The Predictive validity of the Bender-Gestalt test emotional indicators

Jeffrey Torch

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The Predictive Validity of the Bender-Gestalt Test Emotional Indicators

Master’s Thesis

Submitted to the Faculty
Of the School Psychology Program
College of Liberal Arts
ROCHESTER INSTITUTE OF TECHNOLOGY

By

Jeffrey G. Torch

In Partial Fulfillment of the Requirements
for the Degree of
Master of Science

Rochester, New York August 27, 1997

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James B. Hale, Ph.D., Committee Chair

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Nicholas DiFonzo, Ph.D., Committee Member

Dean: _______________________

William Daniels, Ph.D., Dean
College of Liberal Arts
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The Predictive Validity of the Bender-Gestalt Test Emotional Indicators

Abstract

Although clinical reports of the predictive validity of the Emotional Indicators (EI’s) of the Bender-Gestalt Test (BGT) have been presented, objective research supporting these claims have been limited. This study investigated the validity of the EI’s on the BGT in predicting maladaptive behaviors of 23 elementary school children referred for psychoeducational evaluation. Several of the EI’s were related to the behavior factors of the Devereux Elementary School Behavior Rating Scale (DESBRS). Although projective implications of some EI’s were supported by their regression on DESBRS factors, few strong relationships were found. Implications and suggestions for future research will be discussed.
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Introduction

Statement of the Problem

The purpose of this study was to investigate the propensity of children’s Koppitz Emotional Indicators (El’s; Koppitz, 1964) on the Bender-Gestalt Test (BGT; Bender, 1946) to predict maladaptive classroom behaviors as rated by school personnel using the Devereux Elementary School Behavior Rating Scale (DESBRS; Spivack & Swift, 1967).

Importance of the Study

Although BGT El’s have been found in acting-out, withdrawn, or severely anxious children, rarely have these signs been compared to specific observable behaviors (McCormick & Brannigan, 1984). As it is often used in clinical practice, there is a need for more research in determining the BGT’s ability to accurately differentiate specific symptoms of maladaptive classroom behaviors (Tolor & Brannigan, 1980). If predictive of maladaptive classroom behavior, the BGT can help identify potential environmental determinants of aberrant behaviors. Using this information, teachers can take preventative measures to effectively manage classroom environments and provide the most effective learning strategies for all students. The prevention of classroom discipline problems allows teachers to guide their students through learning activities more effectively by maximizing on-task behavior (Edwards, 1993).

The present study will contribute to the literature by evaluating the BGT EI’s accuracy in predicting the potential for maladaptive classroom behaviors in children, which disrupt the learning process.
Order of Presentation

Chapter II contains a literature review of the BGT as an indicator of emotional adjustment in relation to the research questions. Chapter III consists of an explanation of the study goals and anticipated results. Included is a description of the subjects, instrumentation, study design, and procedure. In addition, terminology is defined and dependent and independent variables are identified. Chapter IV describes the nature of the data, statistical treatment, and the analyses. Chapter V contains a summary and interpretation of the results in terms of both the specific hypotheses generated and research reviewed above. Implications and recommendations are discussed and study limitations are presented.
CHAPTER II

Literature Review

Development of the Bender-Gestalt Test

In the relatively short history of school psychology, many psychological tests have been developed to assess a wide range of human functions within the school environment. The Bender Visual Motor Gestalt Test (commonly referred to as the Bender-Gestalt Test; BGT) has remained popular among clinical and school psychologists since its introduction to the field in 1938 by Dr. Lauretta Bender (Tolor & Brannigan, 1980). This review will present a brief history of the BGT, its origins and uses in the field of psychology, and the use of the BGT as a diagnostic and projective tool.

The BGT, based on Gestalt psychology theory and principles, was first introduced by Wertheimer, Kohler, and Koffka (Bender, 1938). Gestalt psychologists emphasize perception as a function of environmental stimuli and dynamics of the individual, or dynamic inner factor (Bender, 1938). In an attempt to investigate the nature of the visual Gestalten and the principles that determined them (Tolor & Schulberg, 1963), geometric figures were presented to normal individuals provided with the instruction to describe their perceptions. In 1932, Bender became interested in the use of this Gestalten method with patients with dementia (Tolor & Schulberg, 1963). Her procedure consisted of subjects copying designs rather than describing them. Thus, Bender was credited for transforming the test from a verbal to a visual-motor task (Tolor & Schulberg, 1963).
The Dichotomous Use of the Bender-Gestalt Test

Two different, but reportedly complementary, approaches have been employed in the use of the BGT since their inception in the 1930’s. The first is using the BGT as a tool to assess perceptual-graphomotor development in young children between the ages of 4 and 11 years old. Considered a valuable test of visual-motor gestalt maturation (Tolor & Brannigan, 1980), Bender (1938) first described seven maturational patterns of visual-motor perception in children:

1) Vortical movement (biologically determined in the optic field) gives rise to the most primitive visually perceived forms, such as circles and loops;
2) Movement (always present) is directional-clockwise or counter-clockwise, or on a horizontal plane;
3) By controlling or inhibiting this action-pattern, globes, circles, and arcs are constructed;
4) Visual fields are organized into both a foreground and background;
5) Boundaries between objects are defined;
6) Verticalization develops with body-image maturation as infant posture shifts from the prone to the upright position; and
7) Crossed lines, diagonal or slanting relations, and angle formations develop later, approximately six to eight years of age.

Bender reported that these principles are often not integrated until 11 years of age (Tolor & Brannigan, 1980). However, at six to eight years the main principles have been established (Bender, 1970).
The BGT is the second most prevalent instrument used by practitioners to measure perceptual-graphomotor development. A survey of school psychology practitioners and training programs found that the BGT remained the second most commonly used instrument (Wilson & Reschly, 1996). The decrease in the use of the BGT since 1986 is possibly attributable to the increase in use of the Beery Visual Motor Integration Test (Wilson & Reschly, 1996).

The BGT has also been used by clinicians as a projective measure of personality and has been recorded in literature since the early 1960’s (Tolor & Brannigan, 1980). Despite its early popularity for this use, skepticism toward the validity of projective testing had been growing from negative research findings during the forties and fifties (Tolor & Brannigan, 1980), and has been recently challenged for its poor technical quality (Wilson & Reschly, 1996); however, it is widely recognized that early studies suffered from serious methodological limitations (Blatt, 1978). Prior to 1963, there was little research on the validity of the BGT as a tool to evaluate the personality adjustment of children (Tolor & Brannigan, 1980).

Methodological flaws, as was typical in the sciences in the 1930’s and 1940’s, limited Bender’s work. It is more useful to accept Bender’s work as descriptive case studies that provide a rich source of testable hypotheses rather than sound experiments yielding valid results (Tolor & Schulberg, 1963). In order for a test to be valid it must be able to predict what it purports to measure. Although the predictive validity of the BGT has been questioned, the information the test elicits beyond that of visual-motor skills should not be ignored (Brown, 1965).
There has been inconsistent evidence supporting the use of the BGT as a projective assessment tool. The accuracy of the BGT in differentiating between well-adjusted and maladjusted children has been supported by early research (Tolor & Brannigan, 1980). In a study involving children age five to ten years, Koppitz (1960) investigated BGT protocols of normal school children who had no history of emotional problems and children who had been referred to a clinic or school psychologist because of emotional problems. Out of a total of ten EI's hypothesized to be indicative of adjustment problems (Koppitz, 1964), six EI's were clearly differentiated between the two groups. The group exhibiting emotional problems displayed a higher incidence of the following six EI's: Confused Order, Dashes for Circles, Large Size of Drawings, Overwork or Reinforced Lines, Second Attempt, and Expansion.

The BGT EI's ability to differentiate between well-adjusted and maladjusted children was supported in a second study (Byrd, 1956). In reviewing the BGT protocols of maladjusted and well-adjusted children between the ages of 8 and 16, six factors discriminated between the two groups. The maladjusted group had more problems with orderly sequence of designs; change in curvature and in the angulation of figures; figure closure; rotation of designs; and change in the size of the design.

A subsequent investigation of the EI's examined three groups of normal, adjustment disordered, or behavior disordered children aged 7 to 10 years (Rossini & Kaspar, 1987). Although the EI's by themselves were not predictive of group membership, the total EI score was found to be a valid indicator of maladjustment.
One of the few studies that correlated behavior problems with BGT performance examined the parent DESBRS ratings and EI’s of school children between the ages of 5 and 13 (Gregory, 1977). Strong relationships were found between the total number of EI’s and the Pathological Use of Senses; Poor Coordination and Body Tonus; Unresponsiveness to Stimulation; Anxious-Fearful Ideation; and Inability to Delay factors of the DESBRS.

The BGT EI’s have differentiated between children exhibiting normal and maladaptive behaviors in one study examining acting out behaviors (Handler & McIntosh, 1971). Comparing the performance of three groups of third graders who were classified as normal, withdrawn, or aggressive based on their classroom behavior, the BGT was found among other projective tests to be the best predictor of aggressive behavior. In addition, withdrawn subjects also displayed more EI’s than normal subjects.

Although these findings are worth noting, negative results have also been found. In one study, the BGT did not predict maladaptive acting-out classroom behavior (Trahan & Stricklin, 1979). Children ranging between 5 and 12 years of age were administered a BGT, while teachers completed behavior rating scales. This study created a serious doubt among the authors in utilizing the BGT as a projective assessment tool for acting-out behavior.

Subsequent research has also concluded that the BGT inconsistently predicts school achievement, neurological impairment, or emotional problems on an individual basis (Buckley, 1978). For every article stating that projective techniques
are invalid, articles demonstrating the projective technique as valid can also be found (Karon, 1994).

**Bender-Gestalt Test Administration**

There have been five different forms of the BGT used prominently in research. The five differ in relation to test administration, response format, scoring procedure, and interpretation. They range in use from projective to objective multiple choice tools in assessing visual-motor coordination, organic brain disorders, or emotional status (Canter, 1963; Hutt, 1960; Koppitz, 1964; Spraings, 1966; Rosenberg & Rosenberg, 1965).

These versions are dramatically different, but a topic of greater relevant concern is the minor variations in the administration of the BGT, despite Bender’s development of an instruction manual 50 years ago (Bender, 1946). Clinical studies supporting the BGT were questioned because of the different administration modes (Tolor & Brannigan, 1980). Verbal instructions have varied from simple requests to copy figures to specific detailed instructions for each card. Considering the variety in administration procedures and significant differences in some of the figures themselves on different forms, there is no single test that may be appropriately called the Bender-Gestalt Visual-Motor Test (Dana, Field, & Bolton, 1983).

**Projective Scoring of the Bender-Gestalt Test**

Projective interpretation of BGT performance has been based on either clinical-intuitive methods or objective scoring methods (Dana, Field, & Bolton, 1983). Psychologists in support of projective BGT use argue that a child cannot make a design reproduction error, because it is representative of a child’s experience and
maturation at the time of performance (Bender, 1970). No method of scoring discrete items can do justice to the full value of the test (Bender, 1970) and as a result clinical utility may be demonstrated by objective scoring systems.

Various objective scoring systems have been used to determine personality adjustment in both children and adults, yet one of the most common are offered here. Koppitz (1964) introduced an objective scoring system involving ten EI’s. Her development of the EI’s was based on her clinical experience, and supported by other research (Byrd, 1956; Clawson, 1959; Hutt & Briskin, 1960; Kitay, 1950; Murray & Roberts, 1956; Pascal & Suttell, 1951; Tucker & Spielberg, 1958), all of which failed to reject the null hypothesis that the BGT can not distinguish between children who are well adjusted and those who are maladjusted (Koppitz, 1964). Koppitz (1964) claims that the total number of BGT EI’s appears to be related to the seriousness of the emotional disturbance.

Diagnosing emotional disturbance through projective interpretation of the EI’s is considered to be one of the best objective scoring system uses (Tolor & Brannigan, 1980). Bender criticized all objective scoring systems for their oversimplification and failure to do justice to the test richness (Tolor & Brannigan, 1980). She contended that the primary task is not to reproduce the designs perfectly, but to express a “living, unique perceptual-motor experience” (Tolor & Brannigan, 1980, p. 162). Interpreting the BGT using EI’s requires the examiner to develop hypotheses that are measured against other psychological data and observations (Koppitz, 1975). Without ecological validity, the BGT should not be used as a sole indicator of personality problems (Tolor & Brannigan, 1980).
Although objective scoring systems of personality adjustment offer valuable data, clinical judgment yields a greater wealth of information (Wagner & Murray, 1969). In their comprehensive survey study, Wade and Baker (1977) showed that clinical psychologists continue to devote substantial time to personality testing, despite the many criticisms leveled, and negative reactions to projective techniques by university trainers. Moreover, this survey upheld the assessment importance attributed to the BGT by clinical psychologists.

*Factors Affecting Bender-Gestalt Performance*

The greatest factor that must be taken into consideration when evaluating a child’s BGT protocol is the role that maturation plays in the reproduction of the designs (Tolor & Schulberg, 1963). There have been limited studies of the development of perceptual-motor skills or artistic ability on BGT design reproduction (Tolor & Brannigan, 1980). Although Bender (1970) originally believed that the perceptual-motor skills generally mature by about eleven years of age, the following studies have refuted this claim.

One study found a rapid decrease in Bender Developmental Errors between 5 and approximately 8 years of age (Taylor, Kauffman, & Partenio, 1984). Among this sample of children 5 to 11 years old, it was also found that the greatest variability or scatter of scores occurred for children between the ages of 5 and 8 years old. Nearly accurate performance on the BGT was found to begin around 9 years of age, two years earlier than what Bender proposed, suggesting that perceptual motor development has truly matured by this age (Taylor, Kauffman, & Partenio, 1984). Thus, the test should not be considered a function of development or perceptual-
motor maturation for children ages 9 or 10 (Taylor, Kauffman & Partenio, 1984). This study suggests that between the ages of nine and eleven, the relevant developmental processes attain maturity and all of the designs can be successfully reproduced. Errors that persist can then be attributed to factors other than normal motoric immaturity, such as neuropsychological impairment or personality functioning.

Other studies have demonstrated that some EI's purported to be associated with acting-out behaviors are directly related to the subject's level of perceptual motor development (Koppitz, 1964; Pascal & Suttell, 1951). Correlation studies suggest that age is significantly related to the quality of BGT reproductions only at the extremes of the age distribution, (i.e., young subjects who have not achieved full development) and in older subjects who are motorically impaired because of aging (Tolor & Schulberg, 1963) or dysfunction.

In addition to age, the differences in performance between boys and girls have also been investigated. Although girls mature earlier in the perceptual-motor skills and complete the BGT quicker, there were no significant differences at any age level between boys and girls (Koppitz, 1960). Buckley (1978), in reviewing research between 1966 and 1977, concluded that a majority of studies found no significance between male or female BGT performance.

The validity of the BGT as a projective tool to assess personality and social-emotional functioning in children appears to rely heavily on the examiner's role in objectively interpreting the results, while examining the influence of development. It is therefore imperative to consider maturation level in perceptual-motor development
when interpreting the results of a child’s BGT performance. In addition, there are three risks that must be avoided in all assessment (Tolor & Brannigan, 1980). The first is an excessive preoccupation with one instrument in diagnosing psychological problems. The second is the failure to take into account the complex person-situation interaction. The third risk to be avoided in assessment is overlooking the subject’s competencies while stressing pathology.

Although limitations of the BGT in associating performance with personality or behavior, they can be reduced when interpretations involve objectivity and developmental considerations of visual-motor development. The BGT, according to the literature, has the potential to gather rich information in assessing the social-emotional status of a child, but the validity of the information it produces relies on the examiner’s knowledge of these limitations and objective skills in interpreting the tool.

*Research Questions*

The present study was designed to evaluate the predictive validity of the BGT EI’s. The investigation examined the relationship between the BGT EI’s, objectively scored, and teacher ratings on the DESBRS. The null hypothesis was there would be no relationships between the EI’s and DESBRS scales.
CHAPTER III

Methods

Subjects

A total of 23 children, ranging in age from 6 years 6 months to 12 years 9 months, from an elementary school in the Northeast participated in the study. The mean age of the subjects was 9 years, 6 months. All 23 students had been referred for psychological testing due to academic or social-emotional difficulties in the classroom. Of the 23 subjects, 19 were male. Subjects obtained an average standard score of 93 on the Wechsler Intelligence Scale for Children-Revised (WISC-R; Wechsler, 1974) or Wechsler Intelligence Scale for Children-Third Edition (WISC-III; Wechsler, 1991), and scores ranged from 61 to 139.

Procedure

This study involved correlating BGT EI’s with behavior ratings on the DESBRS of children referred for psychological testing. An archival record review of student performance on the BGT, WISC-R or WISC-III, and teacher ratings of student behavior was employed. This review involved student records between 1974 and 1996. The independent variables were the EI’s, which were dichotomously coded as present or absent for each child. The dependent variables were DESBRS teacher ratings for each of the 11 behavior factors.

Each student was administered an intelligence test, the WISC-R or WISC-III, and BGT as two components of a full battery of tests used to determine disability eligibility and special education service delivery. In addition, the referral source was asked to complete the DESBRS as part of the psychosocial evaluation.
The BGT was individually administered to each subject during the comprehensive evaluation. Five of the battery tests were administered and scored by a certified school psychologist, with the remaining tests administered and scored by the current investigator. Teacher behavior rating forms were completed within one week of the testing. For interrater reliability, a second investigator scored all BGT protocols with 91 percent simple concurrence with the investigator.

The data were entered into a confidential SPSS-X computer file and descriptive statistics were calculated. The study employed zero order correlations to examine the relationships among the variables. To control for Type I error, stepwise multiple regression analyses were undertaken, with each dependent DESBRS subscale analyzed in a separate equation.

*Instrumentation*

The BGT consists of nine geometric figures. Each figure is presented on a card about the size of a 3X5-index card. The client is given 8 ½” by 11” paper, a pencil with an eraser, and then asked to copy the designs exactly as they are shown. There is no time limit for test completion. The basic assumption underlying the use of the BGT is that the ability to perceive and reproduce the Bender-Gestalt designs is not only a function of perceptual-motor development or maturation, but also a function of the individual’s experience and personality (Pascal & Suttell, 1951).

The BGT was interpreted projectively utilizing Koppitz’s (1964) objective scoring system for El’s. The following is a description of the El’s:

1) **Confused Order of Design Placement** The individual scatters the BGT figures randomly over the sheet of paper;
2) **Wavy Line (Figures 1 and 2)** Two or more abrupt changes in the direction of the line of dots in Figure 1 or line of circles in Figure 2;

3) **Dashes Substituted for Circles (Figure 2)** This entails at least half of all circles in Figure 2 being replaced with dashes one-sixteenth of an inch long or longer;

4) **Increasing Size (Figures 1, 2 and 3)** Dots and circles increase progressively in size until the last ones are at least three times as large as the first ones;

5) **Large Size** One or more designs are drawn one-third larger than the design on the stimulus card;

6) **Small Size** One or more designs are drawn half as large as the design on the stimulus card;

7) **Fine Line** The individual’s pencil line is so thin that it requires effort to see the completed design;

8) **Overwork of Reinforced Lines** The total design or part of it is redrawn or reinforced with heavy, impulsive lines;

9) **Second Attempt at Drawing Figures** The drawing of a design or part of it is spontaneously abandoned before or after it has been completed and a new drawing of the design is made;

10) **Expansion** Two or more sheets of paper are used to complete the drawing of all nine BGT designs; and

11) **Constriction** The use of half a page or less in reproducing the designs.
The DESBRS provides a profile of 11 overt problem behavior factors or subscales that are believed to interfere with learning in the first six grades of elementary school (Spivack & Swift, 1967). Research utilized in the development of this scale involved 147 teachers who made 1719 ratings on a total of 1546 children (Spivack & Swift, 1967). The DESBRS reliabilities range from .85 to .91 on the 11 subscale scores. Information of the scale’s validity was not provided in the DESBRS manual.

The 11 DESBRS subscales consist of between three and five behavior items each (Spivack & Swift, 1967). The 11 DESBRS subscales are as follows:

1) **Classroom Disturbance** The extent to which behavior is active, social (although inappropriate), and disruptive. Behavior is seen as disrupting the functioning of others and interrupting the flow of work;

2) **Impatience** An inappropriate drive to enter into and to complete the work assigned or never thinking much about the quality and neatness of the educational product;

3) **Disrespect-Defiance** The extent to which the child manifests open disrespect for or resistance to the school, the subject matter being taught, and the teacher;

4) **External Blame** The extent to which the child expresses the feeling that it is the external circumstances (e.g., the teacher, the work) which are the sources of his or her difficulties;
5) **Achievement Anxiety** The outward display of disturbance (worry and upset) concerning the inability to meet the achievement demands of the teacher and/or school situation;

6) **External Reliance** The degree of the child’s inability to make independent decisions, to hold opinions, and to take independent action without the support and direction of others;

7) **Comprehension** The extent to which the student comprehends the day-to-day work demanded by the curriculum and teacher;

8) **Inattentive-Withdrawn** The tendency to lose contact with what is going on in class;

9) **Irrelevant-Responsiveness** The extent to which the child’s verbal responses in class are irrelevant, intrusive, and/or exaggerated or untruthful;

10) **Creative Initiative** measures the degree to which the child exhibits active personal involvement in, and positive motivation to contribute to, the classroom learning situation; and

11) **Need for Closeness to Teacher** The extent to which children like to be close to, seek out, and offer to do things for the teacher.
CHAPTER IV

Results

Located in Table 1 are the subject means, standard deviations, and ranges of WISC-R or WISC-III, DESBRS, and Total BGT EI scores. Subjects’ mean WISC-R or WISC-III scores indicate cognitive skills in the Average range, while subjects’ mean Total EI scores do not suggest severe emotional disturbance in the population. Scores on the Impatience, External Blame, External Reliance, Inattentive-Withdrawn, and Irrelevant-Responsiveness subscales of the DESBRS indicate maladaptive behaviors for the sample and were within one Standard Deviation above the norm. The remaining subscale means were scored within the normal range.

Table 2 represents the frequency of EI’s occurring on subjects’ protocols when objectively scored. Confused Order was the most common EI, with approximately two-thirds of children receiving this EI. Expansion and Large Size were equally common, occurring in about one-third of the sample BGT protocols.

Table 3 illustrates the intercorrelations between the EI’s and the DESBRS subscale scores. Moderate correlations were found for the Dashes for Circles EI and Need for Closeness subscale (-.42); Confused Order EI and Creative Initiative subscale (.47); Fine Line EI and External Blame subscale (.45); Fine Line EI and Disrespect-Defiance subscale (.42); Fine Line EI and Creative Initiative subscale (.50); Increasing Size EI and Creative Initiative subscale (.54); Second Attempt at Drawing Figures EI and Achievement Anxiety subscale (-.47); and Expansion EI and Creative Initiative subscale (-.42).
Table 1.

Mean, Standard Deviation, and Range of Subject Scores

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<th>M</th>
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<td><strong>WISC-R and WISC-III</strong></td>
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<tr>
<td>Full Scale</td>
<td>91.48</td>
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<tr>
<td>Verbal</td>
<td>90.13</td>
<td>16.67</td>
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<tr>
<td>Performance</td>
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<tr>
<td><strong>Devereux Elementary School Behavior Rating Scale</strong></td>
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<tr>
<td>Impatience</td>
<td>13.70</td>
<td>5.42</td>
<td>18</td>
</tr>
<tr>
<td>Classroom Disturbance</td>
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<td>4.99</td>
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<tr>
<td>Disrespect Defiance</td>
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<tr>
<td>External Blame</td>
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<tr>
<td>Achievement Anxiety</td>
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<td>Inattentive Withdrawn</td>
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<td>Need for Closeness to Teacher</td>
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<td><strong>Bender-Gestalt Test</strong></td>
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<tr>
<td>Emotional Indicator Total</td>
<td>2.13</td>
<td>1.36</td>
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Table 2.

Frequency Distribution of Coded Emotional Indicators

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<tr>
<th>Emotional Indicator</th>
<th>Number Positive</th>
<th>Percent</th>
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<td>Confused Order</td>
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<td>Wavy Line&lt;sup&gt;1&lt;/sup&gt;</td>
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<sup>Note</sup>: <sup>1</sup>Figures 1 and 2; <sup>2</sup>Figure 2; <sup>3</sup>Figures 1, 2, and 3

Reported in Table 4, the multiple regression analyses yielded eight relationships between EI’s and the DESBRS subscales. For the Disrespect-Defiance subscale, which is associated with impulsive and acting-out behavior, the Fine Line EI entered the equation first, accounting for 17% of the variance in predicting shy, timid or withdrawn behavior ($F = 4.44; p = .047$). An additional effect in predicting Disrespect-Defiant behavior was exhibited by the Large Size EI, associated with explosive and acting-out behavior, accounting for 18% of the variance ($F = 5.41; p = .013$).
### Table 3.

**Intercorrelations Between Emotional Indicators and Behavior Ratings**

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</table>

*Note.* DA = Classroom Disturbance; DB = Impatience; DC = Disrespect-Defiance; DD = External Blame; DE = Achievement Anxiety; DF = External Reliance; DG = Comprehension; DH = Inattentive-withdrawn; DI = Irrelevant Responsiveness; DJ = Creative Initiative; DK = Need for Closeness to Teacher; B1 = Confused Order; B2 = Wavy Line (Figures 1,2); B3 = Dashes for Circles (Figure 2); B4 = Increasing Size (Figures 1,2,3); B5 = Large Size; B6 = Small Size; B7 = Fine Line; B8 = Overwork or Reinforced Lines; B9 = Second Attempt; B10 = Expansion; B11 = Constriction; and ET = Emotional Indicator Total.

* *p < .05. **p < .01

External Blame was the second DESBRS subscale that was found to have a significant relationship with an EI. The Fine Line EI, implying shy and timid behavior, accounted for 21% of the variance in predicting External Blame or the extent to which the child attributes success or failure to external sources such as teacher expectations or judgments ($F = 5.46; p = .029$).
Table 4.

Regression Analysis of Emotional Indicators in Predicting Behavior

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<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variable</th>
<th>β</th>
<th>SEB</th>
<th>r_{xy}</th>
<th>p_{xy}</th>
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<td>.39</td>
<td>.42*</td>
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<td>.19</td>
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<tr>
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<td>.19</td>
<td>-.47</td>
<td>-.47*</td>
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<td>Creative Initiative</td>
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<td>-.54</td>
<td>-.54**</td>
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<td>.47</td>
<td>.53**</td>
<td>.28</td>
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<td>Need for Teacher Closeness</td>
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<td>.20</td>
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<td>.18</td>
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<td></td>
<td>Confused Order</td>
<td>.42</td>
<td>.19</td>
<td>.26</td>
<td>.41*</td>
<td>.17</td>
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</tbody>
</table>

*Note. \(^1\)Figures 1,2,3 only. \(^2\)Figure 2 only.

\(^*\)p < .05; \(^**\)p < .01

The Second Attempt EI, associated with anxious behavior, accounted for 22% of the variance in predicting the Achievement Anxiety subscale \((F = 5.99; p = .023)\).

The DESBRS Creative Initiative subscale was predicted by two EI’s. Increasing Size accounted for 29% of the variance in predicting active, positive classroom involvement \((F = 8.69; p = .007)\). The Confused Order EI, implying acting-out behavior, was a second variable that accounted for 28% of the variance in predicting positive classroom behaviors \((F = 13.6; p < .001)\).

The Need for Teacher Closeness subscale was predicted by two EI’s. The Dashes for Circles EI, associated with explosive and acting-out behavior, accounted for 18% of the variance in predicting student conformity and need for teacher
affiliation \((F = 4.61; p = .044)\) and the Confused Order EI accounted for 17\% of the variance \((F = 8.43; p = .009)\).
CHAPTER V

Discussion

This study intended to explore the BGT EI’s validity in predicting maladaptive classroom behaviors as rated by teachers on the DESBRS. The clinical use of the BGT in assessing personality has been emphasized in early literature with regard to the test’s potential in differentiating normal subjects from those that exhibit maladaptive behaviors (Byrd, 1956; Gregory, 1977; Handler & McIntosh, 1971; Koppitz, 1964; Rossini & Kaspar, 1987; Tolor & Brannigan, 1980). Although scrutinized by current research for weak methodology and inconsistent results, the BGT’s potential for gathering rich information in assessing the social-emotional status of a child continues to be explored.

The results of the zero order correlation analysis yielded four positive and four inverse relationships between EI’s and behavior ratings. The relationship between Fine Line EI and External Blame subscale could be expected if the child’s shyness and timidity leads to less ownership of his or her difficulties in the classroom. The Confused Order and Creative Initiative relationship might be explained by the fact that creative children exhibit more divergent and less structured thought leading to less structure in their work products. Of the four inverse relationships, children who produce dashes for circles on the BGT may exhibit impulsive and acting-out behaviors, thus probably would not be seen as having a high need to be close to teachers.

The multiple regression analyses yielded five positive and three inverse relationships. Of the five positive relationships, four could be logically anticipated.
Research supports the finding that Large Size EI implies disrespectful and defiant behavior in children (Koppitz, 1975). Also, a child who displays Confused Order EI when reproducing the BGT designs may be seen as having a higher need to be close to teachers for additional structure and regular redirection. The rationale for the relationships between Fine Line EI and External Blame, and Confused Order EI and Creative Initiative were mentioned previously.

The inverse relationship between Dashes for Circles and Teacher Closeness is interpreted as a logical relationship in that children who display acting-out and impulsive behavior most likely would not be seen as having a high need to be close to the teacher.

Instead, these children probably oppose authority figures, thus teacher contact with them would often be related to their inappropriate behavior. The remaining positive and inverse relationships resulting from the multiple regression analyses were not logically anticipated. The BGT's ability to accurately predict logically anticipated behaviors is not entirely supported by this research. Considering the small sample size and limited number of subjects coded for EI's, these results should be interpreted with caution. Further investigation and analysis would be necessary to understand these perplexing relationships.

**Limitations**

This research does have potential shortcomings that may impact on the generalizability of the study. The limited size of the sample makes it difficult to generalize the BGT EI's findings to other children in elementary school. The small number of subjects also limits the power to detect significant correlations. Although
significant correlations were found between EI’s and DESBRS factors, few EI’s consistently predicted maladaptive DESBRS factors. Also, this study involved children between the ages of 6 years 7 months and 12 years 11 months old, therefore the results are only generalizable or applicable to populations within this age range.

Although the data analysis yielded significant relationships between EI’s and DESBRS subscales, only one relationship was found to be consistent with Koppitz’s original hypotheses. The arguments presented to explain these relationships were purely speculative and based on logical reasoning.

A third limitation of the study was the methodology in collecting the data. The archival record review provided limited information about the subjects during the BGT administration. Behavioral observations were not recorded or reviewed in this study. Behavioral observations could have led to different explanations of the significant relationships between EI’s and DESBRS factors.

The DESBRS was standardized using 1960 census data, limiting the validity of the scale in determining maladaptive classroom behaviors of students. In addition, the DESBRS was only completed by the teacher making the initial referral, thus the ratings are possibly biased interpretations of the child’s classroom behavior. The results are also limited to students exhibiting academic or social-emotional problems in the classroom in a rural New York State public school.

Subjects’ classroom difficulties may have been due to problems with neurological functioning. Children with learning problems could perform poorer on the BGT and positive EI’s could be related to learning, not personality problems. This possibility was never controlled for in this study.
The results obtained from this research suggest that elementary school children's performance on the BGT cannot completely predict specific maladaptive behaviors as suggested by Koppitz. Although the results were not consistent with Koppitz's interpretations of EI's, the scoring of BGT EI's did yield noteworthy correlations with students' classroom behaviors as rated by school personnel. These findings resulted in unsupported hypotheses of the relationship between BGT EI's and classroom behaviors. It is recommended that further research be conducted to investigate the validity of the relationships found in this study. Several possible changes would be helpful in future research. First, a larger sample of subjects should be used and matched on perceptual-motor development. In addition, future research could utilize a more current objective behavior assessment tool and obtain student behavior ratings from at least two school personnel. These changes may lead to a higher degree of result validity and generalizability.
References


