THE VALIDITY OF THE BENDER-GESTALT TEST

IN MAKING A DIAGNOSTIC CONCLUSION

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THESIS

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CHAPTER I

INTRODUCTION: BACKGROUND KNOWLEDGE

The clinical psychologist is ever searching for a psychometric instrument which will enable him to predict, with a fair degree of certainty, the future behavior of individuals and groups. So far such an instrument has not been found, although many efforts have been directed toward achieving just such an instrument.

The clinical psychologist is often called upon to decide whether or not a subject is manifesting psychotic thinking or bordering on such a condition, and to place him in one of the diagnostic categories so that treatment of some kind may be started.

The clinical psychologist has at his disposal many different types of tests ranging from simple aptitude tests to involved projective instruments that help him to make a diagnosis.

The first personality test to be based upon visual motor methods was developed by Bender (3) who used figures first suggested by Wertheimer (9). Her use of these figures as a test procedure was based upon extensive research into the ability of children and adults with various personality disorders to reproduce these figures. Bender used both

full exposure and tachistoscopic exposure during her experiments.

The evaluation of the drawings was made on the basis of the movements involved, the perceptions implied by the figures drawn, the characteristics of the drawings themselves and associated behavior.

The Bender-Gestalt test has enjoyed wide usage, however, until recently, there have been few attempts at quantification. Bender has made an attempt but little has been done with her suggestive approach (3). Hutt, on the other hand, has set up several factors which, according to him, differentiate between the records of psychoneurotics and normals (7). Billingslea has attempted an objective approach with respect to measurement, but he found little validity when comparing normal and psychoneurotic records (5).

The test has considerable literature with respect to its use as a repetitive visual-motor test. This literature is systematically reviewed by Bender (3) and Billingslea (5), and will not be considered in great detail here. Very little published literature is available, however, about the use of the test as a diagnostic clinical instrument. Bender (3) illustrates the kind of reproductions obtained from patients of various categories, but she does not, in any great detail, discuss the drawings of adults with psychogenic disorders.

Until recently, all attempts at quantification have either been impractical or lacked validity. This has led

Pascal and Suttell (8) to a systematic study of the Bender-Gestalt test.

After two years of study and the administration of hundreds of Bender-Gestalt tests, Pascal and Suttell devised a scoring procedure accompanied by a standardization which appears to be reasonably reliable and valid. Following is a short discussion of the scoring procedure for the Bender-Gestalt test.

For each design there are various scoring determinants which have different weighted values. The weighting of the scores obtained is based upon empirical evidence obtained from normal and psychotic subjects. Thus if a large number of psychotic patients converted dots to circles a higher weighting was assigned to the psychotic reproduction. For example, on design five, if the subject converts the dots to circles he is scored eight points. If, however, he converts the dots to dashes he is scored two points. On design seven the subject is scored three points for failure to connect lines, and scored one point for extra lines.

In discussing reliability, the investigators speak of test reliability and scorer reliability. In regard to the latter, they state the following:

> On the basis of three different studies of scorer reliability involving three different pairs of scorers we believe that a reliability coefficient of .90 represents a fair estimate of the scorer reliability which can be attained with practice.

> Although as a reliability coefficient, per se, it is nothing, we suggest that it indicates a remarkable consistency of individual adjustment. The reliability coefficient we found was .65. As users of the test we have not been primarily concerned with test reliability as long as validity has been maintained. We do not, in reproducing these data on reliability, feel that we have arrived at an accurate estimate of the reliability of the test.
>
> Test re-test reliability decreased with an increasing time interval between test and re-test. As an extreme in time interval we re-tested 23 normal subjects after 18 months correlated their scores and obtained a reliability coefficient of .63 (8, pp. 15-16).

Pascal and Suttell believe that a number of factors tend to support the validity of the test as well as their scoring method. In regard to the latter, they converted raw scores of all the patients to standard scores (z) based on a normative population. "A biserial correlation coefficient of .91 was obtained between the z scores of non-patients and psychotics, while a correlation of .73 was obtained between non-patient and neurotics" (8, p. 29).

This has led Pascal and Suttell to place confidence in the validity of the scoring as well as to bear out the supposition that the test may be measuring something which has to do with the subject's ability to cope with his environment. This ability to cope with one's environment has sometimes been referred to as a function of the ego (1). Pascal and Suttell further believe that ego strength lies on a continuum from very high to very low Bender-Gestalt scores. In confirming this hypothesis, they found,

That there is a significant tendency for those patients who improved with hospital care to get lower Bender-Gestalt scores when tested on admission to the hospital than those who seem not to have improved (8, p. 9).

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CHAPTER II

THE PROBLEM

This study used as a point of departure Pascal and Suttell's book (8), and Curnutt's unpublished master's thesis (6). The methods of scoring, as well as some of the rationale advanced by Pascal and Suttell, will be utilized.

Curnutt, in his thesis, derived empirically six signs for the prediction of alcoholism by the use of the Bender-Gestalt test. His subjects included twenty-five relatively normal individuals and twenty-five persons who were members of an Alcoholics Anonymous group. Curnutt states:

> It would be desirous to find a syndrome or unique configuration that would differentiate the alcoholic from the other clinical entities, as well as from normal individuals. It is not likely that the design employed here will answer this question unequivocably, but it is hoped that empirical signs will emerge from this study that can be tested later.
>
> It can, of course, be argued that other populations may demonstrate such signs. This is a possibility which warrants further investigation. The author in a non-systematic way has explored such a possibility. His casual observations tend to support the thesis that these signs are unique to an alcoholic population and perhaps also to a pre-alcoholic population (6, p. 15).

This study will attempt to validate the hypothesis that these six empirically derived signs will differentiate the alcoholic patient from other clinical groups.

The six signs to be statistically validated are:

1. A Z score of at least 59 but not over 91.
2. Rotation of design seven at least five degrees to the left but not more than 20 degrees. By rotation two things are meant:
   a. When the whole design is rotated so that the top point of the figure is five degrees or more from its perpendicular base.
   b. When the top point is rotated but not the rest of the design. Here the base line of the protractor is not an imaginary perpendicular but the point at the bottom of hexagon one. This type of rotation results in a misjudgment of the top angles of hexagon one.
3. If rotation of hexagon one is less than two degrees left, then distortion of the gestalten may be expected. The term distortion is a subjective one and thus is difficult to describe objectively. This is considered the weakest sign, not because of its lack of frequency of occurrence, but because of the difficulty in pinning it down. By distortion several things are meant:
   a. When there is disproportion between the size of the two hexagons, one must be approximately twice the size of the other.
   b. When the two hexagons do not overlap or when they overlap excessively.
   c. When the design is otherwise reproduced in a markedly distorted manner that approaches destruction of the Gestalt.
   d. When there is extreme elongation of either Hexagon 1 or 2.
4. If rotation is less than two degrees left, then a total score of not less than three should be expected on design seven.
5. Counting of the dots by the subject on design five.
6. A score of two or more on design five.

After comparing the performance of the alcoholic group with respect to the proposed alcoholic signs, the following generalizations were made:

1. If the Z score is less than 61, then at least three of the signs should appear.
2. If the Z score is 61 or more, then four of the signs must be present.
3. If sign two is not present, sign one must be. (6, p. 10).

Subjects and Methods

The test records utilized in this study were selected from the files of the Psychology Department of the Wichita Falls State Hospital, Wichita Falls, Texas. Each of the records selected had been diagnosed by the staff of the hospital.

One hundred male alcoholics, one hundred male schizophrenics, paranoid type, and one hundred male schzophrenics, catatonic type, were originally selected, and after roughly matching for age and education, there were remaining twenty-five alcoholics, twenty-five schizophrenics of the catatonic type, and twenty-four schizophrenics of the paranoid type of records. The age range for the alcoholic group was from 25 to 51 with the mean age being 37 years. The age range for the paranoid group was from 21 to 48 with a mean age of 37 years. The catatonic group age range was from 20 to 51 with a mean age of 36 years.

The test records of the three groups were shuffled and coded by another person with all identifying marks removed, so that during the scoring procedure the scorer would not know whether he was scoring an alcoholic's record or the record of a subject from another category.

The method used in obtaining test scores was that advanced by Pascal and Suttell. They point out that their scoring system is subject to error, but state, "with reasonable care the beginning scorer, should by the time he

has scored twenty records in this manner, be scoring within four or five points of the authors" (8).

The writer followed these instructions with resulting scoring on an average of plus 3.46 points above that of Pascal and Suttell while there was a four to five point difference in individual scoring between the authors themselves (8, p. 31).

Curnutt, in the scoring of his records, averaged a plus 3.65 difference from Pascal and Suttell's scoring (6, p.14).

Within this margin of error, it is felt that the scores obtained in this study are similar to those that would be obtained had Pascal and Suttell done the actual scoring.

The relative unreliability of psychiatric diagnosis, (2), is another possible source of error in this study since only a psychiatric diagnosis was the determinant into which these records were grouped; however, this is believed to be minimal since the psychology department played a role in establishing this diagnosis.

General Procedure

The apparatus utilized in this experiment consisted of the Bender-Gestalt Visual-Motor Gestalt test, number two pencils and white sheets of paper eight and one-half inches by eleven inches.

The test was administered to the three groups in the office of the Psychology Department of Wichita Falls State

Hospital which was relatively free of distracting stimuli. Following the advice of Pascal and Suttell (8), the general tone of the setting was such as to imply a serious test of the subjects' capacity to reproduce the designs. The method of administration in general, followed that proposed by Bender (4) and Hutt (7).

The subject was seated at a table. He was given a blank white sheet of paper and a sharp-pointed pencil with an eraser. The following instructions taken from Pascal and Suttell were then read to him:

> I have here nine simple designs (or figures) which you are to copy, free hand, without sketching on this paper. Each design is on one of these cards which I will show you one at a time. There is no time limit to this test (8,p. 11).

During the test situation some of the subjects asked for additional information. The examiner on most points was non-committal. Thus if the subject asked, "Do I have to count the dots and circles?" the examiner usually countered with something like, "It's up to you," or "Just as you please." Questions about using both sides of the paper, erasing, etc. were handled in a similar manner. The subject was provided with additional paper when it was requested. The subject was not permitted to use a ruler or any similar object as a guide for his drawing.

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CHAPTER III

RESULTS AND DISCUSSION

The hypothesis put forth earlier in this study that the six signs for the prediction of alcoholism, derived empirically by Curnutt (6), and unique to an alcoholic population, was not substantiated in this study. The mean Z scores of the alcoholic group is 70.24 with a standard deviation of 16.65. The mean Z score for the schizophrenic paranoid type group is 76.66 with a standard deviation of 24.93, while the schizophrenic catatonic type group mean Z score is 70.72 with a standard deviation of 19.20.

It appears that there is too little difference between means to make a differential diagnosis.

The frequency with each individual met the proposed six signs is demonstrated in Tables I, II, and III.

Proposed Alcoholic Signs

1. A Z score of at least 59 but not over 91. This sign seems to speak for itself in that most of the populations sampled fell in this range, although some in each group fell above and below the critical limits. As seen by the above mean scores of the three groups, it appears that there is too little difference between means to make a differential diagnosis, although it would assure the clinician that

TABLE I

RESULTS OF ALCOHOLIC GROUP IN TERMS OF SIX ALCOHOLIC SIGNS

Subjects	Experimental Signs					
	1	2	3	4	5	6
1	61	..	..	x	..	x
2	47	..	x	x	x	x
3	57	..	..	..	x	x
4	68	..	..	..	..	x
5	51	..	..	..	x	x
6	105	..	x	x	..	x
7	54	..	..	x	x	x
8	51	x	..	..	x	x
9	57	..	..	x	x	..
10	80	..	..	x	..	..
11	49	..	..	x	x	x
12	95	..	x	x	x	x
13	102	x	..	..	x	x
14	65	x	..	x	..	x
15	85	x	..	..	x	x
16	59	x	x	..	..	x
17	79	..	x	x	..	x
18	90	..	x	x	..	x
19	65	..	..	x	x	x
20	80	..	x	x	x	x
21	74	x	..	x	..	x
22	68	..	x	x	x	x
23	80	..	x	x	x	x
24	66	..	x	x	x	x
25	69	..	..	x	x	x

the individual obtaining a Z score between 59 and 91 is in need of psychiatric help, thus validating Pascal and Suttell's claims (8.36).

2. Rotation of design seven at least five degrees to the left but not more than twenty degrees. By rotation two things are meant:
   a. When the whole design is rotated so that the top point of the figure is five degrees or more from a perpendicular base.

TABLE II

RESULTS OF THE CATATONIC GROUP IN TERMS OF SIX ALCOHOLIC SIGNS

Subjects		Experimental Signs				
	1	2	3	4	5	6
1	83	-	x	x	-	x
2	77	-	-	x	x	x
3	80	-	x	x	-	x
4	56	x	-	x	x	x
5	79	-	x	x	x	-
6	74	-	x	x	-	x
7	68	-	x	x	x	x
8	91	-	x	x	-	x
9	81	-	x	x	x	x
10	87	-	x	x	x	x
11	92	x	x	x	-	x
12	74	x	-	x	x	x
13	51	-	-	x	x	x
14	72	-	x	x	-	x
15	51	-	-	-	x	x
16	55	-	-	x	x	x
17	51	-	-	x	x	x
18	53	-	-	x	x	-
19	52	-	-	x	x	x
20	38	-	-	x	x	x
21	54	-	-	-	-	x
22	41	-	-	-	x	-
23	101	-	x	x	-	x
24	100	-	-	x	-	x
25	107	-	x	x	-	x

b. When the top point is rotated but not the rest of the design. Here the base line of the protractor is not an imaginary perpendicular but the point at the bottom of hexagon one. This type of rotation results in a misjudgment of the top angles of hexagon one (6).

Sign two is not a good indicator of alcoholism since all groups manifested this sign about equally, consequently it has no diagnostic value beyond indicating the subject is

TABLE III

RESULTS OF THE PARANOID GROUP IN TERMS OF THE SIX ALCOHOLIC SIGNS

Subjects		Experimental Signs					
		1	2	3	4	5	6
1	69	x	-	x	x	x	
2	59	x	-	x	x	x	
3	91	-	x	x	x	x	
4	85	-	-	x	x	x	
5	69	-	-	x	x	x	
6	82	-	x	x	x	x	
7	54	x	-	x	x	x	
8	102	-	-	x	x	x	
9	73	x	-	x	x	x	
10	79	-	x	x	x	x	
11	52	-	x	x	x	x	
12	49	-	-	-	x	-	
13	115	-	x	x	x	-	
14	93	-	x	x	x	x	
15	103	-	x	x	-	-	
16	54	-	-	-	x	-	
17	92	-	x	x	x	x	
18	114	-	-	-	-	x	
19	38	x	-	-	-	x	
20	51	-	-	-	x	x	
21	118	-	x	x	-	x	
22	38	-	-	-	-	x	
23	109	-	x	-	-	x	
24	51	-	-	-	-	x	

in need of psychological help. In the maturational development of the child, rotating to the verticle is more common (3, p. 22). If the child experiences a normal maturational development, this primitive tendency eventually drops out. Perhaps the general immaturity of the alcoholic and the regression observed in the schizophrenic groups is

expressed in the manifestation of sign two on the Bender-Gestalt test. Another explanation for this sign is the abundant amount of anxiety present in all three groups and the mechanisms utilized to handle felt anxiety, such as perfectionism and concrete thinking, contribute to the patient perceiving this subtle nuance more accurately than the normal groups.

3. If rotation of hexagon one is less than two degrees left, then distortion of the Gestalt may be expected (6). This sign was somewhat difficult to score, but it occurred no more frequently in the alcoholic group than in the schizophrenic groups tested, thus indicating its value in predicting alcoholism.

4. If rotation is less than two degrees left, then a total score of not less than three should be expected on design seven (6). It should be pointed out that the scoring system is independent of this sign since only extreme rotation, forty-five degrees, is scored. On the other hand, the scoring system does penalize the individual if distortion is present. Design seven is ordinarily a difficult design to draw as well as to perceive, therefore, many individuals in this study exhibited this sign. This sign does not discriminate between the groups tested.

5. Counting of the dots by the subject on design five (6) is a sign usually easy to determine. If, however, the

administrator of the test does not watch the patient while he is taking the test, the next best thing to do is to count the dots. If there are nineteen dots, then one can be reasonably certain that the subject counted the dots. This sign is considered to be another mechanism to allay anxiety felt by the patient. It is not the exclusive possession of the alcoholic group. The other groups demonstrated this sign with about as equal frequency as the alcoholic group, thus the sign is rejected as being unique to an alcoholic population.

6. A score of two or more on design five (6). Here again the design requires subtle perceptual discrimination and concrete thinking contributes to the manifestation of this sign by all three groups.

A second explanation involves a more Freudian approach. It can be said that symbolically the horseshoe part of the design represents the female genital organ while the extension of the design is masculine in character. Since in our culture sex is an important source of conflict in the lives of many people, one would expect that all three of the groups tested here would show about equal difficulty with this gestalt, which in fact they do (1).

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CHAPTER IV

SUMMARY AND CONCLUSIONS

The problem of the clinical psychologist in differentiating clinical populations from one another was discussed and the Bender-Gestalt test of visual motor coordination was presented as a technique of value in making a diagnostic conclusion.

The population sampled consisted of patients at the Wichita Falls State Hospital. The files of the psychology department were utilized in selecting the records of one hundred male alcoholic patients, one hundred male schizophrenics, paranoid type, and one hundred male schizophrenics, catatonic type, for this study. The records were matched for age and education, resulting in twenty-five alcoholic records, twenty-five catatonic, and twenty-four paranoid records--all of which served as the basis for this study.

The scoring procedure devised by Pascal and Suttell was utilized and a comparison of the scoring of the records by Pascal and Suttell and the writer was made. It was found that the investigator was scoring a plus 3.46 points from the scoring of Pascal and Suttell.

The data obtained in this study appear to warrant the following conclusions:

1. There appears to be too little difference between mean Z scores to make a differential diagnosis.

2. The six empirically derived signs obtained by Gurnutt do not appear to differentiate the alcoholic from other clinical groups.

3. Pascal and Suttell's claims with respect to scoring were supported.

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