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A Validation of Koppitz's Scoring Method for Children's Human Figure Drawings

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A VALIDATION OF KOPPITZ'S SCORING METHOD FOR CHILDREN'S HUMAN FIGURE DRAWING

by

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ABSTRACT

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for Children's Human Figure Drawings

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The purpose of this study was to see if the Koppitz objective scoring method for interpreting children's human figure drawings could be used as a valid assessment instrument with elementary school children. Human figure drawings were obtained from two matched groups of elementary school students, a normal and an emotionally disturbed group. The results of the comparison of human figure drawings of the two groups did not support Koppitz's findings. The Koppitz objective scoring method was found to be invalid as an assessment instrument with elementary school children and of doubtful use in diagnosing emotionally disturbed children. Possible explanations for the differences in results and areas for further research were discussed.

(26 pages)

INTRODUCTION

The training of graduate students in school psychology usually includes instruction in the use of individual assessment devices. One of the instruments currently being taught school psychology students is the drawing of a human figure, a device easily administered to school age children. A human figure drawing is defined as a drawing of a human figure, a man, woman, boy or girl, made by a child after receiving instructions to "draw a whole person." There are presently many scoring methods or techniques of interpreting and analyzing the many features and characteristics of children's human figure drawings. Some of the more prominent techniques being taught are the Goodenough Draw-A-Man Test (1926) and the revised Goodenough-Harris Drawing Test (Harris, 1963) for use as a developmental test of mental maturity; and the Buck House-Tree-Person Technique (1948, 1949) and the Machover Draw-A-Person Test (1949) for use as a projective test to evaluate personality.

Sundberg (1961) found the Draw-A-Person Test to have extensive use in clinical practice, ranking second behind the Rorschach. The Draw-A-Person Test was developed and is used as a projective instrument to analyze and evaluate the personality of clinical patients. This indicates that a human figure drawing is part of the armamentarium used by a great number of psychologists in clinical practice.

Problem

Can objective scoring methods be used to interpret the human figure drawings of elementary school children and to identify and predict adjust-

ment and learning problems? The purpose of this study was to see if the Koppitz method, an objective method, of scoring children's human figure drawings could be used as a valid assessment instrument and be included as part of an assessment battery with elementary school children.

Koppitz (1966, 1968) developed an objective scoring method to be used as a projective technique on the human figure drawings of elementary school children, ages 5 to 12. Her scoring method consists of thirty objective items, drawing characteristics, derived from the work of Machover (1949) and Hammer (1958) and from her own clinical experience. (See Appendix.) The thirty items were designated as emotional indicators and proposed to reflect primarily a child's anxieties, concerns and attitudes. According to Koppitz's scoring method, human figure drawings are scored for the presence of each of the thirty emotional indicators. Koppitz (1968, p. 42) stated that, "two or more emotional indicators on a human figure drawing are highly suggestive of emotional problems and unsatisfactory interpersonal relationships."

Koppitz gave her human figure drawing test to two groups of children, a group of well-adjusted elementary school students and a group of children who were patients of a child guidance clinic, matched for age and sex. She found that she could differentiate between emotional problem children and normal children by using her thirty item scoring method. Her findings supported the hypotheses that (1) emotional indicators occur more often on the human figure drawings of clinic patients than on the drawings of well-adjusted children; and (2) individual human figure drawings of clinic patients show a higher incidence of emotional indicators than those of well-adjusted pupils. This means that (1) a human figure drawing of a clinic patient is more likely to show an emotional indicator

than a drawing of a well-adjusted subject; and (2) a human figure drawing of a clinic patient will show a greater number of emotional indicators than a drawing of a well-adjusted pupil.

The present study differs from Koppitz's study in that it attempts to validate her scoring method by correcting some methodological errors found in her study. First, Koppitz used Chi-squares as her statistical tests to compare the human figure drawings of her two matched groups. When calculating thirty Chi-squares, there is the possibility of obtaining some significant results by chance alone. It is impossible to know which significant results are due to chance or to significant differences between the two groups. This study used a correlated t test for matched samples because the groups to be compared were matched for age, sex and intelligence.

Second, Koppitz's groups were of questionable match. Her well-adjusted group, selected to compare with the emotionally disturbed group, was an atypical sample of an elementary school population. The well-adjusted subjects were students selected by their teachers as outstanding "all around" pupils with good social, emotional and academic adjustment and assumed to have high average or superior intelligence. Since it was assumed that Koppitz's scoring method was developed for use with all elementary school students, especially the average student, this study's normal group included outstanding, high average, average and low average students.

Also, Koppitz matched her groups for age and sex, but failed to match them for intellectual ability. Because intellectual development does play an important role in the drawing of a human figure, not controlling for this variable can lead to erroneous results and invalid

conclusions. To control for this variable, the two groups of this study were not only matched for the variables of age and sex, but also for intelligence.

Hypothesis

The hypothesis tested in this study was that there was no difference between the emotional indicators on the human figure drawings of normal children and children with emotional problems.

REVIEW OF LITERATURE

Many researchers, through the years, have developed different scoring methods and techniques of interpreting and analyzing children's human figure drawings. Goodenough (1926) was one of the first researchers to develop a comprehensive and objective scoring system for children's human figure drawings which measured a child's mental maturity or intellectual development. Her Draw-A-Man Test was used as a basis for the later revised Goodenough-Harris Drawing Test (Harris, 1963) which also used children's human figure drawings as a measure of intellectual maturity.

When interest in children's human figure drawings changed from developmental aspects to projective uses, new methods of interpreting and analyzing drawings developed. The psychologists who used human figure drawings as a projective device thought of them as primarily a language, a form of expression, expressing not only the needs and emotions dominant at the time of drawing, but also the more deep seated and lasting characteristics known as personality (Goodenough and Harris, 1950). Buck (1948, 1949) and Machover (1949) were the pioneers in using human figure drawings as projective instruments in clinical practice and developing methods of interpretation. Machover's Draw-A-Person Test became the most extensively used human figure drawing technique in clinical practice (Sundberg, 1961).

In their extensive review of the research done on Machover's drawing technique, Swensen (1957, 1968) and Roback (1968) found the Draw-A-Person Test produced equivocal results. Some researchers found the Draw-A-Person Test to be a reliable and valid projective test instrument and

clinical tool, while others found it to be of little value to psychologists in clinical practice. Several researchers (Vane and Eisen, 1962; Dillard and Landsman, 1968; Koppitz, 1966) developed new methods of interpretation from Machover's drawing technique. These researchers, in developing new objective scoring methods for interpreting children's human figure drawings from Machover's work, hoped to find a more reliable and valid drawing test instrument.

Vane and Eisen (1962) developed a nine item behavior rating scale for kindergarten children, of which four items were found to identify maladjustment in children. Dillard and Landsman (1968) developed a ten item weighted scale for kindergarten children which was found to differentiate between problem and non-problem children. Koppitz (1966) developed a thirty item scoring scale for elementary school children, ages 5 to 12, which was found to differentiate between normal children and children with emotional problems. As for the validity of these objective scoring methods, it has yet to be shown for the paucity of research.

Fuller, Preuss, and Hawkins (1970) attempted to replicate Koppitz's (1966) validation study. Their findings supported Koppitz's first hypothesis in that some emotional indicators do occur more often on the human figure drawings of children with emotional problems than on those of normal children. Nine emotional indicators were found significantly more often on the human figure drawings of the disturbed group than on the drawings of the normal group, but only four of the indicators agreed with Koppitz's findings. The authors also found that Koppitz's second hypothesis, that two or more emotional indicators on a human figure drawing are highly suggestive of emotional problems, must be interpreted very cautiously.

Their methodological procedures followed and deviated from Koppitz's. They used Chi-squares to compare the human figure drawings of their two groups as Koppitz did, but failed to match the groups on any variable. Their normal group of subjects were selected at random from lists of children who had never been referred and were considered to be good pupils free of emotional problems. Thus, their normal group was a more representative sample of an elementary school population than Koppitz's well-adjusted group.

Hall and Ladriere (1970) in comparing six human figure scoring systems found that the Dillard and Landsman ten item weighted scale and the Koppitz thirty item scoring scale significantly distinguished between the human figure drawings of problem and non-problem fourth grade boys. They used groups of fourth grade boys matched for age and intelligence and t tests to compare for differences between groups. Their population sample was a very restricted group of elementary school children.

METHODS OF PROCEDURES

Subjects

The subjects for this study were 31 pairs of public elementary school students matched on the variables of age, sex and intelligence. Each group, the normal student group and the emotionally disturbed student group, included 25 boys and 6 girls.

The emotionally disturbed group consisted of 31 students who were in learning adjustment (emotionally disturbed) classes. The students had been referred to the Admissions Committee of the Learning Adjustment Classes for Cache County and Logan City School Districts and diagnosed as emotionally disturbed children. The chronological age range for this group was 6 years, 8 months to 11 years, 3 months, with a mean of 9 years, 8 months. The intelligence scores for these students ranged from 80 to 121, with a mean of 96.

The subjects for the normal group were 31 regular classroom students, first through fifth grade. The students had never been referred for psychological services because of academic or emotional problems or identified as having emotional problems. The chronological age ranged from 6 years, 9 months to 11 years, 3 months, with a mean of 9 years, 8 months for this group. The intelligence scores ranged from 84 to 118, with a mean of 99.

Procedure

The Koppitz human figure drawing test was administered individually to each subject in each group. According to Koppitz's administration

procedures, each subject was given [illegible]
a number 2 pencil with an eraser. [illegible]
suggested by Koppitz (1968, p. 6) [illegible]
you to draw a whole person. It [illegible]
draw, just make sure that it is a whole person and [illegible]
a cartoon figure."

Each human figure drawing was scored [illegible]
of each of Koppitz's thirty emotional indicators [illegible]
manual. A score, the total number of emotional indicators [illegible]
figure drawing, was obtained for each subject. The [illegible]
for scoring the human figure drawings, [illegible]
correlation coefficient was computed, [illegible]
matched samples was calculated to see if there [illegible]
scores on the human figure drawings [illegible]
matched samples was calculated to see if there were a difference between
the emotional indicator scores on the human figure drawings [illegible]
groups.

Koppitz (1966) found that twelve emotional indicators [illegible]
differentiated between her well-adjusted pupils and [illegible]
substantiate her findings, Chi-squares were computed [illegible]
of subjects in the normal and emotionally disturbed groups [illegible]
each given emotional indicator on their human figure drawings. [illegible]
the expected cell frequencies were less than five, Yates' [illegible]
continuity was used. In addition, a comparison was made between the
subjects in the two groups who showed [illegible]
human figure drawings.

procedures, each subject was given an $8\frac{1}{2}$" x 11" blank sheet of paper and a number 2 pencil with an eraser. Each subject was given the instructions suggested by Koppitz (1968, p. 6), "On this piece of paper, I would like you to draw a whole person. It can be any kind of person you want to draw, just make sure that it is a whole person and not a stick figure or a cartoon figure."

Each human figure drawing was scored by the writer for the presence of each of Koppitz's thirty emotional indicators according to her scoring manual. A score, the total number of emotional indicators on a human figure drawing, was obtained for each subject. The intra-rater reliability for scoring the human figure drawings, when a Pearson product-moment correlation coefficient was computed, was .86. A correlated t test for matched samples was calculated to see if there was a difference between the emotional indicator scores on the human figure drawings of the two groups.

Koppitz (1966) found that twelve emotional indicators significantly differentiated between her well-adjusted pupils and clinic patients. To substantiate her findings, Chi-squares were computed comparing the number of subjects in the normal and emotionally disturbed groups who showed each given emotional indicator on their human figure drawings. Where the expected cell frequencies were less than five, Yates' correction for continuity was used. In addition, a comparison was made of the number of subjects in the two groups who showed one or more indicators on their human figure drawings.

RESULTS

The hypothesis that there was no difference between the emotional indicators on the human figure drawings of normal children and children with emotional problems was tested. The obtained t ratio of 1.93 (Table 1) was not significant at the .05 level and therefore the null hypothesis was not rejected. Koppitz's thirty emotional indicators did not differentiate between the normal and disturbed children of this study.

Table 1. Results of the correlated t test for matched samples

	Number of emotional indicators	
	Normal group	Disturbed group
Sum	35	53
Mean	1.13	1.71
S.D.	1.18	1.20

t ratio = 1.93 (P .05)

The only emotional indicator found to have a significant difference between the normal children and children with emotional problems at the .05 level was gross asymmetry of limbs (Table 2). This emotional indicator was one of the twelve emotional indicators found by Koppitz to show a significant difference between her well-adjusted pupils and clinic patients. One other emotional indicator, omission of arms, was found significant at the .10 level. Some of the emotional indicators occurred so rarely on the human figure drawings that statistical analysis was not possible or meaningful.

Table 2. Emotional indicators on human figure drawings of normal and emotionally disturbed students

Emotional indicators	Normal	Disturbed	x^2	P
*Poor integration	0	2		
Shading face	0	1		
*Shading body, limbs	5	2		
*Shading hands, neck	1	0		
*Gross asymmetry of limbs	3	11	4.52	.05
*Slanting figure	6	3		
*Transparencies	1	2		
*Tiny figure	1	3		
*Big figure	1	0		
Tiny head	0	0		
Crossed eyes	0	0		
Teeth	2	1		
*Short arms	2	4		
Long arms	2	1		
Arms clinging to body	3	0		
*Big hands	1	1		
*Hands cut off	0	3		
Legs pressed together	0	2		
Genitals	1	0		
Monster, grotesque figure	1	2		
Three figures	0	0		
Clouds	0	1		
No eyes	0	0		
No nose	0	1		
No mouth	1	0		
No body	0	1		
No arms	0	5	3.48	.10
No legs	0	0		
No feet	1	2		
*No neck	3	5		

*Found by Koppitz to differentiate between clinic patients and well-adjusted pupils.

Eight of Koppitz's thirty emotional indicators were present exclusively on the human figure drawings of disturbed students; and five exclusively on the human figure drawings of normal students. Five emotional indicators--tiny head, crossed eyes, three figures, omission of eyes and omission of legs--were shown on none of the human figure drawings.

Koppitz (1966, p. 314) stated that, "the diagnostic value of the thirty drawing items was greatly increased when the total number of indicators on a given human figure drawing was considered instead of each individual item." Table 3 shows the number of subjects in the normal and disturbed groups who had 0, 1, 2, 3, or 4 or more emotional indicators on their human figure drawings. It was found that twelve, or

Table 3. Number of emotional indicators on human figure drawings of normal and emotionally disturbed students

Number of indicators	Normal	Disturbed
0	12	4
1	8	10
2	8	11
3	2	5
4 or more	1	1

39 percent of the normal students revealed no emotional indicators at all, while another eight, or 26 percent of these subjects showed only one indicator. Four, or 13 percent of the emotionally disturbed students revealed no emotional indicators, while another ten, or 32 percent showed only one indicator. If Koppitz's hypothesis, that two or more emotional indicators on a human figure drawing are highly suggestive of emotional problems, had been used as a cut off point, fourteen, or 45 percent of

the emotionally disturbed students would have been diagnosed as normal. Seventeen of the 31, or 55 percent of the disturbed students would have been classified correctly.

Eleven, or 35 percent of the normal students obtained two or more emotional indicators on their human figure drawings. Again if Koppitz's hypothesis had been used as a cut off point, 35 percent of the normal students would have been diagnosed as emotionally disturbed, while 65 percent would have been correctly identified.

This indicates that Koppitz's scoring method produced a high percentage of false positives and false negatives. Her thirty emotional indicators erroneously indicated that 35 percent of the normal students were emotionally disturbed (false positives) and 45 percent of the emotionally disturbed students were normal (false negatives). Such a high percentage of errors for a proposed assessment instrument suggests that Koppitz's objective scoring method cannot differentiate between normal and disturbed children any better than by chance alone.

Discussion

The findings of this study did not support Koppitz's results. Her thirty emotional indicators did not differentiate between the human figure drawings of normal and emotionally disturbed subjects of this study. Koppitz's objective scoring method was found to be invalid as an assessment instrument for differentiating between normal children and children with emotional problems. Psychologists should be very cautious of using Koppitz's scoring method for interpreting the human figure drawings of elementary school children.

Koppitz's hypotheses that (1) emotional indicators occur more often on the human figure drawings of children with emotional problems than on

those of normal children; and (2) individual human figure drawings of disturbed children show a higher incidence of emotional indicators than those of normal children, were not supported by the findings of this study. Only one emotional indicator, gross asymmetry of limbs, was found to have a significant difference between the human figure drawings of normal and disturbed students at the .05 level. As for Koppitz's hypothesis that two or more emotional indicators are highly suggestive of emotional problems, results show that her thirty emotional indicators produced a high percentage of errors, in that 35 percent of the normal students were diagnosed as disturbed and 45 percent of the disturbed students were diagnosed as normal. As an assessment instrument for elementary school children, Koppitz's objective scoring method has much to be desired.

There are a number of possible explanations for the difference in results between this study and Koppitz's. First, is the selection of the normal group of children to compare with the emotionally disturbed group. Koppitz's well-adjusted group were elementary students selected by their teachers as outstanding "all around" pupils with good social, emotional and academic adjustment and assumed to have high average or superior intelligence. These outstanding students were then matched for age and sex, not intelligence, with the emotionally disturbed group. The normal group of this study were students selected because of never having been referred for psychological services for academic or emotional problems and because they matched the emotionally disturbed students on the variables of age, sex and intelligence.

When the exactness of match is considered, the normal subjects of this study matched the emotionally disturbed subjects more closely than

the groups matched by Koppitz. Koppitz's groups represented the extremes, the outstanding and disturbed students, of an elementary school population. This could explain why her results showed the thirty emotional indicators differentiating between her two groups. Since it was assumed that Koppitz's scoring method was developed for use with all elementary school children, the normal subjects of this study were a more representative sample of an elementary school population, including outstanding, high average, average and low average students. Koppitz (1968, p. 49) pointed out a reason for the results of this study-- she stated, "It cannot be assumed that the thirty emotional indicators can differentiate between the human figure drawings of the average run of good and poor students in public school as well as they can differentiate between the drawings of children with and without serious emotional problems."

The second explanation for the difference in results is the use of a correlated t test for matched samples as the statistical test for comparing the human figure drawings of the two groups instead of Chi-squares as Koppitz did. A correlated t test was used in this study because the groups to be compared were matched for age, sex and intelligence. Also, when calculating a large number of Chi-squares, there is the greater possibility of obtaining a number of significant results because of chance factors alone.

Another possible explanation for the difference in results between the two studies, is sample size. Koppitz's study included 76 pairs of public school children, while this study consisted of only 31 pairs of elementary school children. Also, Koppitz had a majority, 44 pairs, of female subjects in her study, while this study had only 6 pairs of female subjects. Further research is needed to check the influence of such factors as sample size and sex differences on Koppitz's scoring method.

SUMMARY AND CONCLUSIONS

Summary

This study attempted to see if Koppitz's objective scoring method, her thirty emotional indicators for children's human figure drawings, could be used as a valid assessment instrument for elementary school children when certain methodological errors were corrected. Human figure drawings were obtained from two groups of elementary school children, 31 normal students and 31 emotionally disturbed student, matched for age, sex and intelligence. The results of the comparison of human figure drawings did not support Koppitz's findings. The thirty emotional indicators failed to differentiate between normal children and children with emotional problems. The results also show that (1) Koppitz's emotional indicators did not occur more often on the human figure drawings of disturbed students than on the drawings of normal students; and (2) individual human figure drawings of disturbed students did not have a higher incidence of emotional indicators than those of normal students. The Koppitz objective scoring method for interpreting children's human figure drawings was found to be invalid as an assessment instrument and of doubtful use in diagnosing emotionally disturbed children.

Conclusions

The findings of this study show the Koppitz objective scoring method for interpreting children's human figure drawings to be invalid as an assessment instrument for elementary school children. Psychologists

should be very cautious of using Koppitz's scoring method as part of an assessment battery with an elementary school population. Koppitz's thirty emotional indicators are of doubtful use for differentiating between normal children and children with emotional problems. The results indicate that Koppitz's scoring method fails to adequately diagnose normal and emotionally disturbed students. Human figure drawings may be of valid use as an assessment instrument to psychologists, but the findings of this study suggest that Koppitz's objective scoring method does not assess students any better than chance. Further research is still needed to check on the influence of such factors as sample size and sex differences on the Koppitz scoring method.

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APPENDIX

Koppitz's Emotional Indicators

(All of the emotional indicators are considered valid for boys and girls ages 5 to 12 unless otherwise indicated.)

Quality signs

1. Poor integration of parts (Boys 7, Girls 6): One or more parts not joined to rest of figure, part only connected by a single line, or barely touching.

2. Shading of face: Deliberate shading of whole face or part of it, including "freckles," "measles," etc.; an even, light shading of face and hands to represent skin color is not scored.

3. Shading of body and/or limbs (Boys 9, Girls 8): Shading of body and/or limbs.

4. Shading of hands and/or neck (Boys 8, Girls 7): Shading of hands and/or neck.

5. Gross asymmetry of limbs: One arm or leg differs markedly in shape from the other arm or leg. This item is not scored if arms or legs are similar in shape but just a bit uneven in size.

6. Slanting figure: Vertical axis of figure tilted by 15 degrees or more from the perpendicular.

7. Tiny figure: Figure two inches or less in height.

8. Big figure (Boys and Girls 8): Figure nine inches or more in height.

9. Transparencies: Transparencies involving major portions of body or limbs, single line or lines of arms crossing body not scored.

Special features

10. Tiny head: Height of head less than one-tenth of total figure.

11. Crossed eyes: Both eyes turned in or turned out; sideway glance of eyes not scored.

12. Teeth: Any representation of one or more teeth.

13. Short arms: Short stubs for arms, arms not long enough to reach below waistline.

14. Long arms: Arms excessively long, arms long enough to reach below knee or where knee should be.

15. Arms clinging to body: No space between body and arms.

16. Big hands: Hands as big or bigger than face of figure.

17. Hands cut off: Arms with neither hands nor fingers; hands hidden behind back of figure or in pocket not scored.

18. Legs pressed together: Both legs touch with no space in between, in profile drawings only one leg is shown.

19. Genitals: Realistic or unmistakably symbolic representation of genitals.

20. Monster or grotesque figure: Figure representing non-human, degraded or ridiculous person; the grotesqueness of figure must be deliberate on part of the child and not the result of his immaturity or lack of drawing skill.

21. Three or more figures spontaneously drawn: Several figures shown who are not interrelated or engaged in meaningful activity; repeated drawing of figures when only "a" figure was requested; drawing of a boy and a girl or the child's family is not scored.

22. Clouds: Any presentation of clouds, rain, snow or flying birds.

Omissions

23. No eyes: Complete absence of eyes; closed eyes or vacant circles for eyes are not scored.

24. No nose (Boys 6, Girls 5).

25. No mouth

26. No body

27. No arms (Boys 6, Girls 5).

28. No legs

29. No feet (Boys 9, Girls 7).

30. No neck (Boys 10, Girls 9).