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Assessment of Aggression in Children:
The Use of Human Figure Drawings

Master’s Thesis

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of the School Psychology Program
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By

Jennifer E. Underwood

In Partial Fulfillment of the Requirements
for the Degree of
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Abstract

The purpose of this study was to assess the validity of six characteristics of drawings cited in the literature as indicators of aggression. The study was designed to compare the drawings of students to their rated behavior on the Aggression sub-scale of the Child Behavior Checklist-Youth Self Report form. It was hypothesized, based upon past research, that students who rated their behavior as aggressive would demonstrate a significant number of the aggressive characteristics in their drawings. One-hundred seventy, eighth grade students participated in this study by completing the checklist and drawing a person. The results obtained did not support the claims of previous researchers that the six characteristics are indicators of aggressive behavior in students. Limitations of this study include a small sample size, a limited age range, and a limited number of characteristics measured.
Assessment of Aggression in Children:

The Use of Human Figure Drawings

For many years, school psychologists have had children draw a person in an attempt to discern personality variables. Researchers have traced the study and the use of children’s drawings to describe and to assess personality traits for over 100 years (Motta, Little, & Tobin, 1993; Koppitz, 1983).

Koppitz (1983), traces the origins of the use of drawings as clinical tools to the 1940’s, with its introduction to the profession of school psychology in the late 1960’s and 1970’s. Their popularity rose with the recognition that children often revealed anxieties and feelings in their drawings (Koppitz, 1983). By 1983, studies had documented that figure drawings were among the most widely used assessment techniques for social-emotional evaluation (Motta et al., 1993).

The most often used projective personality tools used by school psychologists include the Draw A Person, Kinetic Family Drawing, and the House Tree Person techniques. Projective personality techniques, like the human figure drawings, are presumed to reflect the drawer’s impulses, anxieties, and conflicts (Koppitz, 1983). Mortensen (1991), describes the drawing process as, “the process of selection (which) involves identification
through projection and introjection” (p. 52.). That is to say that the drawer both consciously and unconsciously identifies with what is drawn and “that the total configuration and the connection between the various elements of the drawings are important” (Mortensen, 1991 p. 53).

In recent years, the use of human figure drawings and other projective measures has been attacked on the grounds of lack of reliability and validity. Despite the extensive use of these techniques, both their predictive and construct validity has yet to be satisfactorily demonstrated (Gresham, 1993; Knoff, 1993; Motta et al., 1993). Perhaps what is most startling is that placement and treatment decisions for children who may or may not have emotional disabilities are often, if not solely, then heavily, based upon subjective interpretations of drawings (Norford & Barakat, 1990).

Due to the regularity with which projective drawings have been used in the schools, researchers have systematically scrutinized these drawings to determine their validity in determining the presence or absence of emotional or behavioral problems in students. These studies have resulted in conflicting findings.
To completely understand the arguments for and against the use of human figure drawings, it is important to understand the theoretical basis behind the interpretation of drawings. The rationale behind the use of drawings is related to both the developmental aspects of childhood and symbolism.

For children, drawing is a natural way of communicating knowledge and feelings about the world (Kamphaus & Pleiss, 1991; Goodenough, 1926). The content of children’s drawings is determined by a process of selection in which both conscious and unconscious motives influence the outcomes (Mortensen, 1991). The outcome of the selection and integration of motives may reveal anxieties, conflicts, or wish dreams (Koppitz, 1983).

In an attempt to quantify significant symbols in children’s drawings, Koppitz (1966) developed a series of 30 Emotional indicators, clinical signs which may reveal underlying attitudes and characteristics of the drawer, and which rarely occur in drawings of well adjusted youngsters. Koppitz (1968) suggested that while the presence of one emotional indicator in a drawing may solely suggest a tendency, the presence of three or more emotional indicators were more suggestive of the presence of emotional problems.
Projective drawings have been intensely studied in an attempt to determine if systematic differences in the content of drawings exist between people presenting with emotional or behavioral problems and those who are not. The remainder of this introduction will be a review of the current literature on the validity of the use of projective drawings, in particular, the human figure drawing technique.

In 1957, Goldstein & Rawn investigated the empirical validity of certain typical figure drawing molar and molecular signs which are generally interpreted as measuring aggressive components. These signs included: heavy line pressure, large figure size, slash-line mouth, detailed teeth, spiked fingers, clenched fists, nostril emphasis, squared shoulders, and toes in a non-nude figure (Goldstein & Rawn, 1957). The results of this study suggested that seven of the specific details: slash-line mouth, detailed teeth, spiked fingers, clenched fists, nostril emphasis, squared shoulders, and toes in a non-nude figure, as a group were related to aggression (Goldstein & Rawn, 1957).

Koppitz (1966), studied whether or not 30 drawing items had clinical validity and could be considered “emotional indicators”. She hypothesized that these items would occur more often in the drawings of children with emotional problems and that the children with emotional problems would have a higher number of emotional indicators in their drawings. She
concluded that 12 of the emotional indicators were clinically significant in the differentiation between children with and without emotional or behavioral problems.

Daum (1983), compiled a list of 11 aggressive features and 4 withdrawn features, all supported in past research by three or more authors. Daum (1983), hypothesized that the drawings of aggressive delinquents would contain a greater number of aggressive features than the drawings of withdrawn delinquents. Furthermore, he believed that the features would occur more frequently in the withdrawn or aggressive delinquent than in the undifferentiated delinquents or non-delinquent. Lastly, the features taken together collectively were hypothesized to have more diagnostic power than individually (Daum, 1983). The results found that “squared shoulders” was the only one of the 12 features which differentiated between the two delinquent groups. However, “slash-line mouth” did occur more frequently in the aggressive group than in the non-delinquent group. Collective consideration of all the features resulted in more predictive power (Daum, 1983).

Opponents of the use of human figure drawings cite such problems as the ambiguousness of the interpretations, the high false positive and false negative hit rate, the lack of a direct relationship between an emotional
indicator and overt behavior, and the presence of illusory correlations in the interpretation process (Norford & Barakat, 1990; Koppitz, 1983; Gresham, 1993). Each of these problems will be further expanded upon in the subsequent text.

In 1990, Norford & Barakat conducted a study to determine the relationship between human figure drawings and aggressive behavior in preschool children using two groups of students, an aggressive group based upon teacher ratings on the Child Behavior Checklist- Teacher Report Form and a non-aggressive group. The results of the study found that there were no significant differences in the presence of five emotional indicators of aggression between the two groups of preschoolers.

Koppitz (1983), suggested that the true interpretation of an indicator can only be determined from a personality assessment battery which includes multiple observations in multiple settings and a developmental/social history. Gresham (1993), objected to the use of projective measures in any personality assessment battery because, “one cannot use a less valid measure (HFD’s) to support results obtained from a more valid measure” (183).

Knoff (1993), in a review of the reliability and validity literature on human figure drawings, reported that “while many attempt to use HFDs within a psychoanalytic perspective, the research simply does not support this
use” (p. 193). The consequences of these psychoanalytic interpretations are high false positive and false negative hit rates. Norford & Barakat (1990), reported that in their research, “clinical judges were unable to categorize correctly the drawings of the aggressive and non-aggressive groups at a rate better than chance” (p. 323). Gresham (1993), in summary of past research reports, “psychologists highly experienced in using HFDs were no more accurate that than inexperienced psychologists in differentiating normal from disturbed children and in making psychiatric diagnoses” (p. 183).

Another problem that has been cited with the use of HFDs is the presence of illusory correlations in the interpretation process. Gresham (1993), defines illusory correlations as the “relationship between test responses and symptoms/behavior that are based on verbal associations rather than valid observations” (p. 183). Documentation of illusory correlations have been found in the use of many projective measures, including HFDs (Gresham, 1993).

Due, in part, to the statistical problems with using projective measures to assess social and emotional functioning, standardized measures of personality and behavior were developed. These measures included the Child Behavior Checklist series developed by Achenbach. The Child Behavior Checklist (CBCL) series was developed as a set of norm-referenced,
standardized behavior rating scales (Lee, Elliot, & Barbour, 1994). Achenbach’s CBCL, CBCL-Teacher Report Form (CBCL-TRF), and the Child Behavior Checklist-Youth Self Report (CBCL-YSR) continue to be used as standard evaluation tools for assessing emotional and behavioral disturbances in school-aged youngsters.

The Child Behavior Checklist - Youth Self Report (YSR), was designed to “obtain 11- to 18-year-olds’ reports of their own competencies and problems in a standardized format” (Achenbach, 1991, p. 2). However, due to the variables which effect how a student responds to the statements, Achenbach (1991) reports that self reports may be less accurate than reports from parents or teachers. Achenbach (1991) reports that it does however, provide one critical part of a social-emotional assessment battery.

The purpose of this study is to assess the validity of six indicators of aggression on the Draw A Person by comparing the drawings of students to their rated behavior on the Aggression sub-scale of the Child Behavior Checklist - Youth Self Report form. The results of this study are expected to support that use of the Draw A Person technique for assessing personality variables, specifically aggression.
The information gain from this study is important because it has implications for educational assessment in schools. This research is an attempt to assess the validity of one popular projective technique, the Draw A Person (DAP) test, by comparing characteristics of aggression in the drawings of students to their score on a non-projective measure of aggression, namely the Child Behavior Checklist - Youth Self Report (CBCL-YSR).

If the six characteristics of aggression on the Draw A Person were valid indicators of aggressive behaviors, then a positive correlation would be expected between the number of aggressive characteristics present in the drawing and the standard score of the Aggression sub-scale of the CBCL-YSR. A significant difference would also be expected between the number of aggressive characteristics drawn by students in the critical range and by students in the borderline or non-significant ranges on the Aggression sub-scale.

Currently, the DAP is frequently given in a standard assessment battery despite its lack of empirical validity. In fact, Norford & Barakat (1990) report that in many school systems, human figure drawings are used to assist in making placement and treatment decisions. Because of legal issues which can arise concerning the interpretation of projective measures in a
psychological report, the establishment of the DAP’s validity is essential if school psychologists are going to continue to use this technique and to interpret the results. This research will further establish the importance of using a variety of test measures when interpreting a student’s psychological health.

Method

Subjects

A convenient sample of 182 student was drawn from an eighth grade population enrolled at a Middle School in south central Florida. The sample of students represented approximately 51% of the entire eighth grade class. All eighth grade students who were present at the school during the day of the research had the opportunity to participate. A group of six students in in-school suspension also participated in the study.

Due to incomplete checklists and drawings, only the data from 170 students was used in the final analysis. Of the 170 students, 80 were male and 90 were female.
District estimates indicate that approximately 59 percent of the students in the middle school are white, 34 percent are African-American, 7 percent are Hispanic, and less than 1 percent are Asian or Indian. The age distribution ranged from 12 to 16 years of age (see Table 1). The mean age of the sample was 13.9 (S.D.=.65).

Instrumentation

The Draw A Person Technique is a projective personality measure which purports to allow nonverbal children to express themselves, to gain an understanding of a child’s inner conflicts, to understand a child from a psycho-dynamic perspective, and to generate hypothesis for further evaluation (Cummings, 1986). Historically, it has been difficult to determine the validity and reliability of interpretations of drawings for personality assessment. Some of the difficulties include the inappropriateness of interpreting drawings in isolation and that the characteristics do not lend themselves to diagnosis in exclusive categories (Hammer, 1969).

The two variables in this study are the number of aggressive characteristics drawn and the T-score of the Aggression sub-scale of the CBCL-YSR. The six characteristics of aggression to be measured in this
study include the presence of teeth, “slash-line” mouth, big hands, long arms, spiked fingers, and fists.

The following are the operational definitions of the six characteristics:

**Teeth:** Any representation of one or more teeth (Koppitz, 1968)

**“Slash-line” mouth:** A single straight line in the lower one-third of the face from top to bottom excluding the hair, which does not curve.

**Big hands:** Hands, across the longest dimension from wrist to fingertip or horizontally across the hand, as big or bigger than the longest dimension of the face excluding hair. If there are no hands drawn than score as absent.

**Long arms:** Arms, measured from top of shoulder to fingertips or where arms end, which, when drawn straight and vertical to the feet, are longer than 50% of the distance between hip (top of belt, if drawn) and bottom of the foot/shoe.

**Spiked fingers:** 50% of more of the drawn fingers which come to a visible point at the end resembling a triangle or a hand without fingers which comes to a point resembling a triangle.

**Fists:** Closed hand with fingers bent into the palm with thumb on the inside or outside of the fingers.
Fifty drawings were selected randomly to determine the interrater reliability for the operational definitions. Interrater reliability was assessed by calculating the percentage of agreement between the investigator and a district school psychologist for each of the six characteristics. Both psychologists assessed the presence of a characteristics using the operational definitions. The percentage of agreement was found to be above 94% for all characteristics except long arms which was at 88% (see Table 2.)

The Child Behavior Checklist - Youth Self Report (CBCL-YSR) is a behavior rating scale that can be completed by students ages 11 through 18. It is a widely used instrument in school and clinical studies. The Checklist is comprised of 112 statements to which the student rates as being “Not True”, “Somewhat True”, or “Very True” of themselves.

The CBCL-YSR measures a student’s behavior along 8 domains: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attentional Problems, Delinquent Behavior, and Aggressive Behavior. For each sub-scale a T-score is provided as well as a descriptive statement of “Not Significant”, “Borderline Significant”, and “Clinically Significant”. In addition to the 8 sub-scales, the CBCL-YSR provides a rating of External problems, Internal problems, and Total problems.
The average test-retest reliability for seven days on the problem scales was found to be .68 for 11- to 14-year olds and .82 for 15- to 18-year-olds, with the total problem score reliability being .70 and .91 respectively (Achenbach, 1991). In a clinical sample of 12- to 17-year-olds, the 6-month stability $r$ was .69 for the total problem score.

"Content validity has consistently been supported by the Youth Self Reports ability to discriminate significantly between demographically matched referred and nonreferred youths" (Achenbach, 1991, p. 82).

The second variable in this study was the T-score obtained on the Aggression sub-scale, after scoring the students CBCL-YSR forms on the accompanied computer scoring program.

**Procedure**

The Child Behavior Checklist - Youth Self Report and a Draw A Person was completed by 182 eighth grade students during a 45 minute homeroom period. All participants were informed, prior to the beginning of their participation, that their participation was voluntary and their anonymity would be preserved.
Each homeroom teacher received a set of standardized directions prior to homeroom. The investigator reviewed the procedures with each teacher and distributed protocols. The importance of standardization was stressed and all teachers reported compliance to the directions.

The CBCL-YSR form and a blank sheet of paper, each with a random identical number on them were passed out to each student. A sharpened pencil was also passed out to each student. Each homeroom teacher read a set of standardized instructions to their class. This investigator circulated throughout the classrooms to provide support and to answer questions for each classroom.

The Draw A Person task was completed first. The students were asked to "Draw a person, a whole person, and not a stick figure or cartoon on your blank sheet of paper". When they were done with their drawing they turned to page 3 of the CBCL-YSR and answered questions 1 to 112. If the students did not know a word, the homeroom teacher was instructed to read it to them.

The students were reminded not to put their names on their papers, to only circle if they were male or female, and to write their age. They were also instructed that it was important for them to answer every question. When they were finished, the students paper clipped the CBCL-YSR and the
DAP together and put them in an envelope. When all the students were done, the homeroom teacher sealed the envelope and its contents.

The investigator went to each eighth grade classroom and debriefed students. They were told that they participated in a study about the personality of eighth graders and how they may express themselves in their drawings. Questions were taken and answered in a straight forward manner.

Results

Due to the characteristics of the T-distribution of the Child Behavior Checklist, the T-scores were transformed into reciprocal natural log scores. Subsequent to the transformation, Pearson r correlation coefficients were calculated between the transformed Aggressive Behavior T-scores and the Total number of characteristics drawn in the drawing. Correlation coefficients were also calculated between the Total Score, the Internal Scale, and the External Scale of the Child Behavior Checklist Youth Self Report. The results of the correlational analysis indicated that there is not a relationship between the number of characteristics drawn by a student and their self rated aggressive behavior (see Table 3).
Discussion

Controversy with using projective measures in personality assessment is well documented in the literature. The results of the present study appear to confirm that characteristics of student’s drawings should not be used in determining their emotional health. The results of this study on aggression in student’s drawings found that six characteristics previously documented as indicators of aggression in drawings were not correlated with student’s self report of aggressive behavior.

Overall, the hypothesis of this study were not found to be supported by the research results. The results of this study were found to be consistent with past research which demonstrated that specific characteristics of drawings can not be used to systematically differentiate between students with emotional problems and those without.

There are several limitations of the current study. The students’ ratings of aggressive behavior provide information on students’ perceptions only. These may or may not be accurate and are also subject to informant effects. Secondly, the rating scale was of considerable length to which many students may have had trouble reading and/or understanding the questions.
The interpretation of drawings was also limited by many factors. A number of characteristics could not have existed concurrently which may have skewed the interpretation of the total number of drawing characteristics differentiating between groups. Secondly, many students completed drawings for which one or more of the features could not be assessed.

Although errors in administration were minimized by providing standardized directions, individual administration of the directions may have resulted in compromised standardization.

Lastly, the generalizability of the findings may be limited by the sample size and characteristics of the sample. Only 170 student from an entire eighth grade class at a single middle school participated in the study. It is unknown whether or not these students represent the average student. Future research may expand this study across various geographic areas and age levels.
References


Table 1

Breakdown of Age and Gender of Participants

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
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</thead>
<tbody>
<tr>
<td>12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>21</td>
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<td>14</td>
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<td>63</td>
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<tr>
<td>15</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>1</td>
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Table 2.

Percentage of Agreement by Independent Raters for the Six Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teeth</td>
<td>98%</td>
</tr>
<tr>
<td>Slash-line Mouth</td>
<td>94%</td>
</tr>
<tr>
<td>Large Hands</td>
<td>100%</td>
</tr>
<tr>
<td>Long Arms</td>
<td>88%</td>
</tr>
<tr>
<td>Fists</td>
<td>100%</td>
</tr>
<tr>
<td>Spiked Fingers</td>
<td>96%</td>
</tr>
</tbody>
</table>
Table 3.

Pearson R Correlations Between the Number of Characteristics Drawn and T-scores on the Youth Self Report

<table>
<thead>
<tr>
<th>Scale</th>
<th>Value</th>
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<tbody>
<tr>
<td>Aggression</td>
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</tr>
<tr>
<td>Internal</td>
<td>-0.15</td>
</tr>
<tr>
<td>External</td>
<td>-0.10</td>
</tr>
<tr>
<td>Total</td>
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