

THE INCIDENCE OF BENDER-GESTALT FIGURE DEVIATIONS IN A GROUP OF MENTALLY RETARDED PSYCHIATRIC PATIENTS

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SUMMARY

The Bender-Gestalt Test was given to thirty mentally-retarded psychiatric patients. The mean, standard deviation, and standard error were 56.73, 26.25, and 4.80 respectively. Rotation was the most frequent major deviation which occurred in all the designs.

Design # 7 was the most difficult one to be reproduced in the sample. This design by itself, was subject to 47% of distortion, 79% of omission, and 21% of rotation.

KEYWORDS: *Bender-Gestalt Test; Design # 7; Mental retardation; Pascal-Suttle Scoring System; Psychiatric Patients; Rotation.*

INTRODUCTION

The Bender-Gestalt Test has been known as a widely-used technique in psychological testing

and differential diagnosis. Because of its relatively simple way of administration, being a nonverbal test and possibly other factors, has become an essential part of any diagnostic and inquiry effort of clinicians and researchers. It is believed that this is a test of visual-motor functioning which involves in visual perception, motor coordination and perceptual-motor integration (1). Theoretical discussion on the structure, function, and dynamics of processes underlying the reproduction of the Gestalt patterns goes beyond the limits and purpose of this paper. In short, we look at this test as a means of neuropsychological assessment which is subject not only to those Gestalt laws as indicated by its original innovator(s), but also to the rules and directions which have been explored and presented by clinical as well as research oriented neuropsychologists.

One of the most important purposes of this test has been always to find its usefulness and informational value in clinical and differential diagnosis. Following this trend, the present authors planned to conduct a piece of research on the application of this test in mentally retarded psychiatric patients in Iran. Our general and long range goal was to examine the applicability of this test in schizophrenics, patients with organic brain syndrome, and the mentally-retarded and to find its differential diagnostic value in these groups. However, at this stage, our purpose is only directed to

retarded individuals.

Different studies have been conducted by investigators to depict the general characteristics in the performance of the Bender-Gestalt Test by retarded people and to examine the relationship between performance and intelligence. Tolor and Brannigan (2), after reviewing these studies, conclude that there is a convincing evidence that the performance of mentally retarded adults on the Bender-Gestalt test is related to their relative levels of overall intelligence (p 1.00). This conclusion, along with some notions derived from Bender's writings (3, 4), encouraged us to use this test in a sample of Iranian mentally retarded patients.

For this purpose, we used Pascal-Suttle (5) scoring system which is still often used in the literature of adult subjects. Despite Bender's opposition to scoring system, it seems that applying an objective scoring system would facilitate interchanging of views and information from different perspectives and between different cultures.

PATIENTS AND METHODS

SUBJECTS

Thirty subjects were selected from a group of in/out patients, who for assessment, were referred, to the clinical psychological department of Roozbeh Hospital. They were diagnosed as mentally retarded psychiatric patients by a clinical psychiatrist. However,

mental retardation was not supposed to be regarded necessarily as an entity but as a condition which could be related to confusional state and/or mental dysfunctioning (6). The Raven's Standard Progressive Matrices (7), which has been standardised for Iranian population (8), was used: and, the subjects with IQ level from 50-70 (mild retardation) were regarded as a sample.

The age range was 16-38, and the mean, standard deviation, and standard error for age scores were 21.2, 4.56, and 83 respectively. Twenty five of the subjects were male and five were female.

The range of educational level was from the second year of elementary school to the end of high school (17 elementary school, 8 prehigh school, and 5 high school). The illiterate subjects were excluded from the sample, because we were working on another project dealing with these subjects which seemed to show some unique features in their performance. The subjects were mostly from low social class.

PROCEDURE

The patients were referred to psychology department (a section of clinical psychology service in Roozbeh Hospital) with a diagnosis of mental retardation. Clinical interview and observation of the subjects (by the trained and

experienced clinical psychologists) showed clearly that there were some intellectual deficiencies in most cases, which revealed themselves in different higher mental processes such as perception, attention, memory, abstraction, and concept formation. For the purpose of being objective, Raven's Standard Progressive Matrices was used and those subjects were chosen whose IQ ranged from 50-70. Finally, the Bender-Gestalt Test was used according to the manual of Pascal-Suttle scoring system (5). Scoring was also in accordance with that manual except for a few clarifications that we realized to be useful in terms of making judgements. These points mostly helped us to follow a clarified rule in scoring, rather than modifying the manual (e.g. we defined design # 1 as a wavy line only if the distances of point to the straight horizontal line were 5-10 mm). There were only five cases which were subjected to this clarified elaboration.

Each member of the research group scored the protocols, independently and then we discussed the points of disagreement very carefully and tried to be as objective and consistent as possible.

RESULTS AND DISCUSSION

Table 1 shows the mean, standard deviation, and standard error of raw score for the sample.

x	56.73
SD	26.25
SE	4.80
N	30

Table 1. Mean, SD, and SE of the sample

The striking point in relation to this table is the wide range of scores (from 13-117, range=105) which is reflected in SD and SE. This arises from the fact that there are a great variety reproductions among mentally retarded psychiatric patients.

The score mean of 56.73 is a relatively high score in the Pascal-Suttle scoring system. Pascal Suttle did not include mentally retarded individuals. On the other hand, we do not have any data available on the score mean of mentally retarded patients in our country. Therefore, it is not possible to evaluate the obtained mean score and make a comparison.

Since three major deviations, namely

distortion, *omission*, and particularly *rotation* have been always subjected to different theoretical and clinical discussions and at the same time constituted a major part of total score in different scoring systems (such as Koppitz, 9, 10); therefore, these deviations are examined in some detail.

Table 2 shows the distribution of three major deviations (8 score deviations in the Pascal-Suttle scoring system): *distortion*, *omission*, and *rotation*.

As Table 2 shows, rotation was the most frequent major deviation which occurred in all the designs. The next one is *omission* which is only seen in designs 1,2,3, and 7. The third one is *distortion* which occurred in designs 3,4,5,6,7, and 8.

Table 3 shows the incidence of three major deviation percentages in all designs in the subjects of the sample who have had at least one major deviation.

Cards Dev.	1	2	3	4	5	6	7	8	Total
Distortion	0	0	1	2	1	2	8	3	17
Omission	1	2	1	0	0	0	15	0	19
Rotation	4	3	5	4	3	2	6	2	29
Total	5	5	7	6	4	4	29	5	65

Table 2. Incidence of *distortion*, *omission*, and *rotation* in total sample as occurred in different cards

Deviation	f	%
Distortion	15	50
Omission	16	53
Rotation	11	33

Table 3. Percentage of subjects who have had at least one major deviation

According to this table, *omission* is the most frequent major deviation observed in the sample (53%). *Distortion* occupies second position which has occurred in 50% of the subjects. *Rotation* (despite Table 2) is the least frequent one on the basis of the occurrence in the subjects. However, as it can be seen in Table 2, it is the highest probable one in terms of incidence in different cards. As a matter of fact, it has occurred in all the cards, although in eleven out of thirty subjects (33%). It is interesting that only three subjects out of eleven showed just one *rotation* which belongs to design # 7.

ROTATION

Since *rotation* has occupied a special position in the literature; therefore, it is discussed with some detail. *Rotation* may be one of the most controversial issues in the application of the Bender-Gestalt Test. Most researchers attempt to explain the incidence of *rotation* in psychopathological conditions in general and in mental retardation in particular. For example, Freed (11), using the Pascal-Suttle scoring system, found that 39.4% of the mentally-

defective patients made at least one *rotation*. Griffith and Taylor (12) found that 55.9% of mental defectives made at least one *rotation*. These figures (39.4 and 55.9), especially the second one, are higher than the percent we calculated (33%). This difference may be partly a function of operational definition of mental retardation. In addition, it seems that the incidence of *rotation per se* may not be the issue to be discussed, but the main point may be the likelihood of the incidence of *rotation* in different designs. There are not any reported data available to the present authors on this matter. What can be proposed at this stage of conceptualization is that *rotation* in mental retardation is not mainly related to individual designs, but may show a tendency to occur in different ones. This proposition may provide a basis for formulating a working hypothesis concerning the role of *rotation* in Bender-Gestalt Test in the future investigations.

Mermelstein's (1) findings, however, lend support to Bender's (3) thesis that *rotation* is related to disorientation in general. His results indicated that *rotations* on the Bender-Gestalt Test may not have any differential value for the

purpose of differentiating brain-damaged patients from *schizophrenics*. But the concept of disorientation has not been operationalized in Mermelstein's paper, and thus it would be very difficult for the present authors to relate their findings to his conclusion.

On the other hand, Hannah (13) demonstrated that factors other than organic or functional impairment of mental processes may produce *rotations* in the Bender-Gestalt designs. He found, for example, that *rotation* might be a function of the way the stimulus is oriented on the card on which it is presented (vertically vs. horizontally). Also, Blum and Chagnon (14) found that age and language are significantly related to the incidence of *rotation*.

In all of these studies, whether demonstrating the role of *rotation* in differential diagnosis or underestimating its significance, *rotation* has been considered a deviation in individual designs rather than as a sequence of deviations Table 4. The number of subjects who had no major deviation in different cards

manifested in different cards. This aspect of *rotation* has not been explored in the Bender-Gestalt Test studies.

DESIGN # 7

Table 4 shows the number of no major deviation in relation to the different cards, in the total sample.

It is obvious that design # 7 is the most difficult, and design # 1 is the easiest one in this sample. On the other hand, Table 5 shows that 47% of *omissions*, and 21% of all *rotations* in different cards are related to design # 7.

Cards	f
1	13
2	4
3	7
4	7
5	2
6	4
7	1
8	10

Major Dev.	Design # 7	All cards	%
Distortion	8	17	47
Omission	15	19	79
Rotation	6	29	21

Table 5. Percentage of three major deviation in design # 7

Omission is very striking, in this respect, since almost 80% of all *omissions* have occurred in the

case of design # 7. This may be partly due to the complication of design # 7 and partly due to the

criteria for *omission* in that design (in comparison with design # 8, the criteria for *omission* in design # 7 are very critical leading to recognition of more *omission* in design # 7). Our findings concerning the importance of design # 7 is consistent with Wagner and Marsico's (15) suggestion that a quick and reliable method for screening organicity with Bender-Gestalt would be to calculate the Pascal-Suttle scoring system for design # 7 only.

SOME CONSIDERATIONS

As a matter of fact, 8-score items have a considerable contribution in the total deviation score, and therefore, they may be regarded as a short way of scoring in particular cases. The correlation coefficient of major (8-score items) and minor deviations was .57 which is significant at $P < .01$ level.

In this study, the researchers observed some deviations in the reproduction of the designs which have not been included in the Pascal-Suttle scoring system. The most frequent ones are as follows:

1) *Rotation* of the diamond inside of hexameter in design # 8;

2) micrographia (which is different from deviation 7, of configuration);

3) continuous line instead of row of dots. The line may be substituted for dots or may be in addition to dot in design # 5 (this item has been considered a deviation in Koppitz's system, 1963);

4) a complete circle of continuous line substituted for arc shape dots in design # 5;

5) drawing a complete square instead of an open square in design # 4.

These deviations, along with other ones may generate a new perspective in the study of mental retardation. We are in need of more objective data and new experiments on the subject.

We are aware of the very limited value of these findings in clinical and experimental settings; however, we hope to start a systematic way of exploration in this respect in our country.

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