

Pittsburg State University

Pittsburg State University Digital Commons

Electronic Theses & Dissertations

10-1961

A NORMATIVE STUDY OF SOME DEVELOPMENTAL ASPECTS OF THE HUMAN FIGURE DRAWINGS OF CHILDREN

Bessie M. Whitehead

Kansas State College Of Pittsburg

Follow this and additional works at: <https://digitalcommons.pittstate.edu/etd>



Part of the [Child Psychology Commons](#), and the [Education Commons](#)

Recommended Citation

Whitehead, Bessie M., "A NORMATIVE STUDY OF SOME DEVELOPMENTAL ASPECTS OF THE HUMAN FIGURE DRAWINGS OF CHILDREN" (1961). *Electronic Theses & Dissertations*. 160.

<https://digitalcommons.pittstate.edu/etd/160>

This Thesis is brought to you for free and open access by Pittsburg State University Digital Commons. It has been accepted for inclusion in Electronic Theses & Dissertations by an authorized administrator of Pittsburg State University Digital Commons. For more information, please contact digitalcommons@pittstate.edu.

A NORMATIVE STUDY OF SOME DEVELOPMENTAL ASPECTS
OF THE HUMAN FIGURE DRAWINGS OF CHILDREN

A Thesis Submitted to the Graduate Division in Partial
Fulfillment of the Requirements for the
Degree of Master of Science

By

Bessie M. Whitehead

KANSAS STATE COLLEGE OF PITTSBURG

Pittsburg, Kansas

October, 1951

PORTER LIBRARY

ACKNOWLEDGMENTS

The writer wishes to express her sincere appreciation to Howard V. Bair, M.D., and his staff at Parsons State Hospital and Training Center. Special recognition is given to Henry Deland, Ph.D., for his constructive criticism; to D. R. Becker, M.S., for statistical assistance; and to Lila Weissenberg, Ph.D., and Dan Smith, M.S., for their assistance in judging.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	GENERAL STATEMENT OF THE PROBLEM.....	1
II.	RELATED LITERATURE.....	8
III.	PROCEDURE.....	24
	Subjects of Study.....	24
	Source of Data.....	24
	Administration of DAP.....	25
	Selection of Sample.....	25
	Scoring Procedure.....	26
	Judges.....	29
	Statistical Methods.....	30
	Scope and Limitations.....	32
IV.	RESULTS.....	35
	Summary of Procedure.....	35
	Statistical Analysis of Performance (CA group).....	35
	Analysis of Performance (MA Sub-groups).....	38
	Comparison of CA and MA Groups.....	39
	Analysis of Special Education (educable) Group.....	40
	Analysis of Special Education (trainable) Group.....	42
	Discussion.....	42
	Implication of Results.....	46
V.	SUGGESTIONS FOR FURTHER STUDY, SUMMARY, AND CONCLUSIONS.....	49
	Suggestions for Further Research.....	49
	Summary, Recommendations, and Conclusions.....	56
APPENDIX A.....		61
BIBLIOGRAPHY.....		64

ABSTRACT

The Draw-A-Person Test by Karen Machover is one of the better known of the projective techniques using drawing behavior of the client as material for interpretation, but a review of the research is evidence that its reliability and validity have not been established to the satisfaction of most of the students of the problem.

The use of the DAP with children is especially questionable. Machover mentions developmental trends and stresses their importance in interpreting the drawings of children, but she sets no standards and gives no norms. The present study was planned as a contribution toward establishing norms with the expectation that with such norms the technique can be used with much more accuracy as a diagnostic tool.

The pupils of an elementary school and two special classes of mentally retarded children were the subjects of the study. Three drawings of the human figure, one of each sex and one self-drawing, were made by each child. The self-drawings were scored by three judges as to the presence or absence of twenty DAP characteristics. The resulting figures were analyzed statistically to determine actual drawing behavior and the effect of age, mental age, and sex upon this behavior.

The present study has actually raised more questions than it has answered. Many more such studies must be made before the psychologist can accurately judge the significance of the drawing traits he finds as he works with elementary school children.

The study confirms Machover's assertion of developmental trends, and agrees with Goodenough's findings that the essential parts of the human figure are habitually drawn by elementary school children. The few drawings of the retarded subjects appeared to follow the same trends at a slower rate in relation to chronological age.

Significant differences were not generally found between the performances of the chronological age, mental age, and sex sub-groups after the age of seven years. The few exceptions were on certain DAP items as drawn by the 8-4 to 9-6 age sub-groups.

Perhaps the most helpful result of the study for persons using the DAP with children would be the tables showing the percentage of children including each DAP characteristic in their drawings. The psychologist can thus compare the drawing of his client with that of the peer group. Either the omission or inclusion of a part could have a significance if the behavior was not typical of the pertinent group.

The study was limited and affected adversely by the narrow socio-economic range; by the limited geographical distribution; by the small age range; by the use of a group intelligence test; and by the unknown incidence of personality deviation among the subjects.

LIST OF TABLES

TABLE	PAGE
I. Chronological and Mental Age Range of CA and MA Sub-groups.....	27
II. Chronological and Mental Age Range of CA and MA Sub-groups.....	27
III. Distribution of Special Education Students by Chronological and Mental Age.....	28
IV. Percentage of Individuals Who Included Each Characteristic in Their Drawing.....	33
V. Percentage of Individuals Who Included Each Characteristic in Their Drawing.....	34
VI. Comparison of the Total Performance of CA Sub-groups.....	37
VII. Comparison of the Total Performance of MA Sub-groups.....	37
VIII. Comparison of the Total Performance of the CA and MA Sub-groups.....	41
IX. Percent of Children Showing Different Parts of the Body at Different Age Levels.....	51
X. Percentage of Successes of Four Groups on DAP Characteristics.....	54
XI. Comparison of the Performance of CA Sub-groups on Each Characteristic.....	59

CHAPTER I

GENERAL STATEMENT OF THE PROBLEM

For many years there has been much interest in the use of human figure drawings as a projective technique for diagnostic use with the mentally ill. Psychiatric implications are attributed to practically every possible characteristic exhibited in the human figure, but until recently, little has been done toward establishing standards or norms describing objectively how various groups in the population actually perform when asked to draw a person. A clinician had no ruler by which to measure the performance of his client. He had no standard by which he could decide that the behavior exhibited was usual or abnormal for the given client. He could not say, "It is common for six-year-olds to omit hands, so for this six-year-old the omission of hands probably has no significance." Some of the more recent research using human figure drawings undertakes to set up such objective standards.

The earliest clinical interest in drawings according to Anne Anastasi and Toley, who made one of the more exhaustive surveys of the literature, was concerned with

their diagnostic value in classifying the various psychiatric groups. Benjamin Rush, "the father of American psychiatry", was reporting the results of such studies as early as 1812, according to these authors.¹

Florence Goodenough reports that the interest in children's drawings began as early as 1885. The purpose of the earliest studies was to improve art instruction through the understanding of the developmental processes and the interests of children. Even in the beginning of such research it was evident that drawing ability was correlated closely with intelligence and a developmental trend was evident. Such research culminated in the Draw-A-Man Test by Florence Goodenough. This test is described in her book, Measurement of Intelligence by Drawing, published in 1926.²

Even before the appearance of the Goodenough Test, called the Draw-A-Man Test, it was recognized that the drawings of apparently normal children differed from those of the backward, delinquent, or mentally ill. Goodenough

¹Anne Anastasi & J. P. Foley, Jr., "A Survey of the Literature on Artistic Behavior in the Abnormal," Journal of General Psychology, 25, 1941, pp. 111-142.

²Florence L. Goodenough, Measurement of Intelligence by Drawings, ed. Lewis M. Terman, World Book Company, Chicago, Illinois, 1926, pp. 62-66.

discussed the possibility of using human figure drawings for diagnostic purposes.³ Other students investigated the validity of her hypotheses with varying results. However, it was not until 1949 that the idea of using human figure drawings projectively was fully developed and systematized by Karen Machover in her test, the Draw-A-Person Test (DAP) described in Personality Projection in the Drawing of the Human Figure.⁴

Karen Machover credits the beginning of her interest in human figure drawings to her use of the Goodenough Draw-A-Man Test in her clinical practice.⁵ Her system is based on her experience with adolescents and adults in a psychiatric setting.

Since the publication of this test, much of the literature has been concerned with testing the validity of her interpretative assumptions. According to Buros, most reviewers are "practically unanimous in their interest in Machover's technique." However, that all deplore the lack of validating data and theoretical background.⁶

³Idem., p. 177.

⁴Karen Machover, Personality Projection in the Drawing of the Human Figure, First Edition, Springfield, Illinois, Charles C. Thomas, 1949, p. 181.

⁵Idem., p. 20.

⁶O. K. Buros, Ed., The Fourth Mental Measurements Yearbook, Highland Park, New Jersey, The Gryphon Press, pp. 112.

The reliability of the technique has also been questioned. Starr and Marcuse have investigated this problem. They say, "In the present study five factors were found to be reliable for both sexes; i.e., to appear consistently on both the first and second administrations, (perspective, position on page, incompletions, height of figure, and ratio of head size to height of figure). One factor was found to be unreliable for both males and females (presence or absence of sexual symbols). One factor was reliable for males only (sex drawn)".⁷

In 1957 Swensen reviewed the experimental results of validating studies of the Machover technique. In his summary he reports that "Machover's hypotheses concerning the DAP have seldom been supported by the research reported in the literature of the past eight years."⁸

Though the validity of the Machover technique of interpreting human figure drawings appears to be questionable at this time, there is still considerable interest in the projective possibilities of such drawings. The recent objective studies and the establishing of norms for various age groups and types of populations seem to be the most promising leads.

⁷S. Starr & F. L. Marcuse, "Reliability in the Draw-A-Person Test," Journal of Projective Techniques, 23, 1959, pp. 83-86.

⁸G. H. Swensen, "Empirical Evaluations of Human Figure Drawings," Psychological Bulletin, 54, 1957, pp. 431-466.

The DAP could be a most valuable instrument if the interpretation could be placed on an objective and valid basis. As Machover has pointed out, the method is very economical of time and material.⁹ It could be very valuable to school psychologists who have the responsibility of large school populations. Large groups could be screened rapidly, even though superficially, by group tests. Personality deviations, incipient or active, might be found in the early stages while they are more amenable to treatment. School and clinical psychologists would welcome the additional tool for assessing personality if the validity could be more definitely established. Social workers and classroom teachers might be alerted to the more obvious signs of disturbance so that they might have evidence, in addition to their observations, as to the need for the referral of individuals for special treatment.

The present study is undertaken for the purpose of adding to the knowledge of actual behavior of an elementary school population and to investigate developmental trends which may accompany maturation. Specifically, it is planned to discover:

1. How elementary school children actually perform on certain aspects of human figure drawings.

⁹Machover, Op. Cit., p. 28.

2. How age, sex, and/or mental age effect the drawing behavior of elementary school children.
3. If the Machover technique can be used in interpreting the drawings of such a population.

Machover has discussed developmental considerations in connection with the chronological age of the subject. She is of the opinion that "chronological age of the subject does not materially alter the interpretation of specific characteristics of his graphic expression since the latter is based on body image projection and the basic functional meaning of its parts. However, the particular significance of a drawing trait for a specific individual must be referred to his age group so as to permit evaluation of the extent to which the trait is a normal expression of a developmental phase."¹⁰

Machover gives several examples of developmental personality phases as found in children's drawings, but as she says, "As yet, no specific norms in terms of personality expression at various ages have been established."¹¹

The proposed study is planned to increase the understanding of the developmental processes in connection with certain aspects of the DAP. To give further background

¹⁰Machover, Op. Cit., p. 102.

¹¹Ibid.

material for this study, the following chapter will briefly review both early and more recent literature concerned with the projective possibilities of drawing in general and the human figure drawing in particular.

CHAPTER II

RELATED LITERATURE

According to Florence Goodenough, the earliest studies of the drawings of children were undertaken chiefly for the purpose of improving the quality of art instruction in schools through a knowledge of the natural order of child development and interest.¹² Goodenough describes one of the earliest articles by Ebenezer Cooke in 1815. This article described the stages of development of the drawing ability of children as he had observed them and urged that art courses conform more nearly to the mentality and interest of children. The article was very influential in educational circles according to Goodenough.¹³

Scientific interest in children's drawings seems to have been particularly high from 1900 to 1905. One of the most ambitious projects resulted in the collection of thousands of drawings from children all over the world. A complete study of the collection has not yet been made,

¹²Goodenough, Op. Cit., p. 1.

¹³Ibid.

though it would have been of great value and interest.¹⁴

The study of children's interest and developmental trends as shown by their drawings soon led to the consideration of the connection between artistic ability and scholastic ability. Goodenough reports such a study by Claparade of France in 1907, and another study by Ivanoff in Switzerland, both of which compare artistic productions with general ability, scholastic standing, and certain moral and social traits. Ivanoff reports a positive correlation in nearly all instances.¹⁵

One of the most extensive studies reported by Goodenough was that of Kerchenstein during the years of 1903 to 1905. He was involved in the reorganization of art education in the city of Munich. For his study he collected and classified almost 100,000 drawings. He identified certain developmental trends and studied the differences in drawings of children of varying mental ability.¹⁶

Later investigators compared the drawings of normal and backward children and some felt that it was possible to distinguish between them by certain characteristics, principally by the lack of coherence shown in the drawings of the backward.

¹⁴ Idem., p. 2.

¹⁵ Ibid.

¹⁶ Idem., p. 4.

Much interest has been shown in comparing children's drawings with those of primitive peoples, both of the past and present. However, the most fruitful investigations centered around the problem of measuring intelligence or general ability from drawings. Goodenough says, "From the first, students of children's drawings have recognized that a fairly close relationship exists between progress in drawing and general intelligence."¹⁷

The projective possibilities of drawings in general was apparently first noted by doctors and psychiatrists dealing with mentally ill adults. Anastasi and Foley record that Max Simon, a French psychiatrist, reported "an analysis of writings and drawings of different patients, and discussed the correlation between clinical symptoms and drawing attributes, illustrating each relationship with case reports and characteristic drawings."¹⁸ This report was dated 1876 and had a decisive influence upon the subsequent investigations both in Germany and in France.

Even earlier, interest was being shown in the artistic behavior of the abnormal or the mentally disturbed patient by Benjamin Rush, an American medical pioneer, according to

¹⁷G. Murchison, (ed.), Handbook of Child Psychology, Worcester, Mass.: Clark University Press, 1931, p. 485.

¹⁸Anastasi & Foley, Op. Cit., pp. 111-142.

Anastasi and Foley. This was as early as 1812.¹⁹ They further report a survey of the literature concerning the artistic behavior of the abnormal made by Despert which listed 145 references from 1812 to 1941.²⁰

While many of the investigations were concerned with adults, the drawing behavior of disturbed and backward children was often the subject of research. Anastasi and Foley mention reports by Traube of France, working with disturbed children; Lembke, who studied the drawings of shy and bold children; Despert, who worked with psychotic children; and Hinrichs, who was especially interested in delinquent and/or mentally defective children.²¹

All these investigators reported noticeable differences between the drawing behavior of their respective groups and that of normal children. However, it appears that these studies were generally subjective in nature and the results were not given the statistical treatment common in research today. Later studies in which adequate statistical methods appear to have been used are not so unanimous in their agreement concerning the validity of certain projective signs and diagnostic values.

¹⁹Idem., p. 118.

²⁰Anne Anastasi and J. P. Foley, Jr., "A Survey of the Literature on Artistic Behavior of the Abnormal: IV. Experimental Investigations," Journal of General Psychology, 1921, pp. 187-237.

²¹Idem., p. 208.

In 1935 Berrien made a study of three clinical groups of abnormal children: (1) post-encephalitic; (2) psychopathic personality; and (3) borderline deficient. He found some differences which could be used for diagnosis. He noted a greater degree of reversals of sex characteristics in the post-encephalitic group. A mixture of primitive and mature characteristics were prevalent in cases of great emotional instability. Using the Goodenough system of scoring, he constructed a table showing the percent of failures on each item for each of the three groups.²² This was one of the first objective studies.

Springer, in 1941, made a study of the drawings of maladjusted and adjusted children. He was seeking to test Goodenough's hypotheses concerning "verbalism" and a "mixture of primitive and mature traits" as indications of psychopathy.²³ He reported that "the general conclusions of this study are that the various items of the Goodenough scale do not differentiate between intellectually normal groups of children who show behavior deviations. The scale fails to differentiate adjusted children from maladjusted ones."²⁴

²²F. K. Berrien, "A Study of the Drawings of Abnormal Children," Journal of Educational Psychology, 26, 1935, pp. 143-150.

²³Goodenough, Op. Cit., pp. 142-145.

²⁴N. N. Springer, "A Study of the Drawings of Maladjusted Children," Journal of Genetic Psychology, 58, 1941, pp. 131-138.

Using children's drawings, Havinghurst, Robinson, and Dorr studied developmental trends in the growth of the "ideal self" among New Zealand children. They report that the observed trends are the same as those found in American children. They observe that some children seem to omit a stage common to most children or may pass through it very quickly.²⁵ It seems that there are individual differences in the development of the "ideal self" concept.

The interest in drawing, and in human figure drawing in particular, was intensified by the publication of Karen Machover's book, Personality Projection in the Drawing of the Human Figure, in 1949. This, according to the author, was a complete and systematic method of personality analysis using drawings of the human figure. She asserted that the differences in pictures by different persons were due to the projected personality of each person.²⁶

Students of the problem did not unanimously accept her method as the final solution of the problem of interpreting personality from human figure drawings. The years since 1959 have seen much research attempting to validate the method or to discredit it.

²⁵J. Havinghurst, M. Z. Robinson, and M. Dorr, "The Development of the Ideal Self in Childhood and Adolescence," Journal of Educational Research, 58, 1941, pp. 241-57.

²⁶Machover, Op. Cit., p. 181.

One of the early validation studies was that of Holzberg and Wexler whose object was to measure the validity of the human figure drawing as a measure of personality deviation. They found "significant differences" between the normal and the schizophrenic women whom they used as subjects. There was also significant differences between the normals and each of the three categories of schizophrenic sub-groups (paranoid, hebephrenic, and catatonic). However, reliable differences were not demonstrated between the sub-groups although "there were indications that further refinements and extensions of the items might demonstrate this statistically."²⁷

The validity of Machover's assumptions concerning the paranoid signs in the eye and ear treatment²⁸ has been the subject of much investigation. In 1950 Fisher and Fisher published such an investigation. Other objectives were to determine how much agreement there was in evaluating figure facial expression and figure stance; to determine if a group of raters with special training in figure drawing analysis show greater agreement with each other in evaluating facial expression and stance than do untrained raters. One of their conclusions was as follows: "The total results suggest

²⁷J. D. Holzberg and M. Wexler, "The Validity of Human Form Drawing as a Measure of Personality Deviation," Journal of Projective Techniques, 14, 1950, p. 343.

²⁸Machover, Op. Cit., pp. 47-51.

that it is precarious to accept most of the current assumptions regarding figure analysis (particularly as expounded by Machover, without the confirmation of further research."²⁹

The study of Griffith and Peyman also investigated the validity of Machover's assumptions concerning paranoid signs. They report, "Our data indicates that eye-ear emphasis in the DAP, while valid, is inefficient in predicting ideas of reference. This should not surprise us, as it is generally recognized that tests are inefficient in predicting personality variables."³⁰

Still another test of the validity of the Machover technique was undertaken by Wanner in 1953. Machover has stated that speech-defective persons will show peculiarities in the drawing of the oral area.³¹ Wanner's study showed some support for the Machover assumption.³²

Using fifty adolescent inmates of a state training school for boys, Grams and Rinder made a validation study

²⁹S. Fisher & Rhoda Fisher, "Tests of Certain Assumptions Regarding Figure Drawing Analysis," Journal of Abnormal and Social Psychology, 1950, pp. 727-32.

³⁰A. V. Griffith & D. A. R. Peyman, "Eye-Ear Emphasis in the DAP as Indicating Ideas of Reference," Journal of Consulting Psychology, 23, 1959, p. 560.

³¹Machover, Op. Cit., p. 45.

³²P. W. Wanner, Partial Test of the Validity of the Machover Drawing-of-a-Human Figure Technique, unpublished Master's thesis, Sacramento State College, Sacramento, California, 1953.

of Machover's signs of homosexuality.³³ They constructed fifteen criteria stated objectively and used them to judge the drawings of the boys. Their conclusions stated: "Neither individually nor collectively did the signs predict the criterion."³⁴

Research concerning the validity of signs of organicity was published by Bieliauskas and Kirkman in 1958. They used the H-T-P Test,³⁵ but among the criteria used were those mentioned by Machover.³⁶ In summary, these authors stated: "None of the statistical results showed significant differences. Therefore, it was concluded that the eighteen criteria did not adequately discriminate either individually or together the organics in the population of this study. Although a larger sample may give more conclusive evidence, it was suggested that extreme caution be exercised in using these signs as organicity indicators in H-T-P drawings."³⁷

Validation studies using children as subjects are not as numerous as those using adults. Silverstein and Robinson investigated the representation of orthopedic disability

³³Machover, Op. Cit., passim.

³⁴A. Grams & L. Rinder, "Signs of Homosexuality in Human Figure Drawings," Journal of Consulting Psychology, 22, 1958, 394.

³⁵J. N. Buck, "The H-T-P Test," Journal of Clinical Psychology, 4, 1948, pp. 151-58.

³⁶Machover, Op. Cit., p. 91.

³⁷V. J. Bieliauskas & Sandra Kirkman, "An Evaluation of the Organic Signs in the H-T-P Drawings," Journal of Clinical Psychology, 1958, pp. 31-34.

in figure drawings³⁸ using drawings from twenty-two children in the chronic stage of poliomyelitis. They report that, by inspection, more than three-quarters of the subjects appeared to represent their disability, either directly or indirectly in their drawings. However, when these drawings were compared with those of normal children, equated for age, sex, and IQ, they found a "non-significant number of significant differences between the two groups in a series of 55 scoring signs." They also discovered that "judges experienced in the psychodiagnostic use of figure drawings were unable to differentiate the drawings of the disabled and normal subjects at a level better than chance."³⁹

Studying the same problem, Hunt and Feldman reported, "correlation between the body cathexis scores and signs of disturbance on the human figure drawings were minimal."⁴⁰

Machover's assumptions concerning body image⁴¹ were examined by Lakin in 1956. He attempted to answer the question: Does the DAP reflect self-concept and body image? As subjects he used one group of aged institutionalized adults and one group of third grade school children in a public school. He reported that "more constricted, shorter, and

³⁸Machover, Op. Cit., p. 26.

³⁹A. B. Silverstein & H. A. Robinson, "The Representation of Orthopedic Disability in Children's Figure Drawings." Journal of Consulting Psychology, 20, 1956, pp. 333-41.

⁴⁰R. C. Hunt & M. J. Feldman, "Body Image and Ratings of Adjustment on Human Figure Drawings." Journal of Clinical Psychology, 1960, pp. 35-38.

⁴¹Machover, Op. Cit., *passim*.

less adequately centered figures were produced by the aged subjects. The findings were viewed as support for the validity of the view that the central variables of self-concept and body image are reflected in drawings of the human figure."⁴²

In 1957 Swensen published a comprehensive review of the research on the DAP. In summary, he stated:

1. Machover's hypotheses concerning the DAP have seldom been supported by research reported in literature of the past eight years.
2. It is suggested that the opinion of clinicians that the DAP is of value as a clinical instrument, despite lack of experimental evidence to support this judgement, is due to the fact that the DAP, in a few cases which impress the individual clinician, does provide an indication of the individual client's problem.
3. Some evidence supports the use of the DAP as a rough screening device, and as a gross indicator of "level of adjustment."⁴³

Several researchers, using the DAP and other adaptations of the human figure technique, have suggested that the problem be approached more objectively. One of the most interesting suggestions was the idea of the "base rate" made by Swensen. This he defined as "the frequency with which a particular sign is ordinarily present in the population of Ss being

⁴²M. Lakin, "Certain Formal Characterizations of Human Figure Drawings by Institutionalized Aged and Normal Children," Journal of Consulting Psychology, 20, 1956, pp. 471-74.

⁴³O. H. Swensen, "Empirical Evaluations of Human Figure Drawings," Psychological Bulletin, 54, 1957, p. 460.

studied." He credits Mechl and Rosen with the assumption of the importance of including the base rate in the validation of a clinical instrument.⁴⁴

Such a concept was the basis of Blizzard's study of the drawings of mentally retarded adolescents in which he investigated the actual drawing behavior of the subjects as a group. He concluded that:

1. The leaving off of body parts, for the most part appears to be a function of retardation, and that attaching any other meaning would be dangerous procedure.
2. Sex and age differences do exist and should be considered in interpreting the DAP.
3. The Machover system, as it is now used, is not applicable to this population.⁴⁵

Swensen and Newton used the objective approach in their study of the development of sex differentiation as shown by the DAP. They established some age norms concerning the trend toward drawing the same sex first and concluded that sex differentiation increased with increasing age. Girls showed greater sex differentiation up to the eighth grade. After that there was no significant difference between the sexes as to the amount of differentiation.⁴⁶

⁴⁴Ibid.

⁴⁵B. T. Blizzard, Diagnostic Limitations of the Draw-A-Person Test with the Mentally Retarded, unpublished Master's Thesis, Kansas State College of Pittsburg, Pittsburg, Kansas, 1960.

⁴⁶O. H. Swensen and K. Newton, "The Development of Sexual Differentiation at Different Age Levels Using the Draw-A-Person Test, Journal of Clinical Psychology, 1935, p. 417.

Sex identification was the subject of another study made by Butler and Marcuse using the DAP. Their subjects were children and adolescents from the age of five to eighteen. They found that boys consistently drew a higher percentage of male figures as their first drawing and that the number of female drawings drawn as the first drawing decreased with increasing age. Girls were found to draw a higher percentage of female figures as their first drawing, but this tendency was not as pronounced as for boys. And, significantly, at the age of seventeen, the girls were found to draw more male figures as their first drawing and the number increased in the eighteenth year. The percent of opposite sex drawings was higher for girls than for boys in every year except the sixth, when the boys drew about twice as many opposite sex drawings first as did the girls.⁴⁷ These changes would make interesting subjects for further study.

Weider and Noller have made several objective studies of children's human figure drawings. In 1953 they published their study concerning the effect of age, and/or sex, and/or intelligence on the human figure drawings of children. They presented norms concerning the first sex drawn; the relative size of same-sex and opposite-sex drawings; the effect of intelligence and sex upon the percentage of profile drawings;

⁴⁷R. L. Butler & F. L. Marcuse, "Sex Identification at Different Levels Using the Draw-a-Person Test," Journal of Projective Techniques, 1959, pp. 299-302.

and the relationship between age and placement upon the page.⁴⁸

Their second report was concerned with the relationship between socio-economic level and sex awareness. Their results seem to indicate that socio-economic level has some relationship to sex awareness. They noted a statistically reliable increase in the number of sexual (masculine or feminine) characteristics drawn as they progress downward from the higher socio-economic levels. Other criteria did not show significant differences between the levels.⁴⁹ Both these studies given norm type results which may easily be compared with results of other studies or used by clinical psychologists studying similar problems.

Another problem concerning researchers has been the effect of the difficulty of drawing upon the results of the human figure drawing. Feldman and Hunt investigated the possibility that these difficulties would have some effect upon the resulting interpretations. They had several artists rate twenty-five body parts as to the difficulty of drawing. Then they had clinical psychologists rate the same parts as indicators of emotional disturbance. The authors say, "A correlation of $-.53$ was obtained between the average ratings of the clinicians and artists for the twenty-five body parts.

⁴⁸A. Weider & P. Noller, "Objective Studies of Children's Drawings of Human Figures: II Sex, Age, Intelligence." Journal of Clinical Psychology, 1953, pp. 20-23.

⁴⁹A. Weider & P. Noller, "Objective Studies of Children's Drawings of Human Figures: I. Sex Awareness and Socio-Economic Level," Journal of Clinical Psychology, 10, 1954, p. 319.

This correlation indicates that those body parts most difficult to draw tend also to be selected more frequently by clinicians as manifesting signs of emotional disturbance."⁵⁰

Drawing difficulty was also investigated by Woods and Cook in 1954. The subjects of this study were eighth grade students in a public school. They found a rather substantial correlation between proficiency in drawing and the tendency to avoid the drawing of hands. According to Machover, the avoidance of drawing of hands by putting them behind the back or in pockets can signify a number of things: nail-biting, evasiveness, insecurity in social and/or sexual contacts, masturbation, delinquency, and psychopathic tendencies.⁵¹ Woods and Cook say:

Once the student attains some mastery of the larger body masses and of the relatively simpler geometrical masses of the head, torso, arms, and legs, he becomes aware of his inability to represent the relatively more complex hands.

The student (or client) may, of course, ignore this difference in representativeness and the ineptness which it reveals, or he may choose, as many apparently do, to hide his lack of skill in placing the hands where their actual rendering is made unnecessary. The ignoring of the hands

⁵⁰M. J. Feldman & R. G. Hunt, "The Relation of Difficulty in Drawing to Ratings of Adjustment Based on Human Figure Drawings." Journal of Consulting Psychology, 22, 1958, p. 217.

⁵¹Machover, Op. Cit., p. 61.

tends to perpetuate itself, producing a stereotype drawing in which the hands are invariably placed out of view.⁵²

The authors conclude that, "the manner of representation of the hands in the drawing of the human figure is a function of proficiency in drawing. Limitations in the interpretations of personality through drawn representations of the human figure are imposed by this relationship."⁵³

It appears obvious from this short review of the literature concerning the DAP that there is little agreement as to the validity of the usual interpretations. However, there is a need for such a projective technique with its ease and speed of administration and its economy. Therefore, it seems valuable to attempt to add to the knowledge of the actual drawing behavior of children as tested by the DAP.

⁵²W. A. Woods & W. E. Cook, "Proficiency in Drawing and Placement of Hands in Drawing the Human Figure," Journal of Consulting Psychology, 1954, p. 120.

⁵³Idem., p. 121.

CHAPTER III

PROCEDURE

Subjects of Study

The subjects of the study were the pupils of the McKinley Elementary School of Coffeyville, Kansas, and of two special education classes maintained by the Coffeyville Public Schools. The school is situated in the southwest section of the city in an area of small homes. It is a low rent area except for a fringe of larger, more expensive homes. The patrons are, for the most part, skilled laborers. There is a small percentage of small businessmen; some self-employed persons; and some unemployed and welfare clients. Negro pupils make up about 12% of the school population. No other minority group is represented to any significant extent.

Source of Data

Three human figure drawings were collected from each child present in school the day the test was given. Some drawings were eliminated because I.Q.'s were not available for the subjects. These included all the kindergarten pupils. The test was administered to the first, second, and third grades by the regular classroom teacher. The art teacher administered the test to the fourth, fifth, and sixth grades. All these teachers were instructed as to the proper methods of adminis-

tration, and cautioned not to coach or make suggestions. A set of instructions based on Machover's directions was given to each teacher to facilitate uniform testing conditions.⁵⁴

Administration of DAP

According to these instructions, the children were first told to "draw a whole person." No further suggestions were given beyond telling the child to draw exactly as he wished rather than as his neighbor was drawing. For the second drawing, the child was told to draw a person of the sex opposite that of the first drawing. More appropriate language was used for the younger children. For the third drawing, the child was told to draw himself. Approximately ten minutes was allowed for each drawing. The drawings were made on 8" x 11" white typing paper with pencils with #2 lead.

The chronological age and IQ was determined from the official school records to eliminate error. Mental ages were calculated from the results of the California Short-Form Test of Mental Maturity which is administered routinely in the first and fourth grades each year.

Selection of Sample

This information was tabulated on 2" x 5" cards for each child. The cards were divided into five chronological age

⁵⁴Machover, Op. Cit., pp. 28-29.

groups and arranged alphabetically. Eight drawings, four by girls and four by boys, were chosen from each group by random methods. This group was designated the CA group.

The cards were then rearranged and divided into groups according to mental age. Eight drawings, four by boys and four by girls, were chosen from these groups by the same random methods. This group was designated the MA group. Several drawings are represented in both categories. Table I and Table II show the CA and MA sub-groups.

Two special education classes comprise the last two groups. Special education (educable) group has a chronological age range of 8-4 to 15-9 and an IQ range of 61 to 84 as measured by the Revised Stanford-Binet (1937-L). There were 14 subjects in this group. Special education (trainable) group numbered ten. The chronological age range was 5-10 to 18-0 and the IQ range was 33 to 58, measured as above. Table III shows the distribution of the subjects in these groups according to CA and MA.

Scoring Procedure

Eighteen items were chosen to be scored as either present or absent in the drawings. Machover makes frequent reference to the omission of body parts and suggests that resistance causes such omissions.⁵⁵ However, she also suggests that the

⁵⁵Idem., p. 29.

TABLES I AND II

CHRONOLOGICAL AND MENTAL AGE RANGE
OF CA AND MA SUB-GROUPS*

CA Sub-groups	MA Sub-groups
A -- 5-10 to 7-0	S -- 5-10 to 7-0
B -- 7-1 to 8-3	T -- 7-1 to 8-3
C -- 8-4 to 9-6	U -- 8-4 to 9-6
D -- 9-7 to 10-9	V -- 9-7 to 10-9
E -- 10-10 to 12-0	W -- 10-10 to 12-0
	X -- 12-1 to 13-3
	Y -- 13-4 to 14-6

* Age in years and months

TABLE III

DISTRIBUTION OF SPECIAL EDUCATION STUDENTS
BY CHRONOLOGICAL AND MENTAL AGE *

Special Education (educable)		Special Education (trainable)	
N	Chronological Age	N	Chronological Age
2	8-4 to 9-6	1	5-10 to 7-0
4	8-7 to 10-9	2	7-1 to 8-3
1	10-10 to 12-0	1	10-10 to 12-0
2	12-1 to 13-3	2	12-1 to 13-3
2	13-4 to 14-6	2	14-7 to 15-9
3	14-7 to 15-9	2	15-0 to 18-0
N	Mental Age	Mental Age	
3	5-10 to 7-0	2	3-4 to 4-6
3	7-1 to 8-3	4	4-7 to 5-9
4	8-4 to 9-6	2	5-10 to 7-0
3	9-7 to 10-9	2	7-1 to 8-3
1	10-10 to 12-0		

*Age in years and months

absence of parts may be a developmental phenomenon but gives no data by which children's drawings may be judged. Machover also attaches much importance to shading⁵⁶ and transparencies⁵⁷ but gives no information as to their significance in the drawings of children. Such information seems to be of the greatest importance if the DAP is to be used with children.

The eighteen items scored as to presence or absence were: (1) head, (2) arms, (3) legs, (4) trunk, (5) eyes, (6) nose, (7) mouth, (8) ears, (9) pupil, (10) brow, (11) lash, (12) hair, (13) fingers, (14) feet, (15) hands, (16) clothing, (17) shading, (18) transparencies. The items were scored by the Goodenough method⁵⁸ wherever applicable. Appendix A gives the complete criteria used for judging. The third or self-drawing was scored as it is generally true that the self-drawing is more complete than the first two. The subject seems to have more interest in and to project more into a drawing of himself.

Judges

Judges were two clinical psychologists currently connected with the Psychology Department at the Parsons State Hospital and Training Center, and the author. The judges scored the

⁵⁶Idem., p. 102.

⁵⁷Idem., et. passim.

⁵⁸Goodenough, Op. Cit., pp. 85-154.

drawings independently. It had previously been decided that the decisions on each item were to be unanimous. When judges could not agree concerning an item in a drawing, that drawing was discarded and another chosen from the proper group by the previously used methods of random selection.

Statistical Methods

Since the samples were small in size, the Fisher Exact Probabilities Test was used to determine any significant differences between the various combinations of sub-groups on each drawing characteristic. Siegel, in his text, Non-Parametric Statistics, states that this is "an extremely useful parametric technique for analyzing discrete data (either nominal or ordinal) when the two independent samples are small in size."⁵⁹ Thus, the two independent groups can be tested to determine if they are the same, or if there is a significant difference in their performance.

To determine any significant differences between the total performances of any two groups, the Sign Test was used. Siegel suggests the use of this test when "a quantitative measure is impossible or infeasible, but in which it is possible to rank with respect to each other the two members of each pair."⁶⁰ This test does not make any assumptions about

⁵⁹S. Siegel, Non-Parametric Variables, New York: McGraw-Hill Book Company, Inc., 1956, pp. 96-101.

⁶⁰Idem., pp. 68-71.

the form of the distribution of differences but only requires that each pair is matched with respect to the relevant variables. It establishes the presence of difference and the amount, though not the area. The researcher determines the level of confidence he wishes to maintain.

The null hypothesis (no differences between the groups) was stated and all the necessary comparisons were made between groups as wholes and between age and sex sub-groups as to performance on each of eighteen DAP characteristics. The .05⁶¹ level of confidence was selected for rejection of the null hypothesis.

Since the Special Education (educable) group was small and the sub-groups were not of equal number, it was not possible to compare the total performance of the sub-groups with the Sign Test. The performance of each sub-group was compared with the performance of the succeeding age group by using the Fisher Exact Probabilities Test.⁶²

The Special Education (trainable) group was too small to analyze in the same manner as the others. It will be considered in the discussion.

Tables IV and V describe the drawing behavior of the CA and MA groups and sub-groups. The percent of individuals

⁶¹The .05 level of confidence was selected on the basis of its common use in current psychological studies.

⁶²Seigel, Op. Cit., pp. 96-101.

in each group who drew each item was determined. This tabulation enables the psychologist to determine if the drawing behavior of an individual is typical of his chronological or mental age group. These tables also show the developmental process as it applies to each item.

Scope and Limitations

The study includes children between the chronological ages of 5-10 to 18-0 and between the mental ages of 3-4 to 14-6. It would have added to the scope of the study to have included the kindergarten pupils in the CA and MA groups. This was impossible as IQ scores were not available and, therefore, mental ages could not be determined. The study is further limited by a narrow range of socio-economic levels and geographical distribution represented. All the children come from a small locality and from low-middle class homes.

The incidence of personality problems and/or deviations among the general school population is not known and may have influenced the results to some extent and in an uncertain manner.

The use of a group intelligence test is not the ideal procedure. Individual testing was impossible due to the lack of time. This may not be as great a limitation as it appears as group mental testing would probably be the rule in any large scale screening operation.

TABLE IV
 PERCENTAGE OF INDIVIDUALS WHO INCLUDED
 EACH CHARACTERISTIC IN THEIR DRAWING
 BY CHRONOLOGICAL AGE

Characteristics	A	B	C	D	E	Total
Head	100	100	100	100	100	100
Arms	87.5	100	100	100	100	98
Legs	100	100	100	100	100	100
Trunk	100	100	100	100	100	100
Eyes	87.5	100	100	100	100	98
Nose	87.5	100	87.5	87.5	87.5	90
Mouth	100	100	100	100	100	100
Ears	62.5	75	87.5	87.5	100	83
Pupil	37.5	62.5	87.5	87.5	100	75
Brow	25	37.5	50	87.5	87.5	58
Lashes	12.5	37.5	12.5	12.5	25	20
Hair	75	100	87.5	100	100	95
Fingers	62.5	87.5	75	100	100	85
Feet	62.5	100	87.5	100	100	90
Hands	50	62.5	<u>37.5*</u>	<u>87.5</u>	75	63
Clothing	100	100	100	100	100	100
Shading	<u>37.5*</u>	<u>87.5</u>	75	100	87.5	78
Transparencies	0	25	12.5	0	12.5	10

*and indicate significant difference in performance of sub-groups as computed by the Fisher Exact Probabilities Test.

TABLE V
PERCENTAGE OF INDIVIDUALS WHO INCLUDED
EACH CHARACTERISTIC IN THEIR DRAWING
BY MENTAL AGE

Characteristics	S	T	U	V	W	X	Y
Head	100	100	100	100	100	100	100
Arms	75	100	100	100	100	100	100
Legs	100	100	100	100	100	100	100
Trunk	87.5	100	100	100	100	100	100
Eyes	100	100	100	100	100	100	100
Nose	75	100	87.5	100	100	100	100
Mouth	75	100	100	100	100	100	100
Ears	62.5	62.5	75	87.5	62.5	100	75
Pupil	25	62.5	62.5	75	62.5	100	87.5
Brow	12.5	50	62.5	50	50	87.5	87.5
Lashes	0	0	12.5	12.5	0	0	12.5
Hair	87.5	100	75	100	100	100	100
Fingers	50	200	75	87.5	87.5	87.5	87.5
Feet	100	100	100	100	100	100	100
Hands	12.5	50	50	50	75	62.5	75
Clothing	87.5	100	87.5	100	100	100	100
Shading	100	75	87.5	100	87.5	62.5	87.5
Transparencies	<u>50*</u>	0	0	0	12.5	0	0

*and indicates significant difference in performance of sub-groups as computed by the Fisher Exact Probabilities Test.

CHAPTER IV

RESULTS

Summary of Procedure

This study considered four distinct groups of school children which were designated (1) the CA Group, (2) the MA Group, (3) the Special Education (Educable) Group, and (4) the Special Education (trainable) Group. The first three groups were further divided into sub-groups as to age and sex. The CA Group will be considered first.

The CA Group was made up of forty school children from regular classes ranging in age from 5-10 to 12-0. The IQ range was from 69 to 139 as measured by the California Short-Form Test of Mental Maturity which is administered routinely in the school. The IQ distribution was approximately normal. The group was divided into five sub-groups of four boys and four girls according to chronological age. The sub-groups were further divided and compared as to sex.

Statistical Analysis of Performance (CA Group)

Significant differences were found between the total performance of the youngest sub-group and each of the other four sub-groups by use of the Sign Test. A significant difference was also noted between the total performance of sub-group C (8-4 to 9-6) and sub-group E (10-10 to 12-0).

(Table VI) However, only two significant differences were noted in the comparison of succeeding age sub-groups as to their performance on the individual items. (Table IV) These were found in comparing sub-group A (5-10 to 8-3) with sub-group B (8-4 to 9-6) on the presence of shading; and in comparing sub-group C (8-4 to 9-6) on the presence of hands. It was noted that the younger sub-group A included significantly less shading than did the older sub-group B. Sub-group C fell significantly lower than sub-group E on the presence of hands.

In comparing the performance of the youngest sub-group A to the older sub-groups significant differences were found in the area of the pupil, the brow, and shading. The youngest sub-group used less shading, and included the pupil and brow less often than the older groups. (Table IV)

The comparison of sub-group B (7-1 to 8-3) with the other sub-groups showed significant differences in the areas of the brow and shading. Sub-group B had significantly more shading than sub-group A; and sub-groups D and E drew the pupil significantly more often than did B. Sub-group D (9-7 to 10-9) was significantly higher in the drawing of hands than sub-group C (8-4 to 9-6). (Table IV)

In comparing the total performance of the sex sub-groups divided into the same age levels, A, B, C, D, and E, a significant difference was found only between the boys and

TABLE VI

COMPARISON OF THE TOTAL PERFORMANCE OF
CA SUB-GROUPS

A-B	A-C	A-D	A-E
# * _	<u>.006*</u>	<u>.001*</u>	<u># * _</u>
B-C	B-D	B-E	
.113	.254	.363	
C-D	C-E		
.062	<u>.002*</u>		
D-E			
.227			

TABLE VII

COMPARISON OF THE TOTAL PERFORMANCE OF
MA SUB-GROUPS

S-T	S-U	S-V	S-W	S-X	S-Y
<u>.019*</u>	<u>.006*</u>	<u>.002*</u>	<u>.019*</u>	<u>.011*</u>	<u>.006*</u>
T-U	T-V	T-W	T-X	T-Y	
.746	.188	.471	.344	.062	
V-W	V-X	V-Y			
.344	.344	.500			
W-X	W-Y				
.500	.188				
X-Y					
.188					

Level of confidence better than .001.

* And _ _ _ significant difference as measured by the
Sign Test.

girls in the youngest sub-group. However, no significant differences were noted between the sexes on any one item. The handling of the ears, fingers, and feet approached significance (.079) with the boys drawing ears more often, and the girls drawing fingers and feet more often.

The percentage Table IV shows that several items were included in every drawing in the OA group. These were head, legs, trunk, eyes, mouth, and clothing. The other items rank in the following order: hair; nose and feet; fingers; ears; shading; pupil; hands, brow; lash; and transparencies.

Analysis of Performance (MA sub-groups)

Fifty-six children were represented in the MA group. Fourteen of these were included in the OA group also as both groups were drawn from the same classes by random selection. The MA group was divided into 7 sub-groups as to mental age. There were four boys and four girls in each sub-group. Division was further made on sex lines.

It was found that there were significant differences in the total performance of the youngest sub-group S and all the older groups. Other significant differences were found between sub-group U (8-4 to 9-6) and the two older sub-groups X (12-1 to 13-3) and Y (13-4 to 14-6). The Sign Test was used in this analysis. (Table VII)

In comparing the performance on each characteristic of sub-group S to that of older sub-groups significant differences were noted in the areas of the pupil, the brow, and transparencies. Sub-group S was significantly lower than sub-groups X and Y in drawing the pupil and brow, and had significantly more transparencies than all the other sub-groups. (Table V)

The comparisons of all other groups showed no significant differences as to the number of items drawn. There were also no significant differences found in comparing the performance of the boys and girls as to the presence or absence of each characteristic. However, differences approaching significance were noted in the areas of ears, pupils, brows, and hands. Girls drew ears, pupils, and brows more often. Boys included hands more often. As pointed out, the difference was not significant.

All the group included the head, legs, and eyes in their drawings. The rank order of the other items was as follows: trunk and feet; mouth, clothing, and arms; nose and hair; shading; fingers; ears; pupil; brow; hands; transparencies; and lashes.

Comparison of CA-MA groups

In comparing the total performances of the CA and MA sub-groups, no significant differences were noted between the sub-groups of corresponding chronological and mental

ages. That is, a sub-group with a CA of 7-1 to 8-3 does not differ in performance from the sub-group with a MA of 7-1 to 8-3. Significant differences were noted between the youngest groups and the older groups. (Table VIII)

Analysis of Special Education (educable) group

There were fourteen children in the Special Education (educable) group. The IQ range was from 61 to 84 as measured by the Revised Stanford-Binet (1937). These fell into six chronological age sub-groups. (Table III) The sub-groups were all small so the results are of doubtful value but may indicate a trend. The total performance of the sub-groups could not be compared with the Sign Test as they were not equal in size. Performance on the various characteristics between the succeeding age sub-groups revealed no significant differences. No differences of significance were found between the youngest and the older sub-groups.

There were four mental age sub-groups in the educable group and again no significant differences were noted. No attempt was made to form sex sub-groups as the number would have been too small to be of value. This group all included head, legs, trunk, eyes, nose, and mouth in their drawings. The other items follow in this order: hair and arms; feet; clothing and fingers; pupil; shading; brow; ears; hands; transparencies; and lashes.

TABLE VIII

COMPARISON OF THE TOTAL PERFORMANCE
OF THE CA AND MA SUB-GROUPS

A-S#	A-T	A-U	A-V	A-W	A-X	A-Y
.151	.011*	.020*	.001*	.003*	.011*	.001*
B-S	B-T#	B-U	B-V	B-W	B-X	B-Y
.006*	.227	.020*	.500	.500	.016*	.500
C-S	C-T	C-U#	C-V	C-W	C-X	C-Y
.029*	.500	.363	.145	.145	.113	.090
D-S	D-T	D-U	D-V#	D-W	D-X	D-Y
.002*	.062	.002	.118	.090	.500	.188
E-S	E-T	E-U	E-V	E-W#	E-X	E-Y
.001*	.035*	.001*	.053	.109	.109	.109

* Significant differences as measured by the Sign Test.

Groups of the same chronological and mental age.

Analysis of Special Education (trainable) group

The drawings of ten Special Education (trainable) pupils were collected but not statistically analyzed. Three of the drawings were "Class A" and unscorable. The IQ range of this group was 33 to 58 as measured by the Revised Stanford-Binet (1937). The chronological age range was 6-9 to 17-2. (Table III) In the scorable drawings, the head and eyes were present in every case. The rank order of the other characteristics was as follows: legs and trunk; arms, nose, mouth, and shading; ears, hair, fingers, and feet; clothing and transparencies; brow and hands; and lashes. This order corresponds roughly to the rank order noted in the drawings of other groups.

Discussion

One purpose of this study was to contribute to the establishment of norms concerning the developmental aspects of the drawing behavior of children as seen on the DAP. The results will be discussed from that viewpoint.

As Goodenough reports, the presence of certain items in the human figure drawings is well established by beginning school age.⁶³ The only areas in which significant differences were found between the various CA and MA sub-groups were hands, pupils, and brow, but these appear to be in the process of becoming stabilized.

⁶³Goodenough, Op. Cit., pp. 24-25.

The total performance of the various sub-groups as measured by the Sign Test tends to substantiate the idea of stability for the most part. The youngest sub-groups in both the OA and MA groups showed a significant difference from the older sub-groups in total performance. The older sub-groups were essentially the same in performance. One other significant difference in total performance was noted in the MA group. This involved the sub-group U (7-4 to 9-6) whose total performance differs significantly from the total performance of the older sub-groups V, W, X, and Y. This variation shows up on the percentage tables for both the OA and MA groups as a drop in successes in the 8-4 to 9-6 age range and a rise in the 9-7 to 10-9 age range. Item-wise, none of these changes proved to be significant except in the case of hands as shown on Table IV. However, the fact that the largest number of lowered scores occurs in this age range is intriguing as some recent studies have suggested that this is an age of rapid change in children. Emotional disturbance may accompany these changes and be reflected in the drawing behavior. Blair and Burton make many references to current research on this pre-adolescent age group in their book, Growth and Development of the Preadolescent.⁶⁴

⁶⁴A. W. Blair & W. H. Burton, Growth and Development of the Preadolescent, New York: Appleton-Century-Crofts, Inc., 1951, p. 221.

The impression that the elementary school age group has reached a level of relative stability in the drawing of the essential parts of the human figure is further strengthened by the performance of the Special Class (educable) group. Here there were no children in the lower age ranges but between the CA and MA sub-groups studied there were no significant differences in the number of each item included.

In the areas of pupil, brow, and hands, this study found some significant differences in performances. The trend was definitely in the direction of stability, but there were ups and downs. Goodenough⁶⁵ has noted that changes in the drawings of a child from the simple to the more complex occur sporadically at first. As his concept develops, the tendency to include the specific part becomes more stable until he always regards his drawing as incomplete without it. It may be that the tendency to draw pupils and brows is in the emergent stage during the elementary school years.

The problem of variation in the drawing of hands is perhaps more complex. The developmental trend is present but the significant difference is found between older sub-groups. Goodenough⁶⁶ remarks that self-consciousness has

⁶⁵Goodenough, Op. Cit., p. 75.

⁶⁶Idem., p. 56.

an effect especially upon the drawings of older children. They become more critical of their work and fail to do their best because of the difficulties involved. Woods and Cook have investigated the problem of drawing of the hands in the DAP. They found that older children and those more proficient in drawing often hide the hands behind the back or in pockets because they recognize their inability to draw hands well. These investigators concluded that the "manner of representation of the hands in the drawing of the human figure or person is a function of proficiency in drawing. Limitations in the interpretations of personality through drawn representations of the human figure are imposed by this relationship."⁶⁷

The only part of the human figure studied which did not appear to become relatively stabilized during the elementary school years was the eye-lashes. Even the mentally more mature pupils rarely drew this feature. In the special education groups, only one child included lashes.

As a whole, this study seems to add to the evidence pointing to the presence of developmental trends in the tendency to draw certain characteristics of the human figure. It shows that in the population studied, this tendency is relatively stable for twelve of the characteristics

⁶⁷W. A. Woods & W. E. Cook, Op. Cit., pp. 129-121.

considered. There is a definite trend toward stabilization for the four other items. Exceptions are found in the drawings of the Special Education (trainable) group where organicity and emotional disturbances may distort the picture.

Implication of results

It follows that since elementary school children habitually include certain items in their human figure drawings, omission of these parts would be significant, as Machover contends. The items habitually included are the head, legs, and trunk. Other items almost always included are the arms, eyes, mouth, and clothing. Certain items are not always drawn by younger children, therefore, their omission by the younger child is not significant. However, their omission by an older child would have significance. Still other items such as eye-lashes are not invariably drawn by any elementary school age group. Their omission would not be significant. On the contrary, their presence might be considered noteworthy.

The presence or absence of shading and transparencies in human figure drawings has been given much attention by Machover.⁶⁸ This study shows that shading is present in most of the drawings of the sample population. There was

⁶⁸ Machover, Op. Cit., passim.

some ambiguity in results for the younger groups. Significantly less shading was found for the youngest CA sub-group, but this was not true of the youngest MA sub-group. However, it may be concluded that the inclusion of shading shows no significant deviation from the behavior of the group.

The distribution of transparencies was not clearly determined by this study. In the MA group a significant number were found in the drawings of the youngest sub-group. This would tend to show that transparencies are a function of immaturity. However, in the CA group no transparencies were found in the drawings of the youngest sub-group and the few cases noted were scattered in the older groups. In view of the small number of transparencies in all groups, this drawing characteristic may be considered to be of a questionable nature.

It may be concluded that this study adds to the evidence that the DAP would have value in the elementary school as a rough screening device for personality problems, if developmental levels are considered. Tables IV and V which give the percentage of individuals who included each item in their drawing will probably be the most helpful guide in this respect. Significant differences in performance are also indicated on these tables. The investigator can determine from these tables the usual behavior of several age

sub-groups. He will be able to judge any deviation in the drawings of children of comparable age.

It must be remembered, however, that all problems are not indicated by omissions. Also, the present study has certain limitations, including a small number of subjects, a small range of socio-economic levels, and no range in geographical distribution. However, within these limitations the study has tentatively answered some questions concerning the use of the DAP in a public school. It has also posed many questions for future investigation.

CHAPTER V

SUGGESTIONS FOR FURTHER STUDY, SUMMARY, AND CONCLUSIONS

Suggestions for further research

The findings of the present study have opened several questions when considered in relation to previous normative studies. While there is agreement with Goodenough's conclusions as to developmental trends, it was found that larger numbers of children succeeded with the items considered in the present research than in Goodenough's study. It is not possible to compare Goodenough's results with the present study with complete accuracy due to the following differences in procedure: (1) Goodenough used the drawing of a man, but this study used a self-drawing, male and female; (2) Goodenough's age groups do not correspond exactly to the age groups used in this study; and (3) Goodenough's scoring criteria were not used throughout in this study.

However, the percentage table given by Goodenough⁶⁹ gives a basis for a rough comparison. Her 6, 7, 8, 9, and 10 year normals were compared with comparable age sub-groups from the CA group. This is shown in Table IX. In the following areas the percent of success were approximately equal in

⁶⁹Goodenough, Op. Cit., p. 24-25.

all age groups: head, arms, legs, trunk, eyes, nose, mouth, and clothing. Areas in which there was more than 10% difference were generally the ear, pupil, hair, and hands, though between some groups differences were noted in the area of the nose, feet, fingers, and arms.

Further studies should be done to account for these differences. There are two possible explanations which could be investigated. The first concerns the socio-economic level and geographical distribution of the samples. Goodenough's⁷⁰ children were living for the most part in large industrial cities of the east and west coasts. Some were from better than average socio-economic levels and others from families of industrial workers. Many were of Southern European descent. In contrast, the children in the present study were practically all from lower-middle class homes, and parents and probably grandparents were native born Americans. The geography was entirely different, a small Mid-west city, with some industry, but still rather rural in character.

It can be conjectured that this semi-rural, uncrowded, and unhurried environment may be more favorable for the development of self-concept. Possibly the child can form a more adequate self-image if he is not pushed, crowded, and lost in the mob.

⁷⁰Idem., p. 35-47.

TABLE IX

PERCENT OF CHILDREN SHOWING DIFFERENT PARTS OF THE
BODY AT DIFFERENT AGE LEVELS

ITEM	6-N #	CA Group A	7-N #	CA Group B	8-N #	CA Group C	9-N#	CA Group D	10-N#
Head	100	100	100	100	100	100	100	100	100
Arms	83	87.5	88	100	91	100	92	100	98
Legs	99	100	100	100	100	100	100	100	100
Trunk	87	100	99	100	99	100	100	100	100
Eyes	98	87.5	98	100	98	100	99	100	100
Nose	90	87.5	95	100	97	87.5	100	87.5	100
Mouth	90	100	91	100	92	100	94	100	96
Ears	24	62.5	27	75	32	87.5	35	87.5	36
Pupil	9	37.5	15	62.5	21	87.5	35	87.5	37
Brow		25		37.5		50		87.5	
Hair	26* 15	75	42* 22	100	55* 45	87.5	58* 45	100	68* 58
Lashes	26*		42*		55*		58*		68*
Fingers	69	12.5 62.5	77	37.5 87.5	78	12.5 75	86	12.5 100	93
Feet	42	62.5	60	100	64	87.5	67	100	64
Hands	12	50	14	62.5	29	37.5	36	87.5	48
Clothing	75	100	94	100	98	100	98	100	100

- Goodenough normal group (6-N is CA 6 with normal school progress)

* - Goodenough combined brow and lashes into one item.

The second hypothesis is that children today are more sophisticated due to the influence of the movies, radio, and especially the television. Certainly all these mediums stress awareness of the body. Studies such as the present one, done in various types of localities, might determine if all children today seem more aware of self which would be the case if mass communication is a determining factor. They would also determine if socio-economic level and/or geographical location affect results if these factors are carefully controlled.

The other normative study available for comparison was Blizzard's⁷¹ research using retarded patients at the Parsons State Hospital and Training Center at Parsons, Kansas. Again, only a rough comparison could be made because of different age (14 to 22) and IQ (50 to 75) range of the sample. However, it was interesting to note that this sample falls logically into line in a sort of continuum with three of the groups considered in the present study. The elementary school population had a greater percent of successes with most of the individual items; the Special Education (educable) was next; the mentally retarded group from the Hospital third; and the Special Education (trainable) group last. The IQ levels fall in the same order from higher to lower as one would expect. Table X shows this continuum.

⁷¹Blizzard, Op. Cit.

Blissard's younger groups (14 to 18) which are more nearly comparable to the Special Education (educable) group in IQ and age range, were found to perform more nearly like that group than did his older groups (18 to 22). However, there were many areas of great difference. Since the age and IQ roughly compare, it might be hypothesized that the difference is due to institutionalization with the institutionalized group performing less adequately, i.e., having a less adequate self-concept. It might be further conjectured that institutionalization has an adverse affect in relation to its length, as Blissard's older groups perform less efficiently than the younger groups.⁷² In such a study the length of time in an institution should be carefully controlled.

The items of shading and transparencies show interesting variations in both the present study and Blissard's investigation. The drawings of the elementary school subjects have the largest percent of shading and the Parsons sample the least. But it could not be said from this result that lack of shading is a function of retardation as both of the Special Education classes use a great deal more shading than the Parsons group. (Table X) The incidence of shading needs further clarification since it is generally thought to

⁷²Idem., p. 28.

TABLE X
PERCENTAGE OF SUCCESSES OF FOUR GROUPS ON DAP
CHARACTERISTICS

	Group CA Total*	Special Ed. (educable)**	Blizzard's Sample***	Special Ed. (trainable)****
Head	100	100	100	100
Arms	98	94	84.6	57
Legs	100	100	84.6	70
Trunk	100	100	80.7	70
Eyes	98	100	100	100
Nose	90	100	98	57
Mouth	100	100	100	57
Ears	83	50	50	43
Pupil	75	70	46.1	0
Brow	58	57	53.8	14
Lashes	20	7	19.2	0
Hair	95	94	84.6	43
Fingers	85	79	51.9	43
Feet	90	86	71.1	43
Hands	63	43	25	14
Clothing	100	78	57.6	29
Shading	78	64	15.3	57
Transparencies	10	14	13.4	29

* CA 5-10 to 12-0. IQ 69 to 140. Median IQ 107 plus.
 ** CA 8-4 to 15-9. IQ 61 to 84.
 *** CA 14 to 22. IQ 50 to 75.
 **** CA 5-10 to 18-0. IQ 33 to 58.

indicate the presence of anxiety. It is difficult to believe that subjects living at home would experience more anxiety than those in the Hospital.

Transparencies seem to decrease with age in the elementary school group, but to increase as the IQ level lowers. However, the number of transparencies increase in Blizzard's female group with age with no corresponding decrease in IQ. So, the incidence of transparency could not be said to be only a function of the intelligence, considering these findings. Other factors seem to be entering, possibly emotional disturbance or, again, the effect of being institutionalized. Emotional disturbance as a factor is quite a tenable suggestion as these older youth are facing a very uncertain future as they approach the age of discharge from the Hospital.

One of the most unusual findings, and an interesting one, was the drop in percent of successes with several items in the 8-4 to 9-6 age range in the elementary school group. (Tables IV and V) Since this is the age when the school curriculum becomes more demanding, and a time of personal stress for children according to many authorities,⁷³ it seems to present unusual possibilities for further research.

⁷³Arthur W. Elair & William H. Burton, Growth and Development of the Preadolescent, New York, Appleton-Century-Crofts, Inc., 1951, p. 221.

In reviewing these possibilities for further research, it appears that the present study has revealed more questions than it has answered.

Summary, Recommendations, and Conclusions

This study was undertaken for the purpose of adding to the knowledge of the actual drawing behavior of an elementary school population and to investigate developmental trends which may accompany maturation.

The DAP was given to approximately 250 students by their classroom teachers using Machover's suggestions for administration. The subjects were grouped first by chronological age and then by mental age into two groups designated the CA group and the MA group respectively. The two special education classes were designated as (1) Special Education (educable) group and (2) Special Education (trainable) group.

The CA group was divided into five sub-groups and the drawings of four boys and four girls chosen from each sub-group by random methods. The MA group was divided into seven sub-groups with four boys and four girls chosen to represent them by the same random methods. These sub-groups were further divided as to sex for study.

The special education classes were small so all subjects were used. They were divided into chronological and mental age sub-groups for comparison but were not divided as to sex.

In all, 108 drawings were scored for the presence or absence of the following items: (1) head; (2) arms; (3) legs; (4) trunk; (5) eyes; (6) nose; (7) mouth; (8) ears; (9) pupil; (10) brow; (11) lash; (12) hair; (13) fingers; (14) feet; (15) hands; (16) clothing; (17) shading; and (18) transparencies. The items were scored by the Goodenough method wherever applicable. The complete criteria is to be found in Appendix A.

Judges were two clinical psychologists currently employed with the Parsons State Hospital and Training Center, and the author. Drawings were scored independently and the decisions were unanimous.

The Fisher Exact Probabilities Test and the Sign Test were used to determine significant differences in the drawing behavior of the various groups. All necessary comparisons were made. Percentage tables were set up to describe the drawing behavior of each sub-group. Significant differences between sub-groups were noted on these tables. Table VII shows significant differences between the performance of the CA sub-groups on each item. The performance of comparable CA and MA sub-groups was studied.

The special education groups and sub-groups were analyzed and compared in several possible ways.

The following general results were noted:

(1) A developmental trend associated with maturation was present in the drawing behavior of the elementary school subjects on the DAP.

(2) The tendency to draw the head, arms, legs, trunk, eyes, nose, mouth, and clothing was well established by the age period 5-10 to 7-0.

(3) The tendency to include the pupils, hair, fingers, and brow was well established during the years 7-1 to 8-3.

(4) The drawing of the hands seems to present problems for these subjects. The behavior on this item is erratic.

(5) The drawing behavior of the special classes appears to follow the same pattern at a slower rate of development.

(6) The use of shading was general in the drawings of elementary school subjects.

(7) The incidence of transparencies appears to decline with maturation.

It is recommended that this study be replicated in different socio-economic and geographical settings to validate the findings and to investigate the forces which may influence drawing behavior.

More research should be done with larger numbers of special education pupils on both the educable and trainable levels. With the small number used in this study, trends could only be noted. The drawing behavior of these groups should be compared with that of similar groups in institutions to establish the effects of institutionalization upon drawing behavior as seen on the DAP.

TABLE XI

COMPARISON OF THE PERFORMANCE OF OA SUB-GROUPS ON EACH CHARACTERISTICS

Sub-Group	A-B	B-C	C-D	D-E
Head	0	0	0	0
Arms	.5	0	0	0
Legs	0	0	0	0
Trunk	0	0	0	0
Eyes	.5	0	0	0
Nose	.5	.5	0	0
Mouth	0	0	0	.5
Ears	.183	.4	0	.5
Pupil	.133	.246	0	0
Brow	.179	.342	.128	.4
Lashes	.246	.246	0	0
Hair	.238	.5	.5	
Fingers	.246	.4	.238	0
Feet	.1	.5	.5	.4
Hands	.342	.133	.029*	0
Clothing	0	0	0	0
Shading	.029*	.4	.238	.5
Transparencies	.238	.4	.233	.238

* Significant difference at the .05 level of confidence as computed by the Sign Test.

It would add substantially to knowledge about developmental trends if the drawing behavior of pre-school and kindergarten children were investigated objectively. Norms should extend over a larger age range.

Retesting of the group used in this study would add to the reliability of the results.

As a results of this study, omission of essential parts of the human figure by elementary school children could be regarded as unusual behavior. Diagnostic implications of omissions were not investigated. It is felt that the norms established by the study will aid the clinician in using the DAF with an elementary school population.

15

16

17

18

19

20

21

22

23

APPENDIX

24

25

26

27

28

29

30

31

32

APPENDIX A

SCORING CRITERIA FOR DAP ITEMS

Item	Criteria
Head	Goodenough ** 1
Arms	Goodenough ** 3
Legs	Goodenough -- 2. Also, if a long skirt was drawn on a female figure, legs were credited though only feet were seen. If no legs nor feet were seen, scoring was as follows: (1) if arms were drawn, legs were credited, and (2) if hands were drawn, feet were credited.
Trunk	Goodenough -- 4a
Eyes	Goodenough -- 7a
Nose	Goodenough -- 7b
Mouth	Goodenough -- 7c
Ears	Goodenough -- 15a. Also, on female figures, if the hair covered areas where the ears would normally be, ears were credited.
Pupil	Goodenough -- 15b
Brow	Goodenough -- 16a
Lash	Goodenough -- 16a
Hair	Goodenough -- 8a
Fingers	Goodenough -- 10a

Item	Criteria
Feet	Feet were credited if shown distinctly by a curve or angle at the end of the leg or by a boundary line to shoe where foot or shoe began. Toes established presence of the foot. A shaded area at the extremity was considered a shoe, therefore, a foot was credited. Two feet were necessary for the front view, one foot sufficient for a profile view.
Hands	Goodenough -- 10c. Fingers were credited if the hands were behind the back or in the pocket. Hands were credited only if the upper part of the hand was clearly indicated.
Clothing	Goodenough -- 9a. For female figures, a definite widening at the hemline or a triangular shape was considered a skirt. Clothing was also credited if the waist line was indicated by a narrowing of the body or if there was a belt.
Shading*	<ol style="list-style-type: none"> 1. Vigorous, aggressive shading. 2. Rationalized shading. <ol style="list-style-type: none"> a) Patterns of material used for clothing. b) Shading to give highlights to call attention to details. c) Light lines to accent details. 3. Heavy lines to emphasize certain features but not necessary to the picture.
Transparencies*	Transparencies credited were (1) armature visible through clothing, and (2) body lines visible through clothing. Lines which seem to be the result of poor coordination were not credited.

* Criteria derived from Machover's suggestions.

BIBLIOGRAPHY

BIBLIOGRAPHY

Books

- Blair, Arthur and William M. Burton. Growth and Development of the Preadolescent, New York: Appleton-Century-Crofts, Inc., 1931.
- Buros, Oscar K. (ed.). The Fourth Mental Measurement Yearbook, Highland Park, New Jersey: The Gryphon Press, 1953.
- Goodenough, Florence L. Measurement of Intelligence by Drawings, ed. Lewis M. Terman; Chicago, Illinois: World Book Company, 1926.
- Machover, Karen. Personality Projection in the Drawing of the Human Figure, First edition; Springfield, Illinois: Charles C. Thomas, 1949.
- Murchison, C. (ed.). Handbook of Child Psychology, Worcester, Mass.: Clark University Press, 1931.
- Siegel, Sidney. Nonparametric Statistics, New York: McGraw-Hill Book Company, Inc., 1956.

Periodicals

- Anastasi, Anne and J. F. Foley, Jr. "A Survey of the Literature on Artistic Behavior in the Abnormal," Journal of General psychology, 25, 1941, pp. 111-142.
- _____. "A Survey of the Literature on Artistic Behavior in the Abnormal: IV. Experimental Investigations," Journal of General Psychology, 25, 1941, pp. 187-237.
- Berrien, F. K. "A Study of the Drawings of Abnormal Children," Journal of Educational Psychology, 26, 1935, pp. 143-150.
- Bieliauskas, V. J. "Sexual Identification in Children's Drawings of Human Figures," Journal of Clinical Psychology, 16, 1960, pp. 42-44.
- _____. and Sandra Kirkman. "An Evaluation of the Organic Signs in the H-T-F Test," Journal of Clinical Psychology, 1958, pp. 50-54.

- Buck, J. N. "The H-T-P Test," Journal of Clinical Psychology, 4, 1948, 151-158.
- Butler, R. L. and F. L. Marcuse. "Sex Identification at Different Ages Using the Draw-A-Person Test," Journal of Projective Techniques, 23, 1959, pp. 299-302.
- Feldman, Marvin J. and Raymond G. Hunt, "The Relation of Difficulty in Drawing to Ratings of Adjustment Based on Human Figure Drawings," Journal of Consulting Psychology, 22, 1958, p. 217.
- Fisher, Seymour and Rhoda Fisher. "Tests of Certain Assumptions Regarding Figure Drawing Analysis," Journal of Abnormal and Social Psychology, 1950, pp. 727-732.
- Grams, Armin and Lawrence Rinder, "Signs of Homosexuality in Human Figure Drawings," Journal of Consulting Psychology, 1958, p. 394.
- Havinghurst, J., M. Z. Robinson and M. Dorr. "The Development of the Ideal Self in Childhood and Adolescence," Journal of Educational Research, 40, 1946, pp. 241-257.
- Holzberg, Jules D. and Murray Wexler, "The Validity of Human Form Drawings as a Measure of Personality Deviation," Journal of Projective Techniques, 14, 1950, pp. 343-357.
- Hunt, R. G. and M. J. Feldman, "The Body Image and Ratings of Adjustment on Human Figure Drawings," Journal of Clinical Psychology, 16, 1960, pp. 35-38.
- Lakin, Martin. "Certain Formal Characterizations of Human Figure Drawings by Institutionalized Aged and by Normal Children," Journal of Consulting Psychology, 20, 1956, pp. 471-474.
- Silverstein, A. B. and H. A. Robinson. "The Representation of Orthopedic Disability in Children's Figure Drawings," Journal of Consulting Psychology, 20, 1956, pp. 333-341.
- Springer, N. N. "A Study of the Drawings of Maladjusted and Adjusted Children," Journal of Genetic Psychology, 58, 1941, pp. 131-138.
- Starr, S. and F. L. Marcuse. "Reliability in the Draw-A-Person Test," Journal of Projective Techniques, 23, 1959, pp. 83-86.

Swensen, O. H. "Empirical Evaluations of Human Figure Drawings," Psychological Bulletin, 54, 1957, pp. 431-466.

_____ and Kenneth Newton. "The Development of Sexual Differentiation on the Draw-A-Person Test," Journal of Clinical Psychology, 1955, p. 417.

Weider, Arthur and Paul W. Noller. "Objective Studies of Children's Drawings of Human Figures: I. Sex Awareness and Socio-Economic Level," Journal of Clinical Psychology, 1954, pp. 319-326.

_____, Objective Studies of Children's Drawings of Human Figures: II. Sex, Age, Intelligence," Journal of Clinical Psychology, 1953, pp. 20-23.

Woods, Walter A. and William E. Cook. "Proficiency in Drawing and Placement of Hands in Drawings of the Human Figure," Journal of Consulting Psychology, 18, 1954, pp. 119-121.

Unpublished Materials

Blizzard, B. Theodore. Diagnostic Limitations of the Draw-A-Person Test With the Mentally Retarded, unpublished Master's Thesis, Kansas State College of Pittsburg, Pittsburg, Kansas, 1960.

Wanner, Paul W. Partial Test of the Validity of the Machover Drawing-of-a-Human Figure Technique, unpublished Master's Thesis, Sacramento State College, Sacramento, California, 1953.

