, could not differentiate between normal and neurotic subjects significantly

better than chance. The results support the hypothesized relationship between frequency of occurrence of the scoring factors and the diagnostic classification of the two groups.

Statistical treatment of the data indicate that the Bender Gestalt Test scored for eight diagnostic signs or deviations, was successful in differentiating between normal subjects and psychiatric patients as a group. Therefore, it would seem that the Bender Gestalt scored for the following diagnostic signs is a useful instrument for diagnostic use:

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|---|--|
| <p>1. Position of the First Drawing</p> | <p>Any placement of figure A other than the following is atypical: (1) in a rectangular area 1 inch from left margin and top of page extending to 1 inch from the right margin and then down 2 inches; (2) the upper left-hand corner of the page.</p> |
| <p>2. Use of Space I</p> <p>a. excessive</p> <p>b. constricted</p> <p>c. normal</p> | <p>Space between 2 drawings is more than 1/2 of the corresponding axis of either figure.</p> <p>Space between 2 drawings is less than 1/4 of the corresponding axis of either figure.</p> <p>Less space than a but more than b.</p> |
| <p>3. Isolated Increase or Decrease in Size (Dilation or Cohesion)</p> | <p>An increase or decrease in size of a figure, of at least 1/4 of the corresponding axis in the stimulus, by 1/4 more or less of the dimensions used in the rest of the figure, or by 1/4 more or less of the</p> |

- dimensions used in the preceding or subsequent drawing.
- | | |
|-------------------------|---|
| 4. Closure Difficulty | Gaps, overworking, erasures, increased pressure at points where parts of the design join on another. |
| 5. Crossing Difficulty | Redrawing, sketching, erasures, increase of pressure at the point of line crossings in any figure. |
| 6. Curvature Difficulty | Any changes in the curves in a figure, such as increased amplitude, spiking, flattening, irregularity, changes in size. |
| 7. Change in Angulation | Any change of more than 5 degrees in the reproduction of an angle.
Increased acuity.
Decreased acuity. |
| 8. Rotation | Rotation of the major axis of a figure. |
| a. mild | 5 to 15 degrees |
| b. moderate | 15 to 80 degrees |
| c. severe | 80 to 180 degrees |

The chi square values derived to test the second hypothesis were not significant at the level required for this study. The hypothesis stated that significant differences would exist between a group of neurotic patients and a group of schizophrenic patients on the basis of certain diagnostic signs. The rejection of this hypothesis is interpreted as indicating that for the sample studied, the Bender Gestalt scored for the factors used in this study, was not effective in differentiating between a neurotic and a psychotic group significantly better than chance.

After computation of two additional chi square values, the ability of the Bender Gestalt to separate individuals according to diagnostic group could be examined more closely. The results of this procedure indicated that the Bender Gestalt was successful in differentiating between a group of normal subjects and a group of schizophrenic subjects. Thus, on the basis of the scoring factors used in this investigation, the Bender Gestalt seems to be sensitive to severe psychogenic pathology. However, this ability did not hold true when the Bender Gestalt was required to differentiate between a normal group and a neurotic group. These findings indicate that performance on the scored categories of the Bender Gestalt does not seem to be a sensitive indicator of the less severe pathology of psychoneurosis. Differences observed between the normal and clinical groups, therefore, would seem to be due to the psychotic patients included in the clinical group.

The negative results obtained in the attempt to differentiate between neurotic and psychotic groups may have occurred for several reasons. First, the scoring factors used in this study may not have been sensitive enough for psychoneurotic disorders. Use of finer measures to determine the presence or absence of deviations could increase the frequency of scoring of some deviations. Also, some factors which were not scored seem to be significant. For example,

numbering of the figures by the subject was found to occur often in the neurotic group and also in the records of normal subjects, who also produced several of the other scoring factors. The inclusion of additional signs which occur frequently could increase the differential diagnostic ability of the test.

In addition, all of the diagnostic signs proposed by Hutt and Briskin (3) were not used. Out of their list of twenty-five, twelve signs were chosen for this study, and four of these were discarded in order to statistically treat the data.

Another consideration concerns the use of all eight factors for scoring the protocols of all groups. Hutt and Briskin (3,p.88), list certain factors or signs as related to particular diagnostic categories. The two diagnostic categories and the factors used for scoring in this investigation are presented below in the manner in which Hutt and Briskin feel they are related.

A. Classical or Essential Psychoneurosis

- a. Space: either excessive or constricted.
- b. Closure difficulty: especially if present on two or more figures.
- c. Crossing difficulty: figures 6 and 7.
- d. Curvature difficulty.
- e. Angulation difficulty.
- f. Rotation difficulty: mild (especially with depressives).

B. Schizophrenia

- a. Placement, first figure in abnormal position.
- b. Space: very uneven use of space.
- c. Angulation: if severe.
- d. Rotation: severe.
- e. Cohesion or isolated decrease in lateral size.

In a strict test of Hutt and Briskin's system all eight factors would not have been scored on protocols for all groups. However, this study was designed to test the ability of certain selected factors proposed by Hutt and Briskin as being of diagnostic significance, rather than to test a particular scoring system or to attempt to relate specific deviations to particular diagnostic categories.

The results obtained in this study tend to support other studies such as that conducted by Tucker and Spielberg (7), where the Bender Gestalt was unable to separate depressed from non-depressed patients. Similarly, Tamkin (6) was unable to differentiate between a psychotic and neurotic group. The failure of the Bender Gestalt to separate a neurotic and psychotic group in this study also supports the findings of a study by Hanvik (2).

These findings conflict with those of Bowland and Beabler (1). In their study, they were successful in differentiating between psychotics, neurotics, and normals. Robinson (5) was also able to successfully differentiate between schizophrenic, parietic, and normal groups, and using the Pascal and Suttell scoring method, Lonstein (4) was successful in separating psychotic and nonpsychotic groups.

A conclusion concerning the theoretical assumptions of the Bender Gestalt Test as used in this study can also be made. The theoretical foundation for the Bender Gestalt maintains that mental illness or pathology of an individual will affect the

visual motor perception of that person. The results of this study cast some doubt as to the extent to which this assumption is valid. As measured by the eight scoring factors used in this study, the severity of the pathology seems to be a very important variable in the quality of the Bender Gestalt reproductions. Psychotic patients were successfully differentiated from normals, and a group of psychiatric patients was separated from a group of normals, which was interpreted as being a result of the presence of psychotic patients in the group. Therefore, this part of the results of the study supports the theory behind the Bender Gestalt Test.

However, this was not the case when the Bender Gestalt was required to separate a group of psychotics from a group of neurotics, and when an attempt was made to separate a group of neurotics from a group of normals. The failure of the Bender Gestalt in these tasks indicates that the test, as scored in this study, is not sensitive to less severe forms of pathology. It seems that these forms of pathology do not produce the severe disruptions of the individual's visual motor perception as do more severe forms of mental illness.

The inability of the Bender Gestalt to make the fine distinction between neurotics and normals may be due to the rather coarse nature of the scoring factors used in this study. There seems to be need for development of scoring factors fine enough to be sensitive to the less severe forms of mental pathology and still remain evident enough to be observed by a system of inspection.

CHAPTER BIBLIOGRAPHY

1. Bowland, John A. and Herdis L. Deabler, "A B C Diagnostic Validity Study," Journal of Clinical Psychology, XII, (1956), 82-84.
2. Hanvik, Leo J., "A Note on the Limitations of the Use of the Bender Gestalt Test as a Diagnostic Aid in Patients With a Functional Complaint," Journal of Clinical Psychology, VII, (1951), 194.
3. Hutt, Max L. and G. J. Briskin, The Clinical Use of the Revised Bender Gestalt Test, New York, Grune and Stratton, 1960.
4. Lonstein, Murry, "A Validation Study of a Bender Gestalt Scoring System," Journal of Consulting Psychology, XVIII, (1954), 377-379.
5. Robinson, Nancy M., "Bender Gestalt Performance of Schizophrenics and Paretics," Journal of Clinical Psychology, IX, (1953), 291-293.
6. Tankin, Arthur S., "The Effectiveness of the Bender Gestalt Test in Differential Diagnosis," Journal of Consulting Psychology, XXI, (1957), 355-357.
7. Tucker, John E. and Mimi J. Spielberg, "Bender Gestalt Test Correlated of Emotional Depression," Journal of Consulting Psychology, XXII, (January, 1958), 56.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The problem of this study was to determine the effectiveness of the Bender Visual Motor Gestalt Test in differential diagnosis, on the basis of eight diagnostic signs. Differences between groups were tested using a two by eight chi square design.

Thirty-nine students enrolled in freshman or sophomore psychology courses at North Texas State University were administered the Bender Gestalt Test in a group testing situation. Bender Gestalt protocols of a clinical group composed of fifteen neurotics and twenty-two schizophrenic patients at Wichita Falls State Hospital were compared to those of the normal group on the basis of eight diagnostic factors listed by Hutt and Briskin (1).

The first hypothesis stated: Significant differences exist between the Bender Visual Motor Gestalt Test protocols of psychiatric patients diagnosed as schizophrenic and those psychiatric patients diagnosed as psychoneurotic, on the basis of the frequency of occurrence of various diagnostic signs proposed by Hutt and Briskin (1, pp. 88-91).

This hypothesis was not confirmed by the data. The chi square value obtained was not great enough to yield a significance level which could meet the requirements set for this

study. It can be concluded that for the sample studied, the Bender Gestalt was not effective in separating neurotic patients from psychotic patients.

In order to further delineate the differential diagnostic ability of the Bender Gestalt, two additional relationships were investigated, and chi square values computed for each. The first of these was designed to determine whether or not the Bender Gestalt could differentiate between a normal group and a psychotic group composed of schizophrenic patients. In this undertaking the Bender Gestalt was successful in differentiating between the two groups. However, in the second of the two secondary relationships studied, the Bender Gestalt could not differentiate between a neurotic and a normal group significantly better than chance.

The second hypothesis stated: Significant differences exist between the Bender Visual Motor Gestalt Test protocols of psychiatric patients and those of normal subjects in the frequency of occurrence of certain diagnostic signs proposed by Hutt and Briskin (1, pp.88-91).

The chi square value derived from testing this hypothesis was found to be significant at better than the .01 level. This high level of significance warrants the acceptance of this hypothesis. It can be concluded that the Bender Gestalt was successful in differentiating normal subjects from psychiatric patients.

The conclusion can be made from the data obtained in this study that the Bender Gestalt Test is a useful and effective psychological instrument in distinguishing between normal subjects and psychiatric patients as a group. The Bender Gestalt, scored for the presence or absence of eight diagnostic signs proposed by Hutt and Briskin (1) was also effective in differentiating between normals and psychotics. However, this effectiveness was not maintained in an attempt to separate psychotics from neurotics and normals from neurotics.

The results obtained from this study would seem to give support to those who feel the Bender Gestalt is a valuable screening device, but of dubious value as an instrument for use in differential diagnosis. The scoring factors used in this study seem to be sensitive to the more severe forms of mental pathology, but rather insensitive to the less severe illness of psychoneurosis.

The conclusions based on findings of this study seem to indicate that in situations where individuals are to be screened to establish a general level of mental health, the Bender Gestalt is a useful instrument. This would also seem to be the case in a situation requiring a dichotomy between normal and severe pathology. However, in a situation where a fine distinction is to be made between an emotionally stable and emotionally unstable or neurotic condition, the Bender Gestalt's value is diminished. Also, in instances where differential diagnosis as to neurosis or psychosis is required, the Bender Gestalt would seem to be of

dubious value as scored by the eight diagnostic signs used in this investigation.

Several recommendations can be made that could result in a change in the findings of this study. First, the use of a large sample would increase the chance for more of the scoring factors to occur, especially in the clinical group. This change would be even more desirable if the two subgroups of the clinical group were equal in size to the normal group. In this study, the size of the neurotic group and the schizophrenic group were not equal to that of the normal group. This could be an important factor in the inability of the Bender Gestalt to separate normals from neurotics.

The use of more scoring factors could also increase the Bender Gestalt's effectiveness in separating groups of different diagnostic classification. An increase in the number of factors will increase the variety of deviations scored. In this way, a wider view of the individuals visual and motor perception can be observed.

In addition, a systematic attempt to relate specific deviations observed on Bender Gestalt reproductions to particular diagnostic categories would add valuable knowledge for diagnostic use of the Bender Gestalt.

CHAPTER BIBLIOGRAPHY

1. Nutt, Max L. and G. J. Briskin, The Clinical Use of the Revised Bender Gestalt Test. New York, Grune and Stratton, 1960.

BIBLIOGRAPHY

Books

Bender, Lauretta, A Visual Motor Gestalt Test and Its Clinical Use, Research Monograph Number 3, American Orthopsychiatric Association, 1938.

Hutt, Max L. and G. J. Briskin, The Clinical Use of the Revised Bender Gestalt Test, New York, Grune and Stratton, 1960.

The Prediction of Overt Behavior Through the Use of Projective Techniques, edited by Molly Harrower, Springfield, Illinois, Charles C. Thomas Co., 1960.

McNemar, Quinn, Psychological Statistics, New York, John Wiley and Sons Inc., 1962.

Pascal, Gerald R. and Barbara J. Suttell, The Bender Gestalt Test, New York, Grune and Stratton, 1951.

Articles

Addington, Milton C., "A Note on the Pascal and Suttell Scoring System of the Bender Gestalt Test," Journal of Clinical Psychology, VIII, (1952), 312-313.

Billingslea, Fred Y., "The Bender Gestalt: A Review and a Perspective," Psychological Bulletin, LX (March, 1963), 233-251.

Bowland, John A. and Herdis L. Dabler, "A B C Diagnostic Validity Study," Journal of Clinical Psychology, XII, (1956), 82-84.

Curutt, Robert H. and William B. Lewis, "The Relationship Between Z Scores on the Bender Gestalt and F + % on the Rorschach," Journal of Clinical Psychology, X, (1954), 96-97.

"The Use of the Bender Gestalt With an Alcoholic and Non-Alcoholic Population," Journal of Clinical Psychology, IX, (1953), 287-290.

- Griffith, Richard M. and Vivian H. Taylor, "Incidence of B-G Figure Rotations," Journal of Consulting Psychology, XXIV, (February, 1960), 189-190.
- Hannah, Lewis D., "Causative Factors in the Production of Rotation on the B-G Designs," Journal of Consulting Psychology, XXII, (May, 1958), 398-399.
- Hanvik, Leo J., "A Note on the Limitations of the Use of the Bender Gestalt Test as a Diagnostic Aid in Patients With a Functional Complaint," Journal of Clinical Psychology, VII, (1951), 194.
- Lonstein, Murry, "A Validation Study of a Bender-Gestalt Scoring System," Journal of Consulting Psychology, XVIII, (1954), 377-379.
- McPherson, Marian W. and Loretta A. Pepin, "Consistency of Reproductions of Bender Gestalt Designs", Journal of Clinical Psychology, XI, (1955), 163-166.
- Nadler, Eugene B. and Others, "Objective Scoring Vs Clinical Evaluation of the Bender Gestalt," Journal of Clinical Psychology, XV, (1959), 39-41.
- Perixotta, H. E., "The Bender Gestalt Motor Test as a Culture Free Test of Personality," Journal of Clinical Psychology, X, (1954), 369-372.
- Robinson, Nancy M., "Bender Gestalt Performance of Schizophrenics and Paretics," Journal of Clinical Psychology, IX, (1953), 291-293.
- Rosenthal, David and Stanley D. Imber, "The Effects of Mephenesin and Practice On the Bender Gestalt Performance of Psychiatric Outpatients," Journal of Clinical Psychology, XI, (1955), 90-92.
- Swensen, C. H. and G. R. Pascal, "A Note on the Bender Gestalt Test as a Prognostic Indicator in Mental Illness," Journal of Clinical Psychology, IX, (1953), 398.
- Tamkin, Arthur S., "The Effectiveness of the Bender Gestalt Test in Differential Diagnosis," Journal of Consulting Psychology, XXI, (1957), 355-357.

Tucker, John E. and Mimi J. Spielberg, "Bender Gestalt Test Correlates of Emotional Depression," Journal of Consulting Psychology, XXII, (January, 1958), 56.

Zolik, Edwin S., "A Comparison of the Bender Gestalt Reproductions of Delinquents and Non-Delinquents," Journal of Clinical Psychology, XIV, (1958), 24-26.