THE BENDER GESTALT TEST AND PREDICTION OF BEHAVIORAL PROBLEMS IN MODERATELY MENTALLY RETARDED CHILDREN

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The purpose of this study was to determine the usefulness of Koppitz's method of scoring the Bender Gestalt (BG) Test for the prediction of behavioral problems in retarded children. The problem behaviors with which this study was concerned were those most often associated with the hyperactive child.

The BG was administered to 29 female and 26 male moderately retarded children at Denton State School, and scored by Koppitz's Scoring Manual for Emotional Indicators. To determine the activity level of each subject, two methods were used: (1) the subjects were ranked by their house parents against a description of hyperactive behavior, and (2) individually observed in a testing room.

The BG scores did not predict hyperactivity as measured by either house parent rankings or by observation activity scores. Two reasons were discussed for the failure of Koppitz's scoring method to predict hyperactivity. The measures of hyperactivity used in this study might not have been reliable. An increase in the number and the length of observation sessions might have improved the reliability.

Also, Koppitz's method of scoring could be inappropriate for retarded children because of their preceptual-motor difficulties.

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THESIS

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By

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LIST OF TABLES

Statement of the Problem and Review of the Research

The purpose of this study was to attempt to use the Bender Gestalt Test (BG) to predict behavioral problems in moderately mentally retarded children. The successful adaptation of the BG for this purpose would be of great value to psychologists and administrators in such areas as academic placement, dormatory assignment, and vocational training. Since there has been a voluminous amount of research published on the BG, the discussion of that research will be divided into two parts. There will first be presented a concise overview of the research on the BG, and then a review of the research that pertains specifically to this study.

The BG Test (Bender, 1938) is one of the most widely used clinical tests. Schulberg and Tolor (1961) surveyed 176 members of the American Psychological Association currently engaged in clinical practice. They found that the BG was right after the Rorschach, the Draw-a-Person Test, and the Thematic Apperception Test in order of frequency with which they were used by the personnel surveyed. The BG was regarded by four out of five of the surveyed psychologists as having from "some" to "great" value for diagnosis, regardless of the nature of their testing load or the nature of their patients.

Bellingslea (1963) concluded from his review of research on the BG that despite its many weaknesses, it has proven its value in the repertoire of the clinician and is with us to stay. He therefore believed it is important to continue research on this tool so that its weaknesses may be both exposed and consequently reduced.

The BG Test is composed of nine geometrical designs, which are presented to the subject one at a time. The subject is asked to copy the designs on a blank sheet of paper. The designs are composed of dots, lines, angles, and curves combined in a variety of relationships. Individuals perceive, interprat, and reproduce these designs differently. It is believed that there exists a normalcy range in the matter of reproducing these figures that is highly correlated with the hypothetical average person (Billingslea, 1963). Deviations from the normal range can reflect deviations from the average individual in intellectual capacity and functioning, emotional stability, perceptual-motor function, need gratification patterns, and soundness of brain tissues and chemistry.

Bender (1938) adopted the designs originally used by Wertheimer to demonstrate the principles of gestalt psychology as related to perception. Bender adapted these figures to a visual motor test. It was pointed out by Bender that the perception and execution of the designs were a function of the biological principles of sensory motor action, and varied depending upon the maturational level of the subject and his

psychological or pathological state at the time of the testing. As the normal child matures, he becomes more able to execute correct visual motor patterns in the reproduction of a gestalt. Bender gives examples of the ability to reproduce stimulus figures which are characteristic of children from three to eleven years. At age eleven, a child should be able to copy all nine BG designs without errors. While Bender used a developmental approach in analyzing children's protocols, she used clinical impressions in the assessments of adult protocols. Although Bender employed her test in the detection of organic brain disease, schizophrenia, depressive psychosis, psychoneurosis, and mental retardation, an objective scoring system was not provided.

Many psychologists, using the BG for diagnostic purposes, rely upon subjective clinical impressions to make their evaluations. With this approach, the validity of diagnosis is completely dependent upon the psychologist's knowledge, experience, sensitivity, and general expertise in the specific area in which he is testing. Some may make accurate and reliable assessments, while other psychologists' accuracy may be at or even below chance level.

Studies have clearly shown a lack of agreement between the clinical impressions of experts on the BG (Goldberg, 1959). The need for objective scoring systems for the BG was recognized by many psychologists. Some of those responded by developing objective scoring systems (Gobetz, 1953; Hain,

1964; Keller, 1955; Kitay, 1950; Peek and Quast, 1951). A scoring system that generated much research was developed by Pascal and Suttell (1951). Their method of scoring the BG consisted of tabulating certain deviations in the reproductions of the designs. They believed that the ability to reproduce faithfully the BG designs was an index of ego strength. The lower the score obtained on the test, the less errors in reproduction, the greater the ego strength.

Although the individual objective scoring systems were usually designed to expose a specific disability, subsequent modification by numerous researchers broadened the BG's application to an ever widening spectrum of areas. The BG has been used to diagnose flattened affect in mental patients (Prado, Peyman, & Lacey, 1960), differentiate depressed clinical patients, judge intellectual level and degree of intellectual impairment (Peek & Storms, 1958), differentiate between psychotics, neurotics, and other personality disorders (Tamkin, 1957), judge drawing ability and predict school performance (Peoples & Mall, 1962), investigate the unconscious through symbolic interpretation (Hammer, 1954), and to determine level of mental functioning in mental retardates (Allen, 1969). Of course, this list is but a very small part of the research done with the BG. Koppitz (1964) reported that a general survey of the literature revealed more than 130 books, studies, and papers dealing with the BG since the original Bender monograph appeared in 1938.

As was pointed out previously, this study was concerned with using the BG Test to predict certain personality characteristics in moderately retarded children. These personality characteristics, impulsiveness, aggressiveness, acting out behavior, low frustration tolerance, explosiveness, and hyperactivity, may be the result of brain injury, emotional disturbance, environmental pressures, or any combination of the three. This study was not concerned with the etiology of these problem behaviors, only their prediction from BG protocols. However, since these behaviors were recognized as being characteristic of the hyperkinetic or brain-injured child, a through discussion of the literature in that area was important.

Price (1968) pointed out that central nervous system involvement has been given many labels. These included central nervous system dysfunction, neurophrenia, hyperkinetic behavior syndrome, brain damage, minimal non-motor brain damage, and the Strauss Syndrome. This last name paid tribute to Alfred A. Strauss, who was first to throughly delineate the symptoms of the brain-injured child (Strauss & Lehtinen, 1947). A later book by Strauss and Newell (1955) gave a more elaborated and organized picture of the symptomology of the brain-injured child. Distractibility is extremely characteristic of this syndrome, and it is the most obvious of the child's difficulties. He finds it impossible to engage in any activity in a concentrated fashion. He is

always being led aside from the task at hand by stimuli which should remain extraneous, but do not. In extreme cases his activity may appear to be an aimless pursuit of stimulus after stimulus, as one after another of the elements in his perceptual environment attracts his attention. Strauss and Newell (1955) stated that a related problem was disinhibition. The child makes responses which are not adequate to the situation, and which the normal child does not make because he recognizes their inadequacy. It seems that with the normal child a specific response has been preceded by a number of non-overt trial responses. From these various alternative overt responses, the normal child selects, and responds with, the one he deems most appropriate to the situation. At the same time, he inhibits the unsatisfactory, covert responses. The brain-injured child seems incapable of inhibiting his responses to allow time for the selection of the appropriate one. He appears to react with the first response that occurs to him. If this one fails, he tries the next response in his behavioral reportoire, without calculating the consequences before he acts.

Another characteristic of the brain-injured child is the increased intensity of response. Whatever overt activity he engages in is apt to be entered into with greater intensity than would be the case with a normal child. Everything that he does appears driven and is marked by an excessive expenditure of energy. Davis and Sprague (1969) state that

hyperactivity refers to an excessive amount of activity which is inappropriate to a given environmental situation.

A related phenomenon in brain-injured children has been labeled by Goldstein (1954) the "catastrophic reaction." Because of his hyperactivity, the brain-injured child appears to be elated. It is astonishing to see him burst into explosive crying when confronted with a problem.

Finally, Strauss and Newell (1955) listed perseveration as a prominent feature of the behavior of the brain-injured child, a feature which is almost always absent in the behavior of the non-brain-injured child. Strauss and Lehtinen (1947) stated that this perseveration may take the form of an emotional reaction, like laughter, that may persist beyond reasonable limits. Activities like playing with a ball in an automatized manner, or pushing a toy train along a track for long periods of time with little variation, would be characterized similarly.

Some other characteristics of the hyperkinetic or brain-injured child, reported by Tizard (1968) were: mood fluctuation, aggressiveness, temper tantrums, intolerance of frustration, fearlessness, lack of shyness, lack of affectionate behavior, and social withdrawal. Eisenberg's (1957) description of hyperkinesis further stated that the unfortunate child is unable to sit still. He is constantly fingering, touching, and mouthing objects. The child is frequently destructive, at times by design, at other times

inadvertently because of impulsive and poorly controlled movements. The child is susceptible to mercurial changes of mood, unprovoked frenzies of rage, often inflicting harm upon others. Eisenberg suggested that the lack of adequate provocation and disproportionate destructiveness could indicate the escape of the lower, more primitive rage mechanisms from cortical control.

Laufer and Denhoff (1957) added poor school work to the previously named characteristics of the hyperkinetic behavior syndrome in children. They believed that the child's increased sensitivity to stimuli and impairment in visual-motor-perception areas, renders him incapable of competing academically with the normal child. The syndrome often disappears between the ages of 8 to 18 years. Frequently, the authors stated, there is concomitant injury to subcortical areas, that may result in mental retardation as well as hyperactivity.

It might appear from the previous discussion that there was consensus as to exactly what constitutes hyperactivity. However, such was not the case. Buddenhagen and Sickler (1969) charged that the term "hyperactivity," although intrenched in the literature of clinical psychology, was characterized by vagueness and subjectibility. They stated that there is no agreement nor hardly any speculation on what specific behaviors constitute hyperactivity at the human level. Also, there is neither agreement nor speculation

concerning the frequency at which said behaviors must be emitted before the label hyperactivity can be justifiably attached. The authors thought it remarkable that despite the regular use of hyperactivity as an indicator of central nervous system pathology, no one has sought a clarification to insure more accurate diagnoses. A forty-eight-hour record was made by Buddenhagen and Sickler of all the relevant behavior emitted by a thirteen-year-old mongoloid girl who had been consistently characterized as hyperactive by professional personnel. The record of behavior strongly suggested that the label of hyperactivity served as a euphemism, describing behaviors which might more properly have been regarded as annoying and bothersome to attending personnel.

Tizard (1968) tested the assumption that children reported as overactive were in fact no more active than others, but were more inclined toward aggressive and antisocial behaviors that were highly noticeable. She found that those imbecile children rated overactive were in fact more active as judged by observation. She also reported a greater frequency of overactive children in retarded, as opposed to those with normal intelligence.

Schulberg and Tolor (1961) reported that the most common use of the BG test was to aid in the making of differential diagnosis involving brain injury. The BG track record in this area was inconsistent. Using Koppitz's

(1964) Developmental Scoring System, Price (1968) found significant differences in performance on the BG between brain-damaged and non-brain-damaged groups. Wagner and Murray (1969) were able to show that five raters, of different postulated levels of clinical expertise, were able to correctly identify brain damaged children from their BG protocols. Similarly, Bensberg (1952) found that the Bender could significantly differentiate between brain injured and culturally caused mental deficiency. A modified scoring system based on the Pascal-Suttell method of scoring the BG was used successfully to distinguish between psychiatric patients who did and who did not have organic brain disorders (Canter, 1968). The Peek-Quast system of scoring the BG has also been successfully used in detection of brain damage (Quast, 1961).

However, nearly as many studies report negative results as successful results in identifying brain injury with the BG. Mosher and Smith (1965) reported that diagnostic errors were so frequent with the Peek-Quast and Hain scoring systems as to preclude the methods from being useful for individual diagnosis of brain damage. A very interesting study by Goldberg (1959) found that psychologists, psychological trainees, and nonprofessional judges did not differ in their ability to diagnose organic brain damage from BG protocols. Mehlman and Vatoves (1956) found the diagnostic reliability between three authorities on the BG to be

disappointing. They suggested that use of the BG to differentiate between organic and functional mental patients resulted in so many mistaken diagnoses, even by the best of judges, that it should not be used for that purpose.

The results of the above studies would indicate that the BG has, with present scoring techniques, limited value for diagnosing brain damage. Because of this, the E chose to employ the BG as a projective test, attempting to identify those emotional indicators on the BG protocols which could predict the problem behavior characteristic of the brain damaged or hyperactive child. The BG has been used successfully to diagnose emotional maladjustment. Mogin (1966), using 211 second and third grade pupils as subjects, found that two errors on the BG protocols, second attempt and closure difficulties, significantly predicted maladjustment. It has been shown that maladjusted children exhibit significantly more use of irregular sequence, closure difficulty, rotation, and change in curvature of figures, on their BG protocols, than do well adjusted children (Byrd, 1956). Using 160 children between seven and twelve years of age, 80 that were judged to be emotionally disturbed, and 80 that were judged normal, Clawson (1959) found that evaluation of their BG protocols could significantly differentiate between the two groups. She suggested that expansive style of organization, overall increase in size of figures, and exaggeration of curvature, on the BG reproduction were

indicative of maladjustment. Many other studies have shown the BG to be useful in predicting emotional disturbances (Corotto & Curnutt, 1960; Eber, 1958; Naches, 1967; Simpson, 1958; Zolik, 1958).

Elizabeth Koppitz's book (1964) on the BG Test with young children provided an objective scoring system for the identification of emotional disturbances in young children. The present study used six of Koppitz's ten emotional indicators for the BG to attempt to predict those behaviors characteristic of the hyperactive child in institutionalized moderately retarded children. There was no attempt to identify brain injured or hyperkinetic children. Rather, this study was concerned with prediction of certain problem behaviors in retarded children that could have been the result of brain injury but that could also have been caused by emotional problems or excessive stress. The specific problem behaviors with which this study was concerned were impulsivity, hyperactivity, explosiveness, acting out behavior, and aggressiveness. Koppitz's six emotional indicators for the BG used in this study were developed for identification of the above behaviors. These particular behaviors were, of course, overlapping and interacting, and may be manifest in any particular child in an infinate variety of combinations. Therefore, no attempt was made in this study to identify which of these particular behaviors, or their combinations, were exhibited in the Ss. Rather,

for the purposes of this study, the above listed behaviors, in any combination, were identified as hyperactivity.

Koppitz (1964) identified ten scoring categories, derived from her clinical experience and from the findings of other investigators, that were considered indicators of emotional disturbance when evidenced on the BG. The emotional indicators were considered independent of visual-motor-perceptual difficulties. Koppitz believed that a child may be free from problems in visual-motor-perception ability and yet may still show a high incidence of emotional indicators on his BG protocol, while another child may have difficulties in visual-motor-perception and be free from emotional indicators on his BG protocol. However, Koppitz did not test this impression empirically.

Most of Koppitz's book was devoted to explanation and information on her Developmental Bender Scoring System for Young Children. There have been many studies on this system (Broadhurst & Phillips, 1969; Condell, 1963; Koppitz, 1958; Egeland, Rice, & Penny, 1967; Snyder & Kalil, 1968; Thweall, 1963). The E, however, could find no studies involving Koppitz's Emotional Indicators on the Bender Test for Children, other than Koppitz's (1964) own validation studies. Those studies all involved children of normal intelligence. Even though no research has been done in the area, Koppitz (1964, p. 109) believed her emotional indicators for the BG to apply also to retarded children. It was hypothesized

that hyperactive Ss, as defined in this study, would produce significantly more emotional indicators on their BG protocols than non-hyperactive Ss, when scored for six of Koppitz's emotional indicators.

Method

Subjects

The Ss were 29 female and 26 male moderately retarded children from dormitories 9A and 8A at Denton State School. They ranged in age from 7 to 16 years, and in IQ from 20 to 45.

Apparatus

A standard set of nine BG cards were employed in this study. Six toys were used during the activity observation sessions. The toys included a metal top, manufactured by Ohiobanc; a pink plastic racing car by Bergman; two children's coloring books, and a box of crayons; one can of Play-Doh; a set of Krazy Ikes, plastic construction toys by Whitman, and a Una Doll by The Adorable Quads.

Procedure

All of the Ss were given the BG Test according to the standard instructions for administration detailed by Koppitz (1964). The testing rooms, one adjacent to the 8A dormitory kitchen, the other adjacent to the 9A dormitory kitchen, were furnished with two chairs and a table. A door between

the rooms and the kitchens provided privacy for testing. All of the BG protocols were turned over to the staff psychologist for dorms 8A and 9A for scoring. Since the psychologist was familiar with the Ss, the protocols did not bear the Ss' names, but instead a number which referred to a list of the Ss held by the E. The staff psychologist was experienced with Koppitz's Scoring Manual for Emotional Indicators, having used it often in routine psychological evaluations. Of Koppitz's ten emotional indicators on the BG, only those related to hyperactivity as previously defined, were used for scoring. The six Koppitz's (1964) emotional indicators used were

1. Dashes substituted for circles--This indicator has been associated with impulsivity and lack of interest or attention in young children.
2. Increasing size--This has been associated with low frustration tolerance and explosiveness.
3. Large size--This indicator has been associated with acting out behavior in children.
4. Overwork or Reinforced lines--This has been associated with impulsiveness and aggressiveness. It frequently occurs among acting out children.
5. Second attempt at drawing figures--This indicator has been associated with impulsiveness and anxiety.
6. Expansion--This has been associated with impulsiveness and acting out behavior in children.

The total number of these indicators or errors were calculated for each S's protocol, producing a BG score for each S.

The BG protocols, scored for emotional indicators, were returned to the E for comparison with two measures of hyperactivity. One measure of hyperactivity was obtained from the house parents who care for the children on the dormitory. Behavior rankings were obtained from four house parents, the morning and evening house parents on dorm 8A, and the morning and evening house parents on 9A. Each of the four house parents were questioned separately. The following was asked of each:

> Which child on this dorm best fits the following description? He is always doing things without thinking. He is always on the go, with no apparent purpose. He seems to have trouble concentrating on any one thing. He annoys the other children and has a quick and explosive temper. He seems to ignore warnings and threats of punishments. You never know what he is going to do next.

This description was typed on a card and given to the house parents to refer to during the behavioral rankings. These statements included descriptive terms most often used in describing the syndrome of hyperactivity (McConnell, 1964), with an emphasis on those characteristics related to actual body movement. All the children on each dormitory were ranked from most like the description, to least like the description, according to the house parents' judgments. The two behavioral rankings for 8A were averaged together,

as were the two for 9A, to produce an average behavioral rank for each S.

A second measure of hyperactivity consisted of observational data on the Ss' actual behavior. Each of the 55 Ss were observed for 15 minutes in a testing room. The rooms, the same ones used for administration of the BG, were each furnished with two chairs and a table. Before each observation session the toys, previously described, were lined up on the table. Their placement on the table was the same for each S, except for the race car and the doll. The doll was used only for the female Ss, and the car only for the male Ss. Each S was brought into the testing room separately and in random order. Rapport was easily established since the Ss had met the E previously for the BG testing. Once it was felt that the S was relaxed he was told, "Here are some toys for you to play with. Go on and play with them if you wish." After this, no other communication was initiated by the E during the observation period. Questions asked by Ss were answered briefly. The Ss' activity was recorded on a note pad kept below the surface of the table and out of the Ss' view. A mark was made each time the S (1) made contact with a different toy (2) made contact with a different room fixture (e.g., S changed from touching a toy to touching a chair or the wall) (3) or changed a movement sequence (e.g., S changed from walking around the room to sitting). The marks were totaled to produce

an activity observation score for each S. For purposes of scoring, the two coloring bookings and the crayons were considered a single toy, as were the many plastic construction pieces of the Krazy Ikes. For example, the S was given but one mark for playing with the coloring books and crayons, regardless of how many different crayons he used, or how many different pages he colored. Only when he touched another toy, such as the top, would he receive another mark. It was felt that such a manner of scoring would differentiate between the hyperactive and the non-hyperactive Ss, because the hyperactive Ss, as characterized in the literature, would be unable to concentrate on any one toy for long due to a short attention span. The non-hyperactive Ss on the other hand should become involved with one or more toys for much longer periods of time. This method of recording activity was adapted from a method used by Tizard (1968) with severely retarded children. It was assumed that those Ss who obtained high activity scores, would also be the Ss who presented a behavior problem on the dormitory, as measured by the house parents' rankings. Hyperactivity and problem behavior are usually associated together in the literature concerning the hyperactive syndrome.

Results

Statistical analysis of the data did not support the hypothesis. In order to determine if there was a significant

difference between the male and female Ss' activity observation scores, two chi square tests were computed. One chi square was computed using only the activity observation scores from the toy column of the activity recording sheet, and another computed using the total from all three columns, toys, room fixtures, and movement sequence. All of the female's activity marks were in the toy column, whereas the male Ss had activity marks in all of the columns. However, neither the chi square between male and female Ss, and high and low activity observation categories using only the toy column, nor the chi square between male and female Ss and high and low activity observation categories using the total activity score, were statistically significant. This being the case, tests of significance between BG indicators and activity observation scores, were not computed separately for the male and female Ss.

A Pearson product moment correlation coefficient calculated between BG indicators and activity observation scores for all the Ss, was not statistically significant. Also, a chi square calculated between high and low BG indicators and high and low activity observation scores, produced non-significant results. For purposes of chi square calculations, six to four BG indicators was the high category, and zero to three was the low category. The activity observation scores were dichotomized at the median, with a score of six or above being the high category, and five or below being the low category.

To determine whether the BG indicators were differentiating between Ss who received extreme activity observation scores, the Ss were divided into two groups. The 15 Ss having the highest activity observation scores were one group, and the 15 Ss having the lowest activity scores were the other. The difference between the mean BG scores for the two groups was tested for statistical significance with a t test. The results are presented on Table 1. Although the difference between the BG means was in the expected direction, the difference was not beyond chance level.

TABLE 1

Difference Between Mean Bender Indicators of High and Low Activity Level Groups

Group	Mean	S. D.	t
High Activity Level	3.07	2.02	1.179
Low Activity Level	2.33	1.16	

Chi square was computed for house parents rankings on hyperactivity, for males and females separately, and BG indicators of hyperactivity. These results ($X^2 = .65$, df = 1, for males, and $X^2 = .10$, df = 1, for females) indicated a non-significant relationship between these two measures of hyperactivity.

Next, a chi square was computed between house parent rankings for males, and again for females, and activity observation scores. The median activity observation score for male Ss and for female Ss respectively, was used to separate the high and the low categories for chi square computation. The results of both chi square tests (χ^2 = .62, df = 1, for males, and χ^2 = 2.66, df = 1, for females) were non-significant.

The reliability between the two house parent's behavioral rankings on females, and between the two on males, was estimated by rank order correlation. The correlation coefficients (rho = .66 for males and .44 for females) were statistically significant.

Finally, the Kuder-Richardson Formula 20 was employed to judge the reliability of the six emotional indicators for the BG used in this study. A Kuder-Richardson index of .91 resulted, indicated a high degree of internal consistency among the six indicators.

Discussion

The hypothesis that hyperactive Ss would produce significantly more emotional indicators on their BG protocols than non-hyperactive Ss was not supported. The inability of the BG, scored by Koppitz's method, to differentiate between hyperactive and non-hyperactive Ss in this study, might have been attributable to lack of criterion validity. Although

the rank order correlation coefficients between house parent's behavioral rankings on dorm 8A and on dorm 9A were significant, with coefficients of .66 and .44 respectively, the substantial proportion of error variance inherent in both rankings could preclude detection of a relationship between the BG and the house parent's rankings.

The activity observational scores appear to have some face validity. The more a S moved about the testing room, or played with different toys, the higher would be his activity score. However, since the BG scores did not differentiate between high and low activity levels, perhaps the single 15 minute observational session for each S did not produce a reliable activity score. If four or five observational sessions of 15 minutes or longer had been employed, the reliability of the activity level estimates might have been increased.

Koppitz's emotional indicators were developed from her work with children of normal intelligence. However, she states that they are believed to apply also to retarded children (Koppitz, 1964, p. 109). The results of this study suggest that the indicators may not work with retarded children. If Koppitz's emotional indicators do not work with retarded children, it may be because retarded children very often have perceptual-motor difficulties. Goldberg (1957) found that retarded subjects introduced more tremor into their BG drawings than normal subjects. These

perceptual-motor difficulties could cause deviations in the reproduction of the BG designs that might be mistaken for emotionally induced deviations. Also, the deviations in design reproduction of an emotionally disturbed child with perceptual-motor problems, would not be the same as the reproduction deviations of an emotionally disturbed child without perceptual-motor problems. The interaction of emotional and perceptual-motor problems would produce BG design deviations that could not rightfully be compared with deviations produced by Koppitz's standardization subjects, who were without perceptual-motor problems. In order to use the BG to predict the emotional and behavioral problems characteristic of the hyperactive retarded child, much data must be collected and analyzed on the retarded child's BG reproduction. Then a set of emotional indicators might be deduced which would be appropriate for analyzing the BG protocols of retarded children. It seems clear that the same emotional indicators are not appropriate for both retarded children, and those of normal intelligence.

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