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A Statistical Investigation into the  
Validity and Reliability of the  
Human Figure Drawing Test

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A thesis submitted to the Department of Psychology in partial fulfilment of the requirements for the degree Master of Science in Clinical Psychology.

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ACKNOWLEDGEMENTS

I would like to express my sincere thanks to those people whose help and support made it possible for me to complete this thesis.

Special thanks go to the following people:-

Miss. D. Shamley - my Supervisor

Mr. L Gilbert for statistical help

The Children, parents and Teachers who participated in this study.

Miss. G. McEwan - typing

My parents and family.

Thanks to all of you.

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ABSTRACT

The objective of the present study is to statistically investigate the validity and reliability of the Koppitz Human Figure Drawing Test. 300 children aged eight years to eleven years were tested on the 1) Human Figure Drawing Test, 2) Goodenough Draw-a-Man Test, 3) Wechsler Intelligence Scale for Children, and 4) New South African Group Test - Junior K, for the intellectual assessment, and on the 1) Human Figure Drawing Test, 2) Rutter Parent (A2) Questionnaire, 3) Rutter Teacher (B2) Scale, and 4) the California Test of Personality for the emotional assessment. 224 children aged 6 years to 12 years were assessed for one week test-retest reliability; 175 children aged 8 years to 14 years for one month test-retest reliability; and one hundred drawings were scored for each of inter- and intra-scorer reliability. The results indicate that (1) the Human Figure Drawing Test is not a valid indicator of emotional and behavioural adjustment or as a measure of intelligence, except at the Borderline Range for Mental Retardation; and (2) highly significant test-retest and scorer reliabilities were obtained. It is concluded that the Human Figure Drawing Test can not <sup>be</sup> regarded as a useful clinical technique.

The Human Figure Drawing Techniques are among the most widely-used assessment procedures used in psychological clinics and hospitals (Sundberg, 1961 and CRM Books, 1972). This is not surprising when one considers the many convenient, attractive but superficial advantages of the test: it is a quick, informal test which is easily administered and scored, and it usually has a non-threatening nature for the child. However not one of these convenient attributes tell us anything of the validity and reliability of these techniques, even though it is a major

responsibility of the psychologist to insure that his tests actually do what they purport to do and do so in a reliable fashion.

There have been three distinct approaches to the psychological study of human figure drawings, all of which need to be considered when evaluating children's human figure drawings for their possible clinical significance. The first of these approaches has been to describe the developmental stages of child art productions. At certain periods of their general development children tend to pass through various stages of artistic production and consequently to adopt recognizable modes of artistic expression. The psychologist needs to be familiar with these developmental stages in order to be able to isolate items of possible clinical significance. The second approach to the study of human figure drawings began with the publication of Goodenough's "Measurement of Intelligence by Drawings" in 1926. Goodenough believed she could discern cognitive elements in the genesis of children's drawings; that for the young child, drawing is a means of communication, a form of cognitive expression, and therefore human figure drawings could be used in the assessment of intelligence. The third approach, which is closely linked with the development of the projective techniques of personality assessment, emphasizes the possibility of using human figure drawings as measures of personality. The basic postulation being that "the human figure drawn by an individual . . . relates intimately to the impulses, anxieties, conflicts and compensations characteristic of that individual" (Goodenough, 1929, pp 35).

However, the results of some studies have fostered a profound scepticism regarding the actual significance of the human figure drawing as a clinical psychometric tool. These sceptics feel that what was originally considered to be an evaluation of the clinical variables of intelligence and/or personality, is nothing more than an evaluation of drawing skill. Kellogg (1967), for example, feels that the human figure drawing techniques are based on such erroneous conceptions of the child's mind and child art "that its use to-day is pure psychological ritual with no scientific validity." (pp 22).

Indeed a review of the literature indicates the need for empirical studies into the validity and reliability of the Human Figure Drawing Techniques.

## 2. The Koppitz Human Figure Drawing Test:-

The Koppitz Human Figure Drawing Test appears to take into account all of the various approaches to the psychological study of children's human figure drawings. Koppitz believes that the Human Figure Drawing Test is one of the most valuable techniques for evaluating children, precisely because it can be used both as a projective technique and as a developmental test of mental maturity. Thus the Koppitz Human Figure Drawing Test involves a concurrent evaluation, yet differentiation between the intellectual and emotional factors, as well as taking into account the developmental stages of art production. Her basic premise is that "Human Figure Drawings reflect primarily a child's level of development and his interpersonal relationships,

that is, his attitudes toward himself and toward the significant others in his life . . . . The Human Figure Drawing is regarded . . . as a portrait of the inner child of the moment" (Koppitz, 1968, pp 3,4,).

There has been a lack of empirical studies on the validity and reliability of this Human Figure Drawing Test.

3. Objectives and Hypotheses:-

The objective of this study is to statistically investigate the validity and reliability of Koppitz's Human Figure Drawing Test. The specific hypotheses were :-

Hypothesis No. 1 :- Koppitz's Human Figure Drawing Test is not a significantly valid indicator of intelligence.

Hypothesis No. 2:- Koppitz's Human Figure Drawing Test is not a significantly valid indicator of emotional and behavioural adjustment.

Hypothesis No. 3 :- What is the Test-retest reliability of the Koppitz Human Figure Drawing Test with a (i) one-week interval between test administrations; and (ii) a one month interval between test administrations.

Hypothesis No. 4 :- What are the scorer reliabilities of the Koppitz Human Figure Drawing Test both with respect to (i) inter-scorer reliability and intr-scorer reliability.

4. Method of Procedure:-

4.1. Part I : Construct Validity:

4.1.1. Subjects:- Three hundred children aged eight years to eleven years were individually selected to meet certain criteria of age, sex and socio-economic status in order to obtain a sample which could be regarded as representative of the total population. Only English speaking children were included in the sample.

4.1.2. Experimental Design:- A Factor Analytic study was felt to be the most suitable statistical design. In order to "set up" factors of intelligence and personality the following criterion tests were used.

4.1.3. The Criterion Tests:- Two separate factor analyses were run; one for intellectual assessment and one for emotional assessment:-

The Intellectual Criterion Measures:-

- 1) Koppitz Human Figure Drawing Test
- 2) Goodenough Draw-a-Man Test
- 3) Wechsler Intelligence Scale for Children
- 4) New South African Group Test - Junior K

The Emotional Criterion Measures:-

- 1) Koppitz Human Figure Drawing Test
- 2) Rutter Parent (A2) Questionnaire
- 3) Rutter Teacher (B2) Questionnaire
- 4) California Test of Personality

4.2. Part II: Reliability:

4.2.1. Test-retest Reliability with a one week interval:-

4.2.1.1. Subjects:- 224 school children aged 6 years 0 months to 12 years 0 months were tested in their usual class groups.

4.2.1.2. Statistical Analysis:- Pearson Product Moment Correlation Co-efficients were calculated.

4.2.2. Test-retest Reliability with a one month interval :-

4.2.2.1. Subjects:- 175 children aged 8 years 0 months to 11 years 0 months, drawn from the main subject sample used for the validity research.

4.2.2.2. Statistical Analysis:- Pearson Product Moment Correlation Co-efficients were calculated.

4.2.3. Scorer Reliability:-

4.2.3.1. Inter-Scorer Reliability:- Two scorers independently scored a random selection of 100 drawings, and the Pearson Product Moment Correlation Co-efficients were calculated to obtain the the correlation between the two scorers' assessments.

4.2.3.2. Intra-Scorer Reliability:- Each of two raters rescored fifty drawings and then Pearson Product Moment Correlation were calculated to get intra-scorer reliabilities.

## 5. Presentation of Results:-

### 5.1. Construct Validity on Intellectual Assessment:-

1) Using an oblique rotation for two factors, correlated by .546, there is a clear distinction between (a) WISC IQs and the NSAGT IQs (Factor 1 : "Intellectual Factor"); and (b) the Koppitz Human Figure Drawing Test and the Goodenough Draw-a-Man Test (Factor 2 : "Drawing Factor").

2) With respect to the intercorrelation co-efficients, the Koppitz Human Figure Drawing Test does not correlate at a salient level with any of the criterion tests of intelligence.

3) On consideration of the inter-correlations, for the respective tests within IQ Ranges, the Koppitz Borderline Range for Mental Retardation correlates significantly with both the WISC and the NSAGT Borderline Ranges, but there are no other significant correlations between the Koppitz Human Figure Drawing Test and the other criterion tests within the IQ Ranges of Superior, Above Average, Average or Low Average.

### 5.2. Construct Validity on Emotional Assessment:-

1) On the orthogonally rotated factor matrix two distinct factors emerged:- Factor 1: "Behavioural and Emotional Adjustment", all of the significant loadings being the California Test of Personality ; and on the Rutter Parent (A2) and Teacher (B2) Scales; and Factor 2: "Drawing Factor", all the salient loadings were on the Human Figure Drawing variables.

2) Koppitz's categories for overall emotional adjustment, shyness, aggressiveness, stealing or psychosomatic complaints do not correlate significantly with any of the selected criterion variables which measure similar behaviour patterns.

### 5.3. Test-Retest Reliabilities:-

1) For children aged 8 years or more, <sup>what is this?</sup> high levels of test-retest reliabilities were obtained for both the Developmental Assessments and the Emotional Indicators, over one week and one month intervals between test administrations.

2) Doubtful test-retest reliability on 6 year and 7 year old children, with respect to both Developmental Assessment and Emotional Indicators over a one week interval period.

### 5.4. Scorer Reliability:-

Highly significant inter-scorer and intra-scorer reliability coefficients were obtained.

## 6. Discussion of Results

### 6.1. Construct Validity of Developmental Assessment:

It was felt that since the Koppitz Human Figure Drawing Test was found to be valid at the Borderline Range for Mental Retardation an extraneous drawing variable is introduced into the scoring

system by including such features as relationships, proportions, and organization for drawings which would score within the average and above average ranges of intelligence.

#### 6.2. Construct Validity on Emotional Indicators:-

Having given due consideration to various methodological issues, it is felt that the results clearly indicate the Koppitz Human Figure Drawing Test is not a valid indicator of behavioural and/or emotional adjustment, thus it is most disturbing to note the popularity of the test, despite a mounting body of evidence against the clinical significance of this test as an indicator of emotional adjustment.

#### 6.3 Reliability:-

Children in the Schematic Stage of Art Development have consistency over time in their drawings, while children in the Preschematic Stage of Art Production do not, and can not be expected to, have high test-retest reliability.

#### 6.4. Reliability and Validity:-

The present study clearly illustrates how a test can lack validity and at the same time be highly reliable. This serves to warn the clinician that in order for a test to be regarded as truly useful, it must be both valid and reliable.

## 7. Conclusions:-

In the light of the present study the Koppitz Human Figure Drawing Test may not be regarded as a useful technique for clinical assessment, since it is an invalid emotional indicator and it also lacks validity as an intellectual test for all ranges of intelligence except within the Borderline Range for Mental Retardation.

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\* \* \* \* \*

Chapter 1

"The profession of psychology is much like living, which has been defined by Samuel Butler as "the art of drawing sufficient conclusions from ineufficient premises." H.A. Murray (1938 Pg.)

Drawings of the human figure are one of the oldest, most fascinating, and at the same time, one of the least scientifically established of all psychometric techniques. The human figure drawing tests have many superficial but very attractive advantages. It is a quick informal test, requiring no materials beyond a pencil and paper, which is easily administered by the tester and usually enthusiastically tackled by the child. It is non-verbal and has a non-threatening nature for the child. Drawing, a familiar situation for most children, makes interaction between the child and the examiner unnecessary for awhile, thus providing a welcome buffer period during which the child can gain some sense of security and overcome some of his initial test anxiety. It is also generally considered to be relatively <sup>fair</sup> culture-free. Furthermore, many clinical psychologists believe that since there is no complicated scoring system, and no long apprenticeship to be served, the human figure drawing test can somewhat magically open a secret door to the personality and/or yield an I.Q. score.

Certainly these recommendations have been powerful since it has been found by Sundberg (1971) that human figure drawing tests are among the most popular of the psychological tests used in the clinics and hospitals of the United States of America. Sundberg found that the Draw-a-Person test of Karen Machover was the second most widely used test, trailing only the Rorschach in popularity, while the Goodenough Draw-a-Man test was fifth on the list of the most widely used tests.

However not one of the convenient attributes mentioned above, or its wide usage, tell us anything about the validity and reliability of these tests, they purely comment on the convenience of this test and not on the usefulness.

Scientific interest in the psychological significance of childrens drawings dates back as far as the 1880's when Ebenezer Cooke (1885) published an article on childrens' drawings in which he described the successive stages of development as he had observed them. Since that time, there have been three distinct, but interrelated, approaches to the psychological study of children's human figure drawings. The first approach was largely one of descriptive investigation, where the major interest was centered on the description of the successive stages of development observed in children's drawings rather than in the establishment of an explanatory underlying theory of drawing behaviour. Many classifications of the developmental stages of child art exist to-day and these shall be discussed under the next sub-title.

The second approach deals with human figure drawings as measures of intellectual abilities. This approach began with the publication of Florence Goodenough's "Measurement of Intelligence by Drawings" in 1926 which focused on the belief that there was a large intellectual component in the development of children's drawings. This approach is closely linked chronologically and theoretically to the psychometric study of intelligence, and to this day remains a major focus of many scientific experiments. Then finally, with the advent of the projective techniques of personality study in the 1940's a new interest in the drawing of the human figure appeared. Although, Goodenough (1926) anticipated that drawings could be used interpretively in the study of personality,

the publication in 1946 of Karen Machover's "Personality Projection in the Drawing of the Human Figure", may be regarded as the major impetus to this approach to the study of human figure drawings.

Clearly there has been great interest in human figure drawing tests and numerous alternative and modified approaches to the analysis of human figure drawings have been presented in the literature:- Buck's House - Tree - Person Technique (1948); Dunn and Lorge's Gestalt Scale for the Appraisal of Human Figure Drawings (1954); Wagner and Schubert's Artistic Quality Scale (1955); Strumpfer's Aggression traits in Nichols and Strumpfer, 1961; and Albee and Hamlin's Adjustment Scale (1949).

One of the most interesting of these is Elizabeth Koppitz's Human Figure Drawing Test which combines two approaches and is purported to yield a Developmental Assessment which one interprets to give I.Q. ranges, as well as giving an indication of the emotional adjustment of a child. This test is widely used, yet has not been the subject of many scientific investigations, and thus is the main focus of the present statistical study.

#### 1.1. The Developmental Stages of Art Production.

"... young children paint and draw like young children, and not like small adults who are not very good at it."

(Jameson, 1971, pp 56)

The study of children's human figure drawings from a psychological

viewpoint cannot be divorced from a study of the developmental stages and modes of expression in child art. Child art is widely viewed as being primarily a means of expression, a natural and spontaneous expression:

"No two children are alike and, in fact, each child differs even from his earlier self as he constantly grows, perceives, undertakes and interprets his environment. A child is a dynamic being, art becomes for him a language."

(Lowenfeld and Brittain, 1970, pp6)

The child begins to express himself from birth, beginning with certain instinctive desires which it must make known to the external world, and gradually the child uses many other modalities to express himself, to communicate with others. Expression in art relies on both the unique personal qualities of the child artist, the experiences he has had in life and his exposure to drawing materials although the relative importance of these two factors is not known. Since children neither possess identical personalities nor react in wholly similar fashion to experiments, their output in art must of necessity vary. Nevertheless at certain periods of their general development, children tend to draw in predictable ways, passing through fairly definite stages, starting with the first scribbles on paper and progressing through adolescence, adopting at each stage recognizable modes of artistic expression. Although these stages are sequential, it is difficult to tell where one stage of development begins and another ends, or to indicate precisely at which chronological age each stage occurs.

Development of art is continuous and stages are typical midpoints in the course of development.

Various writers, notably Anastasi and Foley (1938) and Kellogg (1970) have noted the uniformity of artistic expression from country to country, culture to culture, from Paleolithic times to present. Pictorial drawings made by children in many lands are remarkably similar, this being especially true of the very early stages of representations, before the culture influences a child's artistic productions. What a child draws will depend upon the environment in which he lives and the drawing instrument used, but the basic developmental stages which will be described are apparently universal.

Numerous classifications of the development of art are to be found but, basically they all agree on the existence of the following six main stages that occur before adolescence. (Lowenveld and Brittain, 1970).

#### 1.1.1. The Scribbling Stage ( $\pm 1\frac{1}{2}$ - 4 years):-

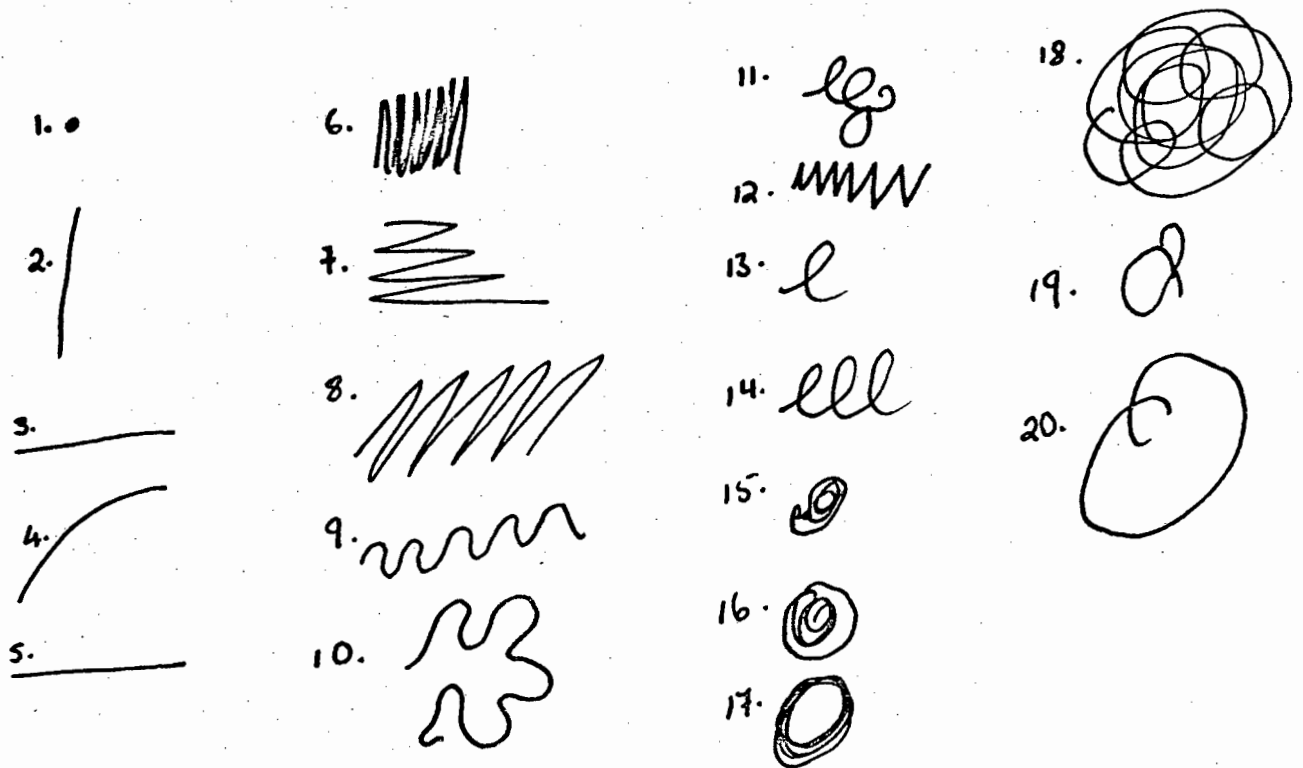
Scribbling is generally regarded as the very important beginning of child art, although the child's art really begins before it places its first marks on a piece of paper. It begins when the child makes contact with its environment through his senses and reacts to these sensory experiences.. Touching, feeling, seeing, manipulating, in fact any method of perceiving and reacting to the environment provides the background for all

art production, be it the painting of a world-renown artist, or the first scribbles of a child.

The child generally makes his first expression on paper, in the form of scribble, at about the age of 18 months, and then over the next two or three years the child's graphic representations pass through three stages:

- (1) Disordered scribbles;
- (2) Controlled scribbles and
- (3) Named scribbles.

(1) Disordered scribbles:- When the 18 month old child first takes a crayon in his hand and scribbles on a piece of paper he does not seem to realize that he can make the scribble do what he wants them to do. They are usually randomly placed on the page, varying in length and direction as the child experiments with manipulating the crayon and himself. Kellogg (1967) has distinguished 20 Basic scribbles (Figure 1) which form the basis of all graphic art, no matter how sophisticated or complex, and which the child at this very young age produces. Initially the child produces sweeping curves and finally the straight line. These basic scribbles can be made whether or not the child is visually aware of the productions, since the scribbles are the product of a variety of directional muscular movements, thus even blind children produce these scribbles.



**Figure 1:-** The 20 Basic Scribbles (Taken from Kellogg, 1970, Pg. 90)

- |                                  |   |
|----------------------------------|---|
| 1. Dot                           | 11. Roving enclosing Line               |
| 2. Single <u>vertical</u> line   | 12. Zigzag or waving Line               |
| 3. Single diagonal line          | 13. Single Loop Line                    |
| 4. Single curved line            | 14. Multiple Loop Line                  |
| 5. Single horizontal line        | 15. Spiral Line                         |
| 6. Multiple <u>Vertical</u> line | 16. Multiple-Line overlaid circle       |
| 7. Multiple horizontal Line      | 17. Multiple-Line circumference circle. |
| 8. Multiple Diagonal Line        | 18. Circular Line Spread Out            |
| 9. Multiple <u>Curved</u> Line   | 19. Single Crossed Circle               |
| 10. Roving open Line             | 20. Imperfect Circle                    |

(ii) **Controlled Scribbles:-** Gradually the child begins to realize that there is a connection between his movements and the marks which appear on the paper, and so the child begins to gain visual control over his scribbles. He will now show great enthusiasm for drawing and will repeat or vary his motions with much vigour.

The child will now prefer continuous scribbles to dots and patterns which require the removal of the crayon from the page. Although these early scribbles are visually meaningless to adults, they are visually significant to the child who makes them. The basic scribbles then become the building blocks from which all graphic art is constructed. "When the child looks at his scribbles, he sees them as visual wholes or entities." (Kellogg, 1970, pp 19)

(iii) Named Scribbles:- As the child's scribbles become more elaborate, he discovers a relationship between what he has drawn and something in the environment, although an adult or even another child may find no recognizable figures in the scribbles. The naming of his scribbles marks a distinct change in the child's thinking. Before he was mainly satisfied with the motions which produced his drawing but now he has come to connect these motions to the world around him. The child now draws with intent, although generally he has no preconceived notion of what his finished scribble will look like. Nevertheless, the child in this stage will set about his work very slowly and deliberately, and will often give a verbal description of what is going on in his drawing. A scribble may, in the course of this description, be named and renamed several times before the drawing is complete.

### 1.1.2. The Preschematic Stage (± 3 - 7 years)

As the child gains greater eye control over his basic scribbles, he sees certain shapes in his work which, as a result of his increased motor control he is able to reproduce. The child in this stage is actually copying his own work, in order to produce the "Diagrams." There is now a conscious creation of form.

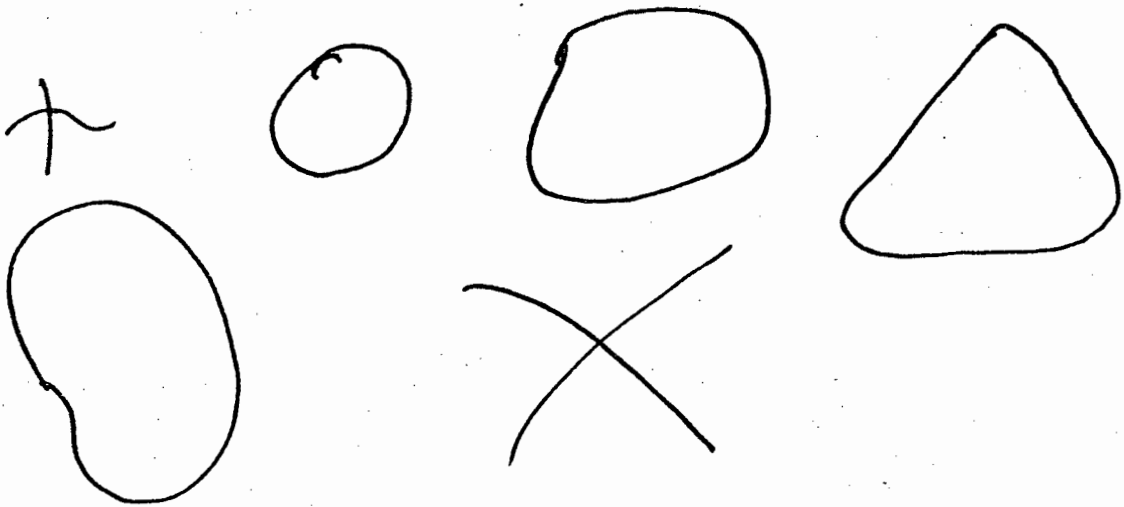


Figure 2:- The Diagrams (Taken from Kellogg, 1970).

Kellogg (1967) attributes the emergence of the Diagrams to an interplay of the child's controlled scribbles and his predisposition to like certain shapes. Almost as soon as the Diagrams have appeared, the child will combine two together to form "Combines" and will later use three or more together to form aggregates.

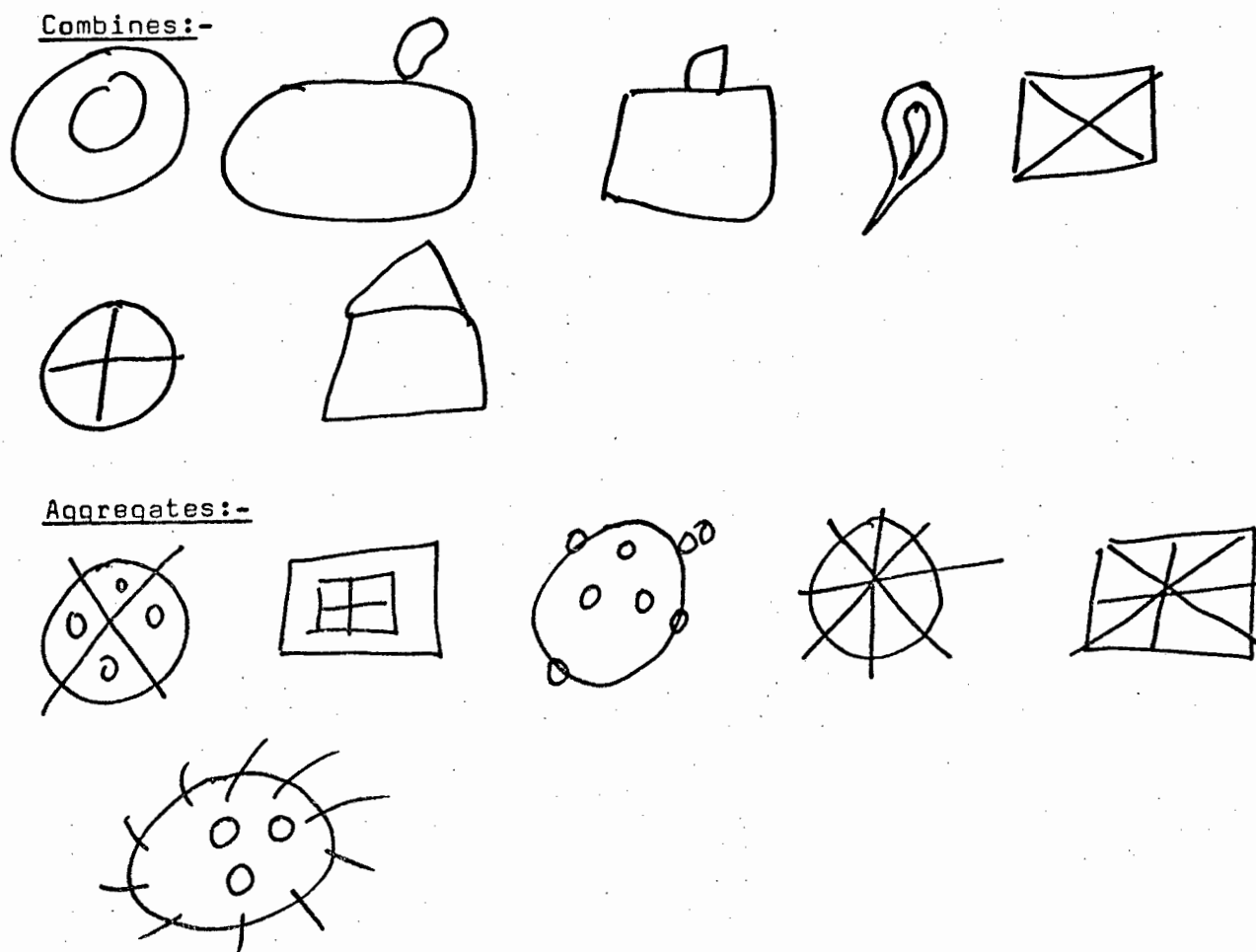


Figure 3:- Combines and Aggregates (Taken from Kellogg, 1967)

Numerous writers have placed particular emphasis on the universality of the combines and aggregates which appear in child art. One of these, the "mandala", which most frequently takes the form of a Greek cross enclosed in a circle, is extremely prevalent in the work of children at this stage of development. Doctor Carl Jung has written extensively on the great human and psychological significance of the mandala, believing it to be symbolic evidence of both the collective and personal unconscious. Jung emphasizes the symbolic expression in art and thus the great significance of symbols in the psychologist's armamentarium for understanding an individual, and therefore he provided one of the major stimuli for the psychologists'

interest in drawings.

Once the child has produced the mandala in his drawings, he will continue to use it in his art work. Indeed, for the child, his production of the mandala is of great importance - he often talks to the mandala or talks to others about it. From the mandala, the child develops first radials, and then from these symbols, the child's earliest pictorial representations will develop.

For nearly every child, his first pictorial representation is of a human, which takes the form of a "big-head" figure in which the child places dots and lines in the centre of the radials. (Figure 4: a, b, c, d.) Slowly the number of radials begins to diminish, or to be grouped as head-top markings which look like hair (Figure 4: e, f.). Eventually two radii representing legs and two representing arms are all that remain attached to the head. (Figure 4: g) Frequently in the next stage, the child will draw armless figures, even though arms have been drawn previously, perhaps because the figure looks more balanced to the child once the head and legs have been made in certain proportions. (Figure 4: h) The child first represents the torso by placing a line across the legs of a big-head figure, and the arms remain attached to the head. (Figure 4: i) Later on the body is defined and will be represented by an oval, circle, rectangle or triangle, with the arms still attached to the head, (Figure 4: j) and it is only at a much later stage of development that the child attaches the arms to the body and then eventually at the shoulder position.

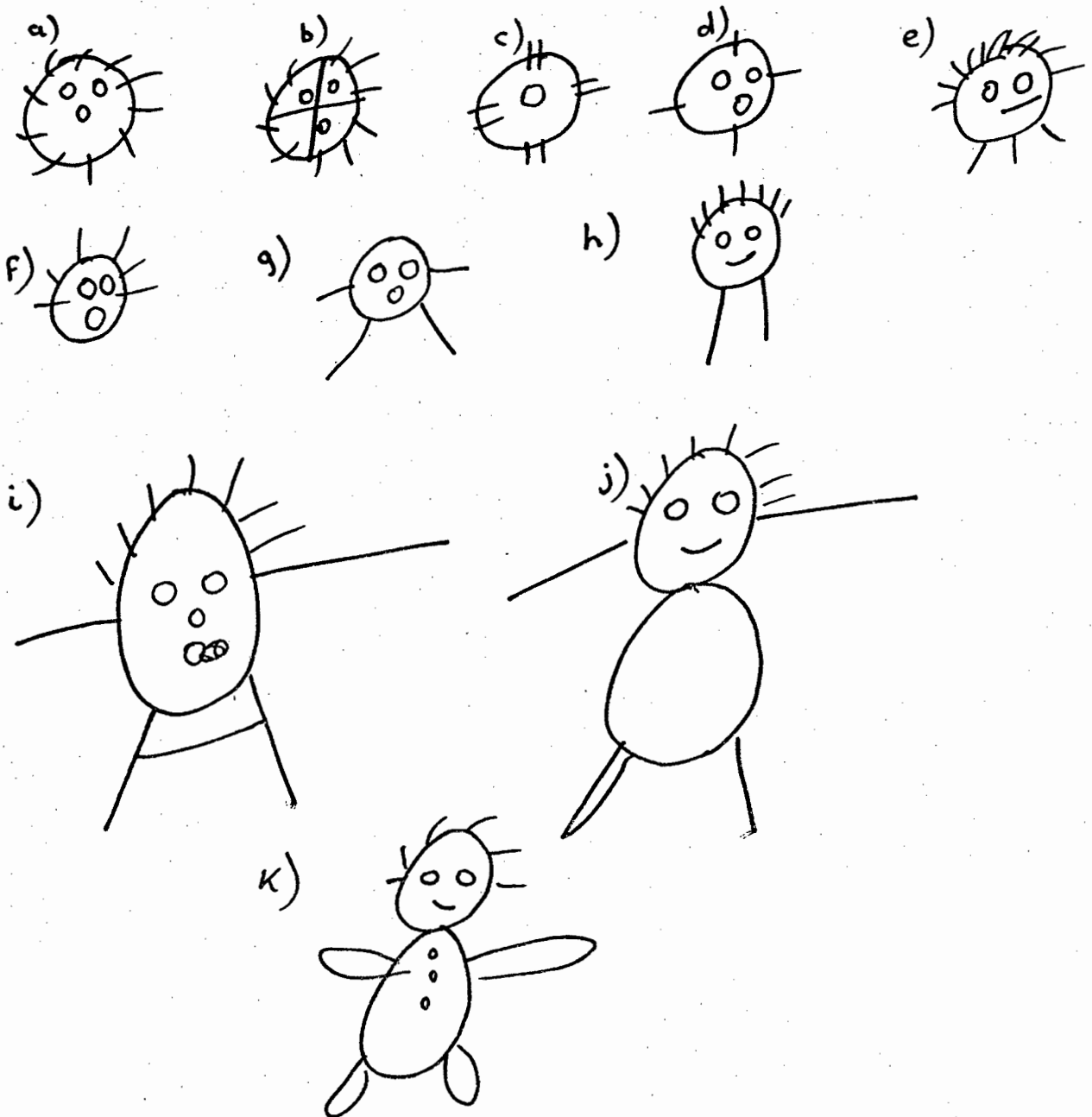
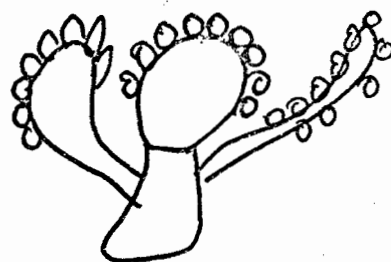
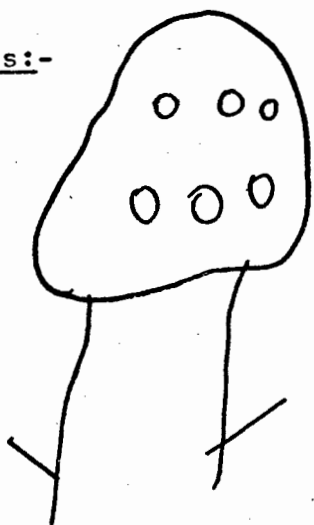


Figure 4:-Early Developmental Stages of the Human Figure Drawing (Taken from children aged 3 - 7 years.)

Once the child has produced the human figure he will begin to represent other subjects in his environment. Many of these earlier representations will closely resemble the human figures he is drawing. For example, he may draw animals

by drawing big-head figures with ears on top of their heads, or his first trees are drawn as armless humans. Gradually the child's interest will widen and he will begin drawing houses, boats, cars, planes, etc. usually by combining several diagrams.

Trees:-



Animals:-

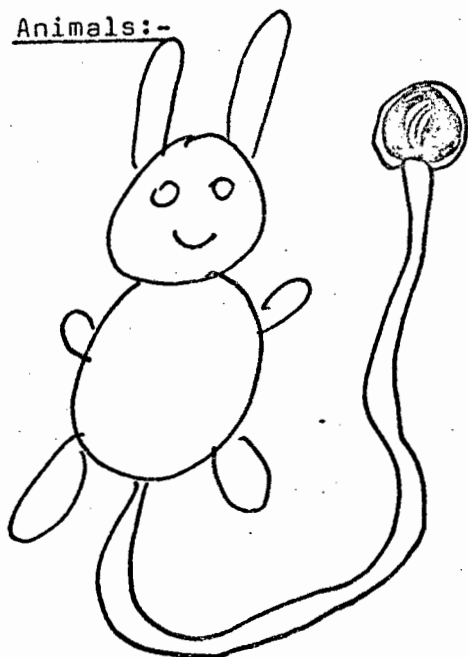


Figure 5:- The Child's Early Pictorial Representations of Trees and Animals. (Taken from children 3 - 7 years of age.)

An important characteristic of the preschematic child's drawing is that individual drawings will vary greatly, since the child has not yet developed a definite concept, a schema for a drawing of a man, a tree, animal or whatever. Thus as can be observed in Figure VI below the test - retest reliability of a drawing test at this developmental stage would be expected to be very low. Kellogg (1967) illustrates this point very clearly - she has collected pairs of drawings comparing one child's "best" and "poorest" drawing of a human done within one week's time:-

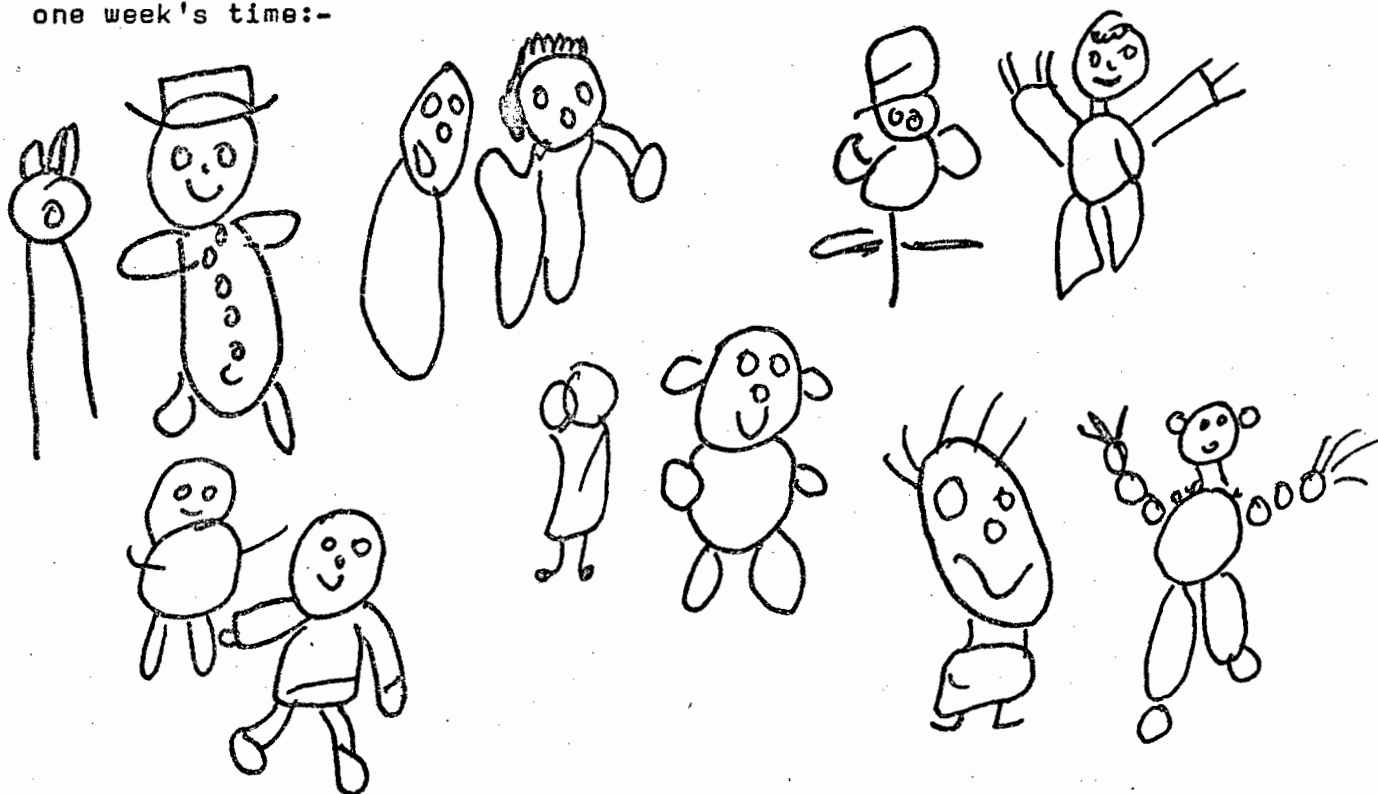


Figure 6:- Each pair of drawings compares one child's "best" and "poorest" drawing of a human done within one week's time. (Kellogg, 1967, pp)

Bearing this variability in a preschematic child's drawing in mind, it would follow that it would be quite unreasonable, and totally invalid, to suppose that the child's intelligence can be assessed on the basis of his performance during a short test period, as is done on the Human Figure Drawing Tests. This drawing characteristic has also been empirically substantiated, notably by McCarty (1944) who administered the verified Goodenough Draw-a-Man Test to 386 3rd and 4th grade children (probably falling between the Preschematic and schematic stages of art development.) She found with a one week test - retest interval, the correlation between the two drawings was +, 68, but that the estimated mental age changed by one year or more in 41,7% of cases. If a drawing test must be used on children at this stage of development, a more reasonable, though clinically impractical method, would be to examine a child's spontaneous drawings over a period of several weeks, looking for the presence or absence of certain gestalts considered to be "normal" at certain age levels.

### 1.1.3. The Schematic Stage ( $\pm$ 7 - 9 Years):-

After much experimenting the child arrives at a definite concept of man and his environment. Although any drawing could be called a schema or symbol, of a real object, here it refers specifically to a concept at which the child arrived and which he repeats again and again. The schema should not be confused with stereotyped repetitions where every detail is repeated over and over again. While a stereotype always remains the same, the schema is more flexible and undergoes many deviations and changes. The acquisition of the flexible use of the schema

is generally seen as an important requisite for the child's true self-expression at this stage. The actual form of the schema may be determined by how a child sees something, the significance he attaches to it, his kinesthetic experiences with or touch impressions of the object, how the object functions or behaves, as well as such factors as artistic ability and the extent of the influences (teachers, parents, other children) on his self-expression in art.

The schema of an object is the concept at which the child has finally arrived, and it represents the child's active knowledge of the object. Thus, a fairly common characteristic is X-Ray drawings. For example a child may represent the activity going on inside the house, as well as the outside walls, door, window and garden. Or a child may draw a man with certain "transparencies" - the heart, intestines and brains drawn in beside buttons and pockets. This characteristic of transparency has been indentified as an emotional indicator by Koppitz (1968) and again this seems to emphasize the importance of having a thorough knowledge of the development stages of child art in order to begin to understand the art of a child at a particular age or stage of development. An important aspect of a child in the Schematic stage is that he will express in art that which is important and significant, to him. So if both the inside and the outside of an object or person are both important for the child, he will include them both in his drawings.

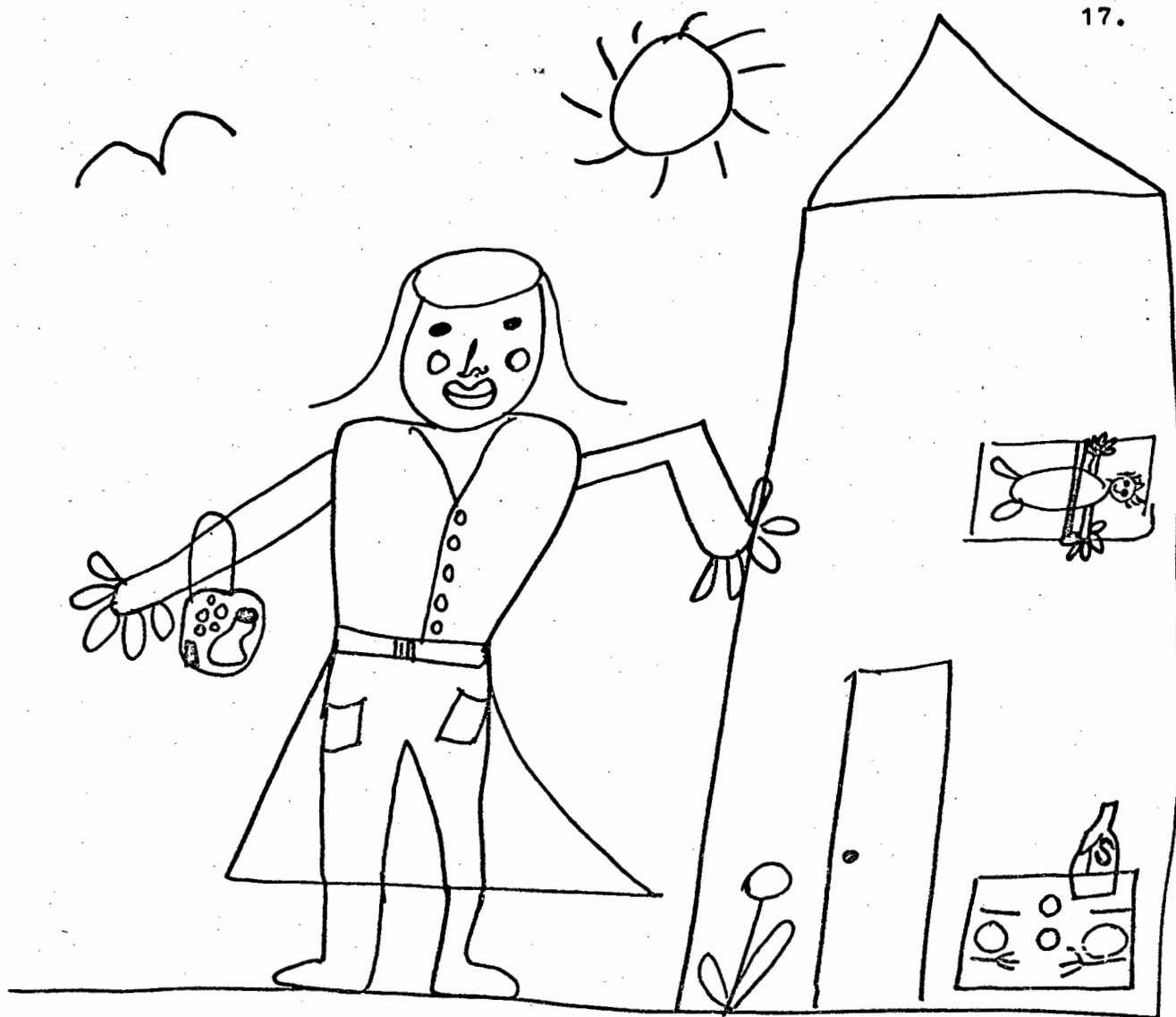


Figure 7:- This drawing was done by an 8 year old boy and clearly illustrates the X-Ray or Transparent Technique of the Schematic Child's drawing. (Illustration from present Study.)

The child's human schema is a readily recognizable symbol -there usually are head, body arms, some of the facial features, separate symbols for heads and feet, fingers are usually drawn. Often clothing is drawn instead of the body, often including buttons, shoe-laces and hat. The human schema is usually highly individualized, and the way in which the schema is modified is clearly shown in drawings of groups of people, especially the family.

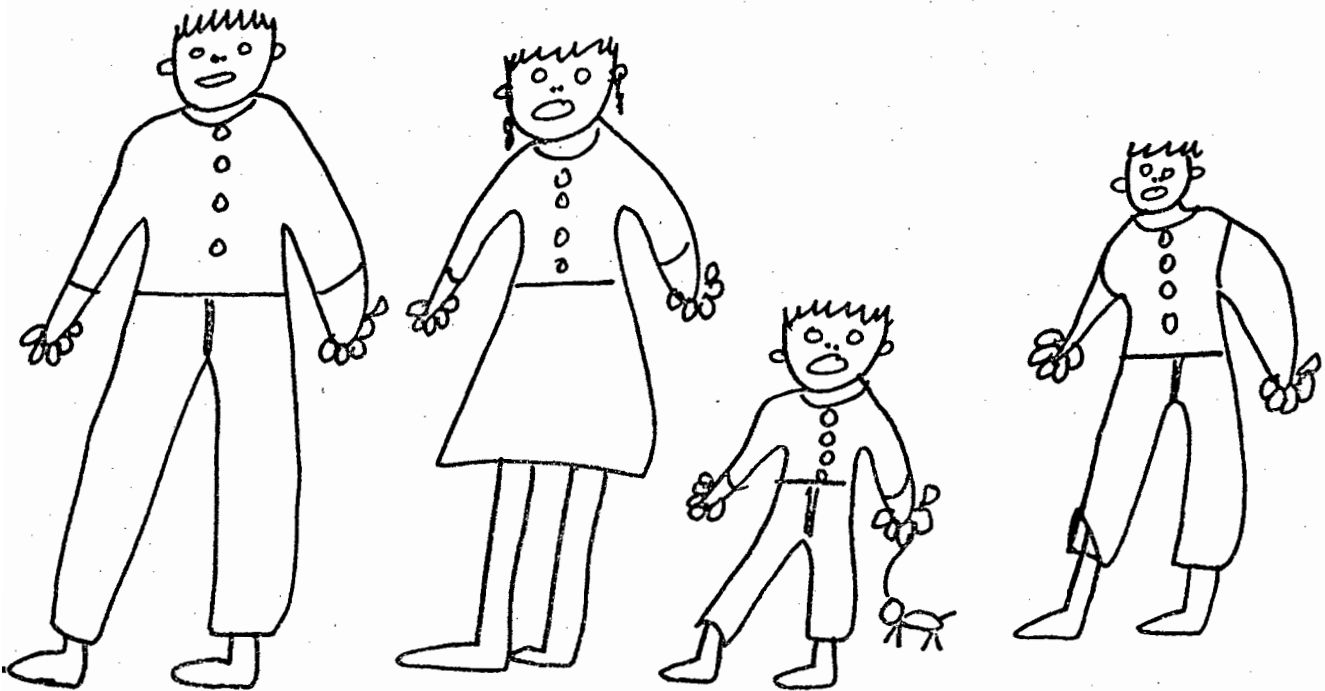


Figure 8:-The Human Schema is repeated for each member of the family, however each drawn figure has individual features. (Drawing by a 9 year old boy.)

One more characteristic of the schematic child's drawing needs mentioning. The child is developing a definite ordering of space relationship which are usually expressed in the drawing by the use of a base line and a sky line, often the very first things drawn on the page. The base line appears as an indication of the child's realization of the relationship between himself and his environment. He places everything on the base line, the sky line is at the top of the page and

a child will identify the space between the base line or ground and sky as being air. Wall (1959) in a study of 5,000 drawings found that only one per cent of 3 year olds drew a base line, while 96 per cent of 8 year olds drew a base line. This phenomenon sometimes makes it difficult to score Koppotz's "slanting figure" emotional indicator, since the child may begin by drawing a base line which slants by  $15^{\circ}$  or more.

#### 1.1.4. The Drawing of Realism (± 9 - 12 years):-

By about the age of nine years, the child finds that the schema which he had developed are no longer adequate. The child now starts to express his awareness of sex characteristics, showing boys in trousers and girls in dresses and jewellery. He shows an increased awareness of detail in his drawing, which often lose a feeling of action and movement, appearing to be stiffer. This awareness of detail is expressed in such things as finger detail, opposing thumb, pupils, eyelashes and eye brows. However the child is still far from a realistic visual representation - he characterizes his environment, strictly differentiating male and female figures in a somewhat stiff and formal manner.

It is also at this age that children begin to show a decided preference for different subject matter. Girls tend to prefer to draw humans, houses, flowers and trees, while boys favour cars, aeroplanes and ships. In their human figure drawings, girls often draw ultra-feminine characters - ballet dancers, princesses, while boys draw rugged masculine figures - sportsman, policemen, criminals.

A child at this age is also very much aware of his peers, of peer approval and disapproval, and so may feel self-conscious about his drawing ability, not wanting to draw a person when requested to do so, or under pressure, may very quickly and roughly draw a person and then turn his attention to drawing the person's car with the greatest attention to detail.

This is Tracy she is going  
to a ball. She is  
a princess.



A Soldier

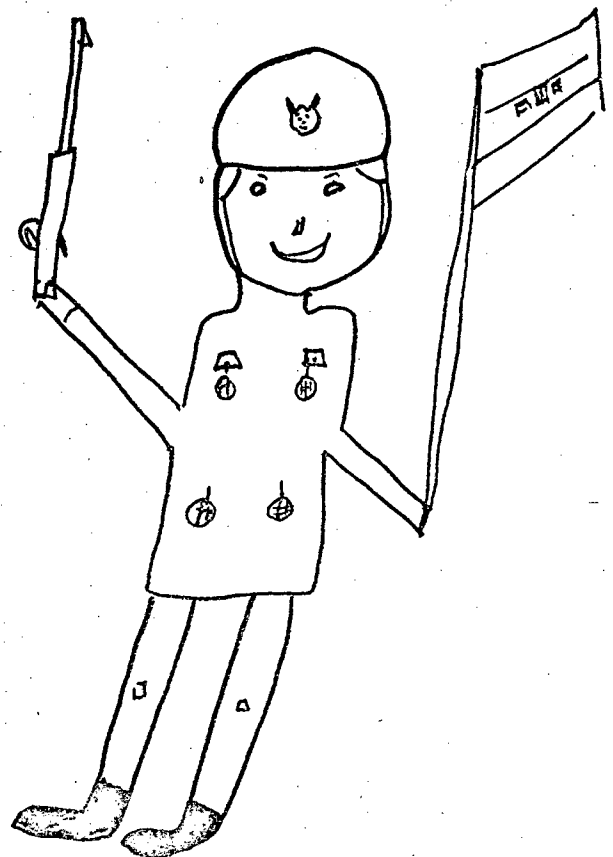


Figure 9:- Drawings by a 10 year old girl and 10 year old boy respectively. (Illustrations from present Study.)

### 1.1.5. The Pseudo-Naturalistic Stage (+ 12 - 14 years.)

This stage of development marks the end of art as a spontaneous activity, when the child becomes increasingly critical of his own products and because of his increased self-consciousness will usually refrain from drawing the human figure, unless he has been positively reinforced for his artistic efforts in the past. He will now draw more what he sees than what he knows to be there, this indicating a shift to an adult mode of artistic expression.

In the representation of the human figure there is a striving for greater naturalness, evidenced by wrinkles and folds in the clothing, light and shade changes, and generally a more realistic visual representation of the human figure. Usually the sexual characteristics are given much attention, sometimes being over-exaggerated. Frequently also a child will get great pleasure in cartooning and representing the human figure through satirical drawings, especially if they be representations of teachers, parents and not-well-liked classmates. (Lowenveld and Brittain, 1970).

Another important feature of the pseudo-naturalistic stage is the child's new ability to portray three-dimensional space, and with this comes skills in shading and perspective.

#### 1.1.6. Adolescent Art (14 - 17 years):-

The adolescent tends to be self-critical, introspective, idealistic and has a growing concern about his relationship to society. He tends to feel that art is something which he can either do or leave well alone, as a memory of something which belongs to his Junior School days. Thus often the adolescent will cease to paint and draw, and will concentrate on art work of more "practical" value such as batik, rug-weaving, photography. Adolescent art is naturalistic, portraying realistic visual features, often sharing awareness of social problems or idealistic dreams.

The above are the main stages of development in children's artistic production, they form an extremely important basic structure from which one can consider the validity of using children's drawings as psychological tests of intelligence and/or personality. It is felt that too frequently these developmental stages have been ignored or given only secondary and minimal consideration by psychologists, resulting in flimsy hypotheses and ill-substantiated theories and tests.

1.2.            Human Figure Drawings as Measures of  
                  Intellectual Maturity

Of the many tests of intelligence, the Human Figure Drawing tests are perhaps the most unusual in basic conception, brevity and general convenience. The most notable of these is the Goodenough Draw-a-Man Test which has been widely used to survey the intellectual status of young children over the last fifty years.

Florence Goodenough published "The Measurement of Intelligence by Drawings" in 1926, only ten years after the appearance of the Stanford Binet Test, at a time when it was generally believed that intelligence was largely determined by hereditary factors and had little to do with the individual's environment. She noted that the drawings of young children fulfill a very different purpose from that of the art products of older children and adults. Drawing, to a child, is first of all a language, a form of expression, "a universal language of childhood whereby children of all races and cultures express their ideas of the world about them." (Goodenough, 1933)

She believed that child art belonged, not to the realm of aesthetics, but to the realm of thought and expression. To a child, the visual appearance of an object at any given instant is secondary to the more general facts which he has learned about it. Thereby Goodenough offered some explanation of why

a child pays so little attention to perspective and to a realistic visual resemblance of the drawing to the real thing. Indeed if a model is placed before a child, it appears that the model serves no purpose other than that of determining the subject to be drawn, after which the drawing proceeds according to the child's concept of the object and not according to its immediate visual appearance. Thus the child's drawing of a model placed before him, does not differ from his drawings of the same object when no model is present. This is because the child "draws what he knows, not what he sees." The statement that the child's drawings depend primarily on his concept of the object rather than upon the immediate visual image is the basic axiom upon which the Goodenough Draw-a-Man Test rests. She noted that (i) as children mature, drawings increase in complexity, yet they always retain a quality of wholeness; and (ii) developmental adaptations or changes in children's drawings do not remain fixed from the time of their first appearance. Concepts become more differentiated as the child increases his contacts with the objects under different circumstances and as he discriminates more and more aspects of them. His drawings likewise show more and more parts. With added experience, the child's concepts become increasingly abstract; they encompass relationships among different aspects of an object, and they include relationships among objects.

Goodenough (1926) states:-

" It seems evident then, that an explanation of the psychological functions which underlie spontaneous drawings of little children must go beyond the fields of simple visual imagery and eye-hand coordination. and take account of the higher thought processes. It has been said that the ability to recognize objects in pictures, an ability which must obviously precede any real attempt to represent objects by means of pictures, is dependent upon the ability to form associations by the similarity of certain elements which are common both to the picture and the object, inspite of dissimilarity of other elements. Analysis and abstraction are clearly involved, but only the final result is present in consciousness... In order to represent objects by means of pictures there must be, however, a conscious analysis of the process, of the intermediate steps by means of which the desired result is to be obtained. It is necessary to select from out of the total impression those elements or features which appear to be characteristic or essential. This analysis must be followed or accompanied by observation of relationships. The relationships to be observed are 2 kinds, quantitative and spatial. The former determine the proportion, the latter the position, of the various parts of the drawing with reference to each other. Very great individual differences are found among children with respect to the extent to which these functions keep pace with each other. In general it may be

said that the brighter the child, the more closely is his analysis of a figure followed by an appreciation of the relationships prevailing between the elements which are brought out by his analysis. Backward children on the other hand, are likely to be particularly slow in grasping abstract ideas of this or any other kind. They analyze a figure to some extent, and by this means are able to set down some of its elements in a graphic fashion, but the ability to combine these elements into an organized whole is likely to be defective and in some instances it seems to be almost entirely lacking. It is this inability to analyze, to form abstract ideas, to relate facts, that is largely responsible for the bizarre effects so frequently found among the drawings of backward children." (pg. 73 - 74)

Further, because development is always gradual it may be said that at any given time a child's drawing will consist of two parts - the first part embracing those characteristics which have already become an integral part of his concept of the object drawn, and consequently appear invariably; the second part including the elements which are in process of becoming integrated and are, therefore, shown with more or less irregularity. The frequency with which any given characteristic tends to appear is a function of the extent to which it has become integrated into the developing concept, and a measure of the weight which should be given to it as an index of concept development." (Goodenough, 1926 pp. 75).

## WHY A MAN?

This then is the theory underlying the Goodenough Draw-a-Man Test. She felt that the drawing of a man in preference to other subjects had several important advantages:- (i) all children are equally familiar with it; (ii) there is little basic variability in the essential characteristics; (iii) it is simple enough in outline, so that even very young children will be able to attempt it, yet sufficiently complicated in its details to tax the abilities of an older child, adolescent or adult; and (iv) it is of universal interest and appeal to children.

Goodenough developed a first scale by selecting ten drawings at random from the work of children in beginning and in advanced Kindergartens, and in beginning and advanced halves of each of the four elementary grades. From inspection of these samples, she discerned changes in children's drawings with increasing age and increasing intellectual development. Later a final scale consisting of 51 items was drawn up. In the scoring of this test, credit is given for the inclusion of individual body parts, proportions and similar features. The test yields the Mental age which could then be converted to an I.Q. score.

$$I.Q. = \frac{\text{Mental Age}}{\text{Chronological Age}} \times 100$$

The Goodenough Draw-a-Man Test has been the subject of many investigations. These investigations have fallen into three main categories:- (1) evaluation of the psychological

development of children to underlie the developing concepts and ideas which their drawings reveal; (2) the investigations of the validity of the test and the method in a more general sense; and (3) the reliability of the scale. Emphasis in this review of the literature will be placed on the Goodenough Draw-a-Man Test, since the Koppitz Human Figure Drawing Test is a derivation of the Goodenough, and many of the basic concepts and theoretical assumptions are similar. (Elaborated on in next section.)

Goodenough found that the drawing test ceases to show age increments by early adolescents, i.e.  $\pm$  12 years of age, and this view has generally been supported in the literature. Harris (1963) reports on several studies which were devoted to the general topic of ascertaining the usefulness of the Goodenough test for subjects older, but the results corroborated Goodenough's original contention that the test ceases to discriminate intellectual differences at about 11 or 12 years. Israelite (1936) compared the relative difficulty of the items on the Goodenough scale for normal and mentally defective subjects, and found that the defectives surpassed the normals in respect to the number of details shown, while the normal children excelled on items involving the correct organisation and proportion of the parts. Earl (1933), McElwee (1934), and Spoerl (1940) had similar results - the defectives show more details, but the normal's sense of proportion was far superior to that of the defectives.

Many of the validity studies have investigated the relation of the Draw-a-Man Test to other tests of intelligence. Several of these studies have correlated the Draw-a-Man Test with the Stanford Binet - Yepsen (1929) found a correlation of +, 60; McElwee (1932) +, 72; Williams (1935) +, 65. More recent studies show lower correlations - Pringle and Pickup (1963) obtained correlations in the range of +, 11 - +, 37; Vane (1967) reported correlations of +, 40 - +, 52. Phillips and Smith (1973) in a fairly extensive study of 300 pupils found correlations of +, 52 for 5 year olds, and +, 56 for 11 year olds. With the exception of the Pringle and Pickup study, all of these studies show a statistically significant result, ( $p < 0,01$ ), but of course, the correlations are low in relation to those generally found among measures of cognitive abilities. Statistical correlations between the Goodenough - Harris Test and the Stanford Binet are very similar to those reports for the Goodenough (Phillips and Smith, 1973, and Harris, Roberts and Pinder, 1970).

Hanvik (1953) studies a group of children in a psychiatric treatment clinic, administering both the Goodenough and the WISC to 25 patients and found a statistically significant mean difference between the Full Scale WISC I.Q. and the Goodenough I.Q. of 13,72 points, significantly lower I.Q. 's being obtained on the Goodenough. For only four of the children did the Goodenough I.Q. exceed and equal the Full Scale WISC I.A. - however it must be borne in mind that the sample was

a psychiatrically disturbed one, and the only conclusion one can reasonably reach in this study is that emotionally disturbed children do not draw the human figure in a fashion commensurate with their WISC Full Scale I.Q. Gunzburg (1955) found that Draw-a-Man I.Q.'s of mental defectives correlated higher with the nonverbal ( $r = .73$ ) than with the verbal ( $r = .43$ ) Wechsler - Bellevue Scale.

Ansbacher (1951) in a study correlating the Goodenough Draw-a-Man Test, the elementary form of the Thurstone's Primary Mental Abilities Test, and tests tracing, tapping and dotting, taken from the McQuarrie Test for Mechanical Ability used 100 ten year old children. He found that the Goodenough was most highly correlated with factors of reasoning ( $r = +.40$ ), space ( $r = +.38$ ), and perceptions ( $r = +.37$ ), and less correlated with the McQuarrie Tapping ( $r = +.23$ ) and Dotting ( $r = +.16$ ) while correlations with the Primary Mental Abilities Verbal Meaning and Number Test were negligible.

The Koppitz Human Figure Drawing Test, which is described in Detail in the next chapter, is based on expected and exceptional items for different age levels, from which a Developmental Assessment Score is calculated, and this then is converted into I.Q. ranges. Koppitz (1968) reports the correlations as listed in Table 1 below, which are all statistically significant at the .01 level.

Age Level	N	Tests Correlated	Correlations
6 and 7	23	Stanford & Binet & HFD's	, 63
8 and 10	50	Stanford & Binet & HFD's	, 55
11 and 12	14	Stanford & Binet & HFD's	, 62
6 and 7	44	WISC & HFD's	, 60
8	35	WISC & HFD's	, 69
9	46	WISC & HFD's	, 68
10	44	WISC & HFD's	, 45
11	55	WISC & HFD's	, 57
12	36	WISC & HFD's	, 80

Table 1:- Correlations between Expected Exceptional Items on HFD's and I.Q. Scores.

These correlations strike one as being most impressive, however a major draw back for the clinics are the large ranges of I.Q. which this test yields, e.g. a score of 5 interpreted yields an I.Q. of 85 - 120.

Several studies have investigated the reliability of the Draw-a-Man Test. McCarthy (1944) gave 386 third and fourth grades the Goodenough Draw-a-Man Test on two occasions, a week apart. Each drawing was scored twice by the same examiner and once by a different scorer, all scorers had had some training in the scoring of the Goodenough. The results of this study were (i) re-scoring by the same scorer (intra-scorer reliability) yielded correlations of + , 94, but it appears that group-test scoring tends to conceal inconsistency since she found that discrepancies, in the same scorer rescoring identical drawings,

amount to as much as one year or more of Mental Age in 12,4% of cases. (ii) The interscorer reliability co-efficient was + , 90, and here discrepancies in the scores assigned to identical drawings by two different scorers, amounted to a Mental Age of one year or more in 25,3% of cases. (iii) The test -retest reliability with a one week interval showed a correlation of + , 68, and under these conditions Mental Age changed one year or more in 41,7% of cases. Smith's (1937) test - retest reliabilities on 100 subjects at each age from six to fifteen years yielded values above + , 91, in all but the oldest children. Brill (1935) found that upon repetition of the test within two or six weeks the likelihood of a decrease in score was twice as great as an increase, his correlations between the two tests separated by 2½ weeks was + , 77, for six weeks the correlation coefficient was + , 68. Laosa, Swartz and Holtzman (1971) did a longitudinal investigation of 416 children's HFD's, with repeated testing over four years. They found test - retest reliability one year apart in the Goodenough - Harris for children aged eight to eleven years was low, + , 01 to + , 35. Reliability co-efficients for eleven to seventeen year olds were substantially higher, this range being  $r = + , 61$  to + , 74, even for testing three years apart.

Many studies on the validity and reliability of the Human Figure Drawing Tests as measures of Intellectual Ability have been undertaken. For many of these studies a major shortcoming is the sampling technique (e.g. Hanvik, (1953) and Brill (1935)) and the sample size. Many of these studies, although there are of course notable exceptions (Laosa, Swartz and Holtzman (1971) and McCarty (1944) have used biased samples - e.g. Clinic populations (Hanvik, 1953, Ansbacher, 1951) or the sample size has been too small, for the study to be reasonably regarded as more than a pilot study. Therefore there is a need for further validity and reliability studies to be undertaken, using a large random sample which can more reasonably be regarded as representative of the population group.

1.3.

HUMAN FIGURE DRAWINGS AS MEASURES OF  
EMOTIONAL ASPECTS OF PERSONALITY

The use of art forms to provide information concerning the personality of the creator has been practised for many years, starting with Freud and Jung who sought for, found, and interpreted the clinical significance of various symbols present in some graphic forms - for example the Freudian phallic symbol, or the mandala for Jung. However with the development of projective techniques it became popular for clinicians and research workers to seek evidence of psychological traits, qualities and states in the formal attributes and stylistic features of drawings and paintings. This has led to the establishment of numerous projective personality tests using human figure drawings, notably the Machover Draw-a-Person Test, and a derivation of the Machover Test in Koppitz's Human Figure Drawing Test. In these projective approaches, the basic assumption is that since drawings and paintings are spontaneous behaviours, they reveal an individual's feelings and desires. Such free activity, they hold, expresses not only the needs and emotions dominant at the time of drawing but also the more deep-seated and lasting characteristics of the personality of the artist.

*Koppitz goes against this*

The concept that drawings of the human figure are useful for the study of the personality, or as diagnostic tools in clinical assessment, finds its theoretical justification in the psychoanalytical concept of projection, and then more

specifically in self-image theory.

Projection, as originally defined by Freud, is a defence mechanism. A person is projecting when he ascribes to another person a trait or desire of his own that would be painful for his ego to admit. Since the act of projections is an unconscious mechanism, it is not communicated to others, nor is it even recognised as a projection by the person himself. Many different definitions of projective techniques have been offered, and many of these definitions repeatedly mention the same features of projective techniques - (i) there is a sensitivity to unconscious or latent aspects of the personality; (ii) the test involves, and indeed encourages, a multiplicity of responses, this wide latitude in response is achieved by ambiguity, or lack of structure, in the test ; (iii) the subject is usually unaware of the purpose of the test, of the kind of inferences which the experimenter intends to make from his performance; (iv) there is a profusion and richness of the response data which is elicited because there is an unlimited number of variables and their interrelationships which may be looked at; (v) responses have no right or wrong status; and (vi) there is an encouragement of a holistic treatment of the personality - projective tests are generally regarded as being sensitive to the "total person." It is interesting to note that Goodenough defines projective techniques as Indirect Methods for studying the inner life of an individual:

" The basic theory underlying all these devices is that each person unconsciously "projects" his private feelings and attributes into his dealings with the everyday situations of the external world and that his actions thus have a symbolic as well as a literal reference ... plastic materials (are employed) that permit a wide variety of symbolic structuralization." (Goodenough, 1949, pg. 562.)

Now, the projective use of human figure drawings has a more specific theoretical basis in self-image psychology. Thus if the human figure drawing could be considered the self-image, consciously or unconsciously, projected, then analysis of drawings could have great importance. Distortions in the drawing may be literal or symbolic representations of inadequacies or distortions in the self-image of the artist. The theoretical postulations of Karen Machover (1949) serve as a good illustration of the application of this approach. Machover's basic hypothesis is that the self-image is projected into the drawing of the human figure, and that interpretation can be based on analogy. She states:-

" When an individual attempts to solve the problem of the directive to "draw a person" he is compelled to draw from some sources. External figures are too varied in their body attributes to lend themselves to a spontaneous, composite, objective representation of a person. Some process of selection involving identification through projection and introjection

enters at some point. The individual must draw consciously, and no doubt unconsciously, upon his whole system of psychic values. The body, or the self, is the most intimate point of reference in any activity. We have, in the course of growth, come to associate various sensations, perceptions, and emotions with certain body organs. The investment in body organs, or the perception of the body image as it has developed out of personal experience, must somehow guide the individual who is drawing in the specific structure and content which constitutes his offering of a person. Consequently, the drawing of a person, in involving a projection of the body image, provides a natural vehicle for the expression of ones body needs and conflicts. Successful drawing interpretation has proceeded on the hypothesis that the figure drawn is related to the individual with the same intimacy characterizing that individual's gait, his handwriting, or any other of the expressive movements. (pp 5) "

Thus she states that:-

" the human figure drawn by an individual who is directed to draw a person relates intimately to the impulses, anxieties, conflicts and compensations characteristic of that individual. In some sense, the figure drawn is the person and the paper corresponds to the environment. This may be a crude formulation, but serves well as a working hypothesis." (pg. 35)

So in line with projection theory, Machover assumes that there is an intimate tie-up between the figure drawn and the personality of the person who is doing the drawing. Drawing a person is assumed to involve a projection of the body-concept and therefore serves as a vehicle for the expression of one's body needs and conflicts.

In the Machover Draw-a-Person Test, and in Koppitz's Human Figure Drawing Test, the individual is simply asked to "Draw a Person", if he only draws the head, he is then asked to draw the whole person. Machover's administration procedure then involves asking the subject to "Now draw a person of opposite sex." As an optional part of the administrative procedure, the examiner may add an inquiry after the pictures are drawn. Questions concerning the age, schooling, occupation, ambition, family, attitude to body, friends, school, sex and marriage guide the inquiry. But Machover does not see this verbal and more conscious aspect of the procedure as an intrinsic part of her Draw-a-Person Test. Machover's approach to interpretation of the drawing consists of a molecular evaluation of numerous specific graphic and content details about which she formulated interpretive hypotheses. So, for example, the head and facial features are considered to be expressive of social needs and responsiveness, thus if the pupil of the eye is omitted this is interpreted as being the drawing of an "egocentric, hysterical individual who feeds parasitically upon what he views, but never uses the eye as an instrument of objective discrimination." (Machover, 1951, pp 354); long arms indicate a reaching out and ambition; a

tie on a male figure indicates sexual adequacy; fancy buckles socialize the dependency inferred from emphasis on the navel; and buttons and pockets indicate maternal-dependency or affectional or maternal deprivation, since pockets are seen as the child's representation of breasts. Indeed, nearly anything and everything that one may draw is given a special interpretive hypothesis.

The literature suffers no paucity of discussion about the actual or potential significance of drawings in portraying the human personality. Unfortunately much of this work has been done with adults, however it is felt that the research on adults is relevant to using projective techniques for children. Further the research with adults served to highlight many of the research difficulties. Therefore the literature will be reviewed with respect to research on adults as well as children in four separate subsections:- (1) Research applying to the body-image hypothesis; (2) Research applying to the content analysis of drawings; (3) Research relating to adjustment differentiation; and (4) Studies of reliability. Swenson (1957) and Roback (1968) have made extensive reviews of the literature in these areas, and the present writer has relied heavily upon these reviews.

#### 1.3.1. Research Applying to the Body Image Hypothesis.

This research is aimed directly at investigating the validity of the statement that when a person is asked to draw

a person he draws himself. Berman and Laffal (cited in Swenson, 1957) wanted to see if subjects when instructed to draw a person, tend to draw (i) a figure that represents themselves; (ii) an idealized figure; or (iii) a figure that shows no discernible relationship to themselves. They tested 39 male patients in a Veteran Administration hospital. Using an inspection technique they rated the body type of the patient, and then they rated the body types of the figures drawn, and correlated the ratings of the patient with the ratings of the drawing. The correlation co-efficient obtained is + , 35, which is significant at the , 05 level of confidence. However individual inspection shows that only 18 of 39 subjects drew figures that were judged to be of the same body type as the subject's body. Lehner and Silver (1948) and Giedt and Lehner (1951) did an extensive investigation to determine the ages assigned to the figures which were drawn by subjects, and the relationship of the patients body to that of the drawn figure. Their results do not show a relationship between the physical dimensions of the patients body to the dimensions of the figure he draws. With respect to age, they found that as the subjects chronological age increased, so he tended to ascribe a higher age to the figure he had drawn, this tendency being particularly marked until the age of 25 years after which the age of the figure drawn ceases to increase as rapidly as the subject's age, further there is a tendency for younger subjects to assign ages to the figure that are older than the subject's own age, while older subjects tend to assign younger ages to their figures than the subject's own age.

Kamano (1960) tested the hypothesis that the figure drawing of a person is similar in meaning to his own self-concept. His subjects were 45 schizophrenic women who filled out semantic differentials having 15 bipolar scales dealing with four concepts - the figure drawn by the subject, the ideal self, the actual self, and the least liked self. The results indicated that the subjects tended to draw a figure that approximated their actual self more than their ideal or unfavourable self.

Several studies have compared the drawings of physically atypical people with drawings of physically normal subjects. Silverstone and Robertson (1956) were unable to differentiate Human Figure Drawings by orthopaedically disabled children from drawings made by a matched control group. Martorana (1954, cited in Harris, 1963) found that 94% of a group of crippled children drew men as normal, while when asked to make a self-portrait, 72% of the crippled children made drawings in keeping with their true body structure. Prater (cited in Swensen, 1957) compared the drawings of hemiplegic patients with the drawings of a matched group of normals. He found no significant differences on relative head size, the tendency to emphasize the head or the limbs by excessive shading or by any other means, and no differences between the limbs either on the part of the limbs that were on the same side of the body as the hemiplegic's paralyzed limbs or those that were on the same side of the body as the hemiplegic's normal limbs.

Thus with respect to research applying to the body image hypothesis it would appear that, as Swensen (1957) and Roback (1968) concluded, the relationship between figure drawings and body image is still unclear and there is still a definite need for research on the basic meaning or significance of human figure drawings.

### 1.3.2. Research Applying to the Content Analysis of Drawings.

In this approach to research, studies have been directed at some specific hypothesis relating to the significance of various details in the drawings. Since the specific focus of the present research is Koppitz's Human Figure Drawing Test special consideration will be given to the emotional indicators which she has listed. However, most of the research was actually directed at Machover's hypothesis, but it does give a good insight into their possible validity as emotional indicators.

Machover stated that " the head is essentially the centre for intellectual power, social balance and control of body impulses." (Pg. 36) She felt that a large head is frequently drawn by a paranoid individual, whereas Koppitz did not find a large head to be a valid emotional indicator, and the reviews by Swensen (1957) and Roback (1968) supported Koppitz's view. Koppitz did feel, however that the presence of a tiny head on a figure seems to indicate intense feelings of intellectual inadequacy (1968, pp 61), and this view appears to be supported by Goldworth (1950) who found that

brain-damaged subjects generally drew small, poorly proportioned heads.

As regards shading, Machover (1949) stated:-

" any degree or type of shading is considered an expression of anxiety. As with other types of conflict projection, the particular area of the figure that is shaded is considered in the light of its functional significance. " (pp 98)

Koppitz however regards shading as being particularly significant as a manifestation of anxiety, although she found that this was not so in very young children. Various studies have not supported these views - Goldworth (1950) cited in Swersen, 1957) found that normal adults show as much shading on most body parts as groups of pathological subjects. Halzberg and Wexler (1951) compared the drawings of schizophrenic and normal women on 176 items of drawings which had been considered to significant indicators of personality deviation. With respect to shadings, they found that normal woman significantly more frequently tended to shade the mouth, arms, chest and waist. When the schizophrenic group were subdivided into hebephrenics and paranoid schizophrenics, it was found that normals did not shade any parts significantly more often than the hebephrenic schizophrenic subgroup, while normal woman did shade the mouth, heads, chest and waist more frequently than the paranoid schizophrenic subgroup. However, one does not usually consider anxiety to be a characteristic feature of

schizophrenia, and thus Holzberg and Wexler's results can not be regarded as a disproof of Machover or Koppitz's hypothesis. Royal (1949) found no significant difference between normal men and anxiety neurotic men in the shading of the hair or the body and clothing. On the other hand, Handler and Reyher, (1964) found that significant differences in shading do occur in the figure drawings of anxious and non-anxious subjects, but in the opposite direction to that predicted by Machover and Koppitz - less anxious subjects drawings had more shading than the anxious subjects drawings. Thus it would appear that the research findings are contradictory, and more research is still required in this area.

The size of the figure drawn has been given a lot of attention by many researchers. Machover, and Koppitz agree that a tiny figure indicates extreme feelings of inadequacy, insecurity, withdrawal, depression and concern over dealing with the environment, while a large figure is associated with expansiveness, immaturity, feelings of narcissism and poor inner controls - perhaps to the extent of psychopathy. Swensen (1957) reviews several studies which support Koppitz's and Machover's views, while other studies do not support them. Levinsohn (1964) found that depressed persons are likely to draw figures smaller than would non-depressed people. Craemer - Azima (1956) found that a depressed patient at the beginning of treatment drew relatively small figures, later when he began showing signs of euphoria, the HFD increased to a large figure (8 $\frac{1}{2}$  inches), and when he returned to a normal mood state, the figure reduced in size to 6 $\frac{1}{2}$  inches.

Black (1972) using 100 children referred for learning disabilities found that although psychodynamic factors may be related to and influence the size of the drawn figure, it is more likely that age, actual height, and height as perceived by the individual are more importantly related to figure size.

Many hypothesis have been proposed with respect to the arms and hands. Omission of the arms is considered to be indicative of withdrawal from the environment and guilt over hostility and sexuality. Machover felt that short arms were a sign of lack of ambition, however studies by McHugh (1966) and Koppitz (1968) did not support this view, although Koppitz believed short arms reflected a child's difficulty in reaching out into the world and towards others. Studies by Hammer (1958) Levy (1958) and Koppitz (1968) observed that long arms reflect externally directed aggressive needs, however Holzberg and Wexler's (1950) investigation gives contradictory evidence.

The emotional indicators which are mentioned above have had conflicting evidence in the literature, while the remaining emotional indicators, not mentioned above, have generally failed to be supported by the empirical research, although some emotional indicators do not appear to have been specifically checked for their validity. As Swenson (1957) concluded - "Machover's hypothesis concerning the D A P have seldom been supported by the research in the literature." (pp 463) He felt that D A P 's popularity, aside from its ease of administration, is the result of

clinicians being impressed when the test did in a few cases, provide an indication of the nature of the patients' problems. If so, the effect has been that the clinician is on a random partial reinforcement schedule and hence the habit of administering the D A P would be very resistant to extinction. Since most empirical studies call for clinicians to make judgements about every drawing with which they are confronted, it is impossible to determine if the cases for which valid inferences can be made are masked by the large number of cases for which no clear-cut valid interpretation can be offered. On the other hand, Hammer (1959) claims that Swensens narrowly defines the self as both experienced by the subject and as projected in his drawing, thereby ignoring the basic assumption of all projective techniques, the D A P included. Hammer (1959) also criticizes some of the type of research reported in Swensens' review and advocated a more careful approach to the investigation of Machover's hypothesis concerning the significance of particular signs. Harris (1963, 1970) also presents a comprehensive review of the literature and he arrives at a less slating conclusion:- (i) Children and adults intentionally adopt lines and colour to indicate moods, states or effects; (ii) there is little evidence that the HFD is in fact a drawing of the self, presented directly or indirectly, overtly or covertly; and (iii) A survey of the research and clinical literature is persuasive, the projective hypothesis still needs to be adequately and consistently formulated, and systems for the evaluation of such drawings have, for the most part, been exceedingly loose. Consequently, the assessment of drawings by such methods very

often shows modest reliability and low validity.

### 1.3.3. Studies Relating to Adjustment Differentiation:-

In direct contrast to the above analytical approach, a global approach advocates that drawings must be interpreted as wholes, as entities, rather than analytically or segmentally. This approach grew from the impression that any analytical and measurement approach failed to take into account all the examiner's impressions from the drawing and that the gestalt or total effect produced by the drawing constituted a vital part of its interpretation. In this type of interpretation much is left to the examiners' intuition and his experience with drawings, thus less communicability is achieved and inter-rater reliability is expected to be low. In an effort to overcome this clinical flexibility and statistical unreliability some supporters of the global approach base their evaluations on the accumulation of points for the presence of emotional indicators, as well as an impression of gestalt effects produced by the arrangements and interrelationships of particular elements. One such worker is Hamlin (1954) who developed an adjustment scale. In this scale, the examiner matches the drawing to be judged with a series of drawings, representing various scale values of the adjustment variable, and the examiner has to find that drawing to which it bears the closest resemblance. This approach Hamlin claimed was in keeping with the common procedure of science - "from something extremely complex we tease out something simple enough to deal with objectively." (Hamlin, 1954, pg. 233.)

Typically the research relating to this global approach has dealt with the utility of the D A P for making differential diagnoses; in essence it relates pertinent research findings from investigations which studied the validity of judgements based upon figure drawings for differentiating the adjustment level of normal and psychiatric samples. (Roback, 1968).

Strümpfer and Nicols (1962) employed several D A P scales in an attempt to make the raters' basis for judgement communicable. Five of their scales were product scales (the Artistic Quality Scale (Wagner and Schubert), The Adjustment Scale (Albee and Hamlin), The Aggression Scale (Strumpfer), The Sexual Differentiation Scale (Swensen) and the Maturity Scale (Dunn and Lorge)), while two other scales (The Body Image Disturbance Scale (Fisher) and the Bugk Sign Scale) required objective, molecular evaluations. They found that of 16 D A P measures none was able to differentiate drawings of normal, neurotic and schizophrenic subjects, thus they seriously questioned the validity of these measures for differential diagnosis. Wanderer (1969) tested the hypothesis (i) diagnostic judgements made by experts, using the D A P agree, beyond chance expectations, with criterion statuses; (ii) differences in accuracy of D A P judgements vary between clinical groups beyond chance expectations, and (iii) the judges diagnostic accuracies are positively related to their reputed expertness, defined by ranks accorded them by their peers. They found that D A P experts are capable of identifying mental defectives far beyond chance expectations, however matched groups of schizophrenics, neurotics, homosexuals and normals were found

not to be identifiable, even after the experts were permitted a second chance to make a correct diagnosis. Further, the reputed expertise of the judges was unrelated to their actual performance. Adler (1970) did a factor analysis of Human Figure drawings done by psychiatric patients. He found that a factor reflecting a cognitive variable, maturity of body image concept, accounted for over half of the common variance, but by and large, diagnostic categories were not differentiated by either factor or individual items on the drawings.

McHugh (1966) comparing two groups of children matched for age and WISC I.Q. and diagnosed psychiatrically as Adjustment Reaction - Neurotic Traits and Adjustment Reaction - Conduct Disturbance, found that she was able to differentiate between the two groups. Children with neurotic traits drew the first of the two figures significantly shorter and both figures significantly further from the bottom of the page and neurotic boys drew the opposite sex first significantly more frequently than did children with conduct disturbances. Fox et al (1958) were able to differentiate between high anxious and low anxious children - high anxious children showed significantly more "mutilation and rigidity", while low anxious children showed significantly more "playfulness - humour, smiling and arm position down"; and "shading" was found to be a significant indicator of anxiety.

Thus with respect to this line of research, again there appears to be conflicting evidence - although research with

children does appear to be promising.

#### 1.3.4. Studies of Reliability:-

There are only a handful of studies that have been done to investigate the reliability of Human Figure Drawing Tests. Bradshaw (cited in Swensen, 1957) investigated the test-retest reliability with a one week interval between the two administrations of the test, with respect to structural aspects of the figure drawing, and found that placement of the figure on the page and the size of the figure do appear to be reliable. Apfeldorf, Randolph, and Whitman (1963) found significant correlations with respect to height ( $r = + , 88$ ); area ( $r = " , 81$ ) and centeredness ( $r = + , 86$ ) between two drawings done one week apart. Strümpfer and Nicols (1962) looked at inter- and intra-scorer reliability on a number of different scales using Human Figure Drawings. The scorers were doctoral students in clinical psychology, though they could not be considered as experts in the use of the D A P. The correlation co-efficients obtained were all significant (mainly with  $r + , 6$ , though inter-scorer reliabilities on the Strümpfer Aggression Scale were in the range  $+ , 31 - + , 42$ ). Intra-scorer reliability, with a rescoring after a period of 4 - 6 weeks, were also significant ( $r = + , 48 - + , 95$ ). Star and Marcuse (1959) studied the one month test - retest reliability on the drawings of 193 subjects finding that (i) a change in experimenter was not important, and (ii) many of their content factors were found to be reliable over a one month interval between the two

administrations of the test. However once again one can only conclude that more research is still required.

To conclude this subsection Robacks' statement seems to be appropriate:-

" Although the studies reviewed, ... generally failed to support Machover's hypothesis, there is still an insufficient number of well-designed investigations from whose findings it could be concluded "the patient died". In addition to the paucity of quality research in this area, it is obvious that there is a great need for standardized and validated scales for estimating personality adjustment from figure drawings .... Thus, applied clinicians have an obligation to their field and their clients to determine the multitudinous variables influencing their interpretations of signs in figure drawings through sound experimental procedures, code these characteristics by scientifically based methods, and accumulate sufficient data from normal as well as abnormal groups which can be analyzed by appropriate statistical techniques."

(Roback, 1968, pp 16, 17.)

#### 1.4. Human Figure Drawings and Artistic Skill

A relatively recent area of research has been to investigate the influence of artistic skill in the psychological evaluation of children's human figure drawings. Indeed the results of some studies have fostered a profound scepticism regarding the actual significance of the human figure drawing technique. In addition, many psychologists have had an intuitively suspicious approach to the use of the Human Figure Drawing Techniques. These "sceptics" feel that what has been considered as the evaluation of clinical variables, either intelligence or personality, is nothing more than an evaluation of drawing skill.

Whitmyre (1953) using psychiatric vs non-psychiatric subjects, had trained psychologists rate human figure drawings according to (a) artistic merit; and (b) the degree of personal adjustment reflected in the drawing. He found that drawings done by the subjects of average to above average intelligence (as were all his subjects) seemed to reflect artistic merit rather than any consistent relationship to level of personality adjustment. Sherman (1958) conducted an essentially similar study, and he found that 10 clinical psychologists could not distinguish to a statistically significant degree the patient from non-patient drawings and that there was a significant relationship between the judgements of artistic ability and the psychologists judgements of adjustment status.

Nichols and Strümpfer (1962) in a factor-analytic study found support for the idea that a considerable degree of the variance in human figure drawings may be attributed to drawing skill. Their subjects were 107 male students and 90 male patients of the Veteran Administration hospital - the latter group being subdivided into 30 normals (medical and surgical patients with no psychiatric background) 30 neurotics and 30 schizophrenics. The subgroups were matched for age and education level. The drawings were evaluated according to five scales involving global judgements, two point scales and two operational measures. Dealing separately with the V.A. sample, and also with the total sample, four related orthogonal factors emerged in both instances. A more or less identical factor that accounted for most of the common variance among the drawing scores was found in both samples. The drawing details that loaded on this factor were lack of any body part, crude clothing, lack of breasts on the female figure, lack of delimiting lines and figure off balance. It was decided that the factor represented quality of drawing not only because all the above-mentioned details seem to indicate poor or incomplete drawings, but the Quality Scale of Wagner and Schubert (1955) had a positive loading of , 82 in the V.A. sample alone, and of , 90 in the total sample. It is particularly interesting to note the loading of gross behavioural adjustment, as represented by the division of the patient sample into normal, neurotic and psychotic groups was - , 02, thereby eliminating the possibility that this factor could represent some broad dimension of psychological adjustment.

Nichols and Strümpfer (1962) concluded:-

" Investigators who set out to develop measures of such aspects of drawings as adjustment, maturity, intelligence, sex differentiation, body image disturbance and artistic quality have ended up with measures whose major differences are in their titles. Apparently, overall quality is such a pervasive aspect of the drawing and has such a large variance compared with other factors affecting drawing that most measures have most of their reliable variance accounted for by this factor .... The present analysis indicates that overall quality of drawing accounts for most of the variance in aspects of figure drawings considered clinically significant." (pp. 160, 161)

Huysamen (1967) conducted a similar factor analytical study using children. He used the human figure drawings of 203 Standard five English speaking pupils. These were scored on the following analytical measures: The Goodenough - Harris Drawing Test, the Person section of the House-Tree-Person Technique, Fishers' Body Image Disturbance Scale, Signs of Aggression and Fox's Indices of Anxiety, as well as various operational measures of total figure height and area, relative height and area of the two figures, placement of figure on page. The Dunn-Lorge Maturity Scale, the Wagner - Schubert Quality Scale and Swenson's Sexual Differentiation Scale were employed as examples of the global approach to the

interpretation of human figure drawings. Huysamen found six meaningfully significantly loaded factors. The drawing variables confirmed their significant loadings to three factors: Quality of Drawing, Size proportions and Figure Size. The Quality of the Drawing was a very large factor which accounted for by far the most of the common variance among the drawing scores. Huysamen (1967) concludes that:-

" In the light of the findings of the present study, childrens' HFD's appear to be of questionable validity, irrespective of whether they are used as bases for intellectual or emotional components of personality. It seems that users of the HFD's are reacting mostly to the technical skill of the subject in portraying a life-like human figure and that this technical skill is not related to significant aspects of psychological functioning. " (pp. 108)

Parvanthi (1973) attempted to determine whether artistic aptitude scores and the Draw-a-Man Test would show a positive relationship independently of factors known to influence drawing performance. 100 11 year olds were given a modified version of the Phataks DAM Test, Meirs' Art Judgement Test (AJ) of artistic aptitude, Ravens' Progressive Matrices, Junior EPI, Hand Steadiness Test, and Kuppuswamy's Socio-Economic Status Scale. A significant product moment correlation of ,22 ( p , 02) was obtained between AJ and DAM scores. The correlations remained significant (all p's  $\geq$ , 05) when the scores on the five other tests were

partialled out either individually or in combination. She concluded that aptitude for drawing facilitates accurate figural expressions.

Cressey (1975) found further support for this view - when art quality varied for a set of figure drawings, judges were unable to differentiate hospitalized schizophrenics from a matched non-patient group. Both trained and naive judges erroneously tended to see drawings of low art quality as of patient origin and drawings of high overall quality as of non-patient origin. When the quality of drawings was held constant, judges were able to differentiate the patient versus non-patient group at a rate only slightly better than chance. Psychologists were found to be no more accurate in their assessments than naive untrained judges.

Generally therefore the results support the position that art quality of drawing influences judges evaluations and, represents a major source of error in drawing interpretation. Even when art quality was controlled, however, judges rate of success was low, casting doubt on the status validity of the Draw-a-Person Test.

Chapter 2The Human Figure Drawing Test

Dr. Elizabeth Koppitz (1968) believes that the Human Figure Drawing Technique is one of the most valuable techniques for psychometrically evaluating children, since it could be used both as a developmental test and as a projective method. And indeed, if so, no other widely used technique could so clearly demonstrate the close relationship between intellectual and emotional factors. Intelligence is not an entity separate and different from personality, but it is part of the total expression of an individual. A child's emotional reactions enter into and influence his performance on all measures of intelligence, but while this influence is often inferred (or taken into account by the large standard error of measurement) it is given graphic expression in the Human Figure Drawing Test. Yet, as Koppitz notes, and as is evident from the above introduction, there is a great deal of confusion in the literature - a single item on the Human Figure Drawing of a child could be regarded as indicative of both mental maturity and of emotional conflict. Koppitz (1968) writes that in her experience. "it is indeed possible for the same items on Human Figure Drawings to have both developmental and projective significance, but not necessarily for the same children at the same age level." (1968, Pp 2)

The following example serves to illustrate the above points: an omission of the neck in the human figure drawing is common for eight year old children; thus from a developmental point of view, one cannot expect this item to be present at that age

level, therefore the absence of the neck on the drawing of an eight year old can not be considered to have clinical significance. On the other hand, by age ten for boys and age nine for girls, one could expect children to draw figures with necks and thus the absence of the neck could more reasonably be given clinical significance as indication of intellectual immaturity and/or emotional disturbance. Thus, a meaningful interpretation of human figure drawings of children presupposes a thorough knowledge of both possible developmental and emotional indicators on drawings at each age level and a clear differentiation between the two. NB

The present writer feels that it is this concurrent evaluation, yet differentiation, between intellectual and emotional factors which makes the Koppitz HFD test of particular interest. Koppitz's approach takes account of the close interrelationship between intellectual and emotional factors, as well as the developmental stages of art production. However there is a great lack of empirical studies which highlight this particular feature. (Psychological Abstracts, 1968-1976 and Koppitz, 1975)

Koppitz's basic hypothesis is that:-

" HFD's reflect primarily a child's level of development and his interpersonal relationships that is, his attitudes towards himself and toward the significant others in his life. It is further maintained that HFD's may reveal a child's attitudes towards life's stresses and strains and his way of meeting them; drawings may also reflect strong fears and anxieties which may

concern the child, consciously or unconsciously, at that given moment .... HFD's reflect the child's current stage of mental development and his attitudes and concerns of the given moment, all of which will change in time due to maturation and experience. The HFD's particular value is seen in its very sensitivity to change within the child, and these changes may be both developmental and/or emotional. The HFD is regarded ... as a portrait of the inner child of the moment." (Koppittz, 1968, pp34.)

Koppittz's emphasis on the changeability in HFD's raises special problems with respect to the test and retest reliability of this test, as will be discussed further in Section 3.2.

#### 2.1. The Administration of the Test:-

The HFD test requires that the child "draw a whole person" at the request of the examiner and in his presence. It can be administered either individually or as a group test. The child is seated comfortably at an uncluttered table and is presented with a blank sheet of A4 size paper, a pencil and eraser.

The verbatim instructions are "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 it is a whole person, and not only a stick figure or a cartoon figure." And for younger children who may not understand the meaning of "person"

one can add: "You may draw a man, a woman, a boy or a girl, whichever one you want to draw.

There is no time limit, though most children finish their drawings in about ten minutes. A child may erase, or may start again if he so wishes.

On the Koppitz Scale, the drawings are analyzed according to two different dimensions: (i) developmental assessment which yields a measure of intellectual maturity and is interpreted to give an I.Q. range; and (ii) indicators of emotional disturbance with special reference to characteristics of shyness, aggressiveness, stealing behaviour, psychosomatic complaints and global emotional problems. These two dimensions for interpretation are seen as basically interrelated, however for the sake of clarity and ease of discussion, the dimensions shall be discussed separately.

## 2.2. Intellectual Assessment - Developmental Items on HFD's:-

A developmental item is defined as an " item that occurs on relatively few HFD's of children of a younger age level and then increases in frequency of occurrence as the age of the children increases, until it gets to be a regular feature of many or most HFD's at a given age level." (Koppitz, 1968, pp 9)

Thus Koppitz believes that the presence of developmental items in a HFD is primarily related to the child's age and maturation and not to his artistic ability, to school learning, or to the

instructions given or the medium used. The normative study for Developmental Items was done on 1,856 public school children aged five through twelve years. This sample was considered to be representative of the children of the U.S.A. Thirty developmental items were selected from the Goodenough - Harris scoring system and Koppitz's own experience. Then the drawings of the children in each age group were divided, purely on the basis of their percentage occurrence at each age level and for each sex separately, into four frequency categories, which include the expected items, the common items, the not unusual items and the exceptional items.

1) Expected Items:- These are items which are present on 86 - 100% of the HFD's at a given age level for either sex, and it is thus considered to constitute the basic minimum of items one can expect on figure drawings of children at a given age. The absence, rather than the presence of an expected item is considered to be significant, the omission of any developmental items which fall into the Expected category is seen to be indicative either of undue intellectual immaturity, mental retardation, or the presence of regressions due to emotional problems.

2) Common Items - items present in 51 - 85% of the HFDs at a given age level i.e. items which are present on more than half of the drawings but which could not be considered to be absolutely essential, and thus can not be given clinical significance.

3) Not unusual items - items present on 16 - 50% of the HFD's at a given age level, and thus also could not be given clinical significance.

4) Exceptional items - these items are present on 15% or less of the HFD's at a given age level and so are thought to be found only on the HFD's of children with above average mental maturity. (Koppitz, 1968)

By using the above categories Koppitz drew up a schedule of expected and exceptional items on HFD's of boys and girls age five through twelve. The normative data for boys and girls was found to differ, and this difference was attributed to the different rates of maturation, and they also were thought to reflect the differing values and attitudes that are generally accepted and fostered for boys and girls by our society.

A simple scoring system was then devised for scoring HFD's for expected and exceptional items. (See Appendix A.) Each item was given the value of one. To score, one starts with a score of five and subtracts one for every expected item which is missing and adds one for every exceptional item present. Thus the omission of one expected item would yield a score of  $5 - 1 = 4$ ; the presence of two exceptional items would yield a score of  $5 + 2 = 7$ . In this way a child is able to obtain a score.

Then in order to relate these scores to the conventional I.Q. scores, Koppitz correlated the HFD scores with the WISC I.Q. for 260 children, and with the Stanford - Binet for 87 children. The correlations thus obtained (see table 2) were all found to be statistically significant at the , 005 level of confidence.

Age Level	N	Tests Correlated	Correlations
6 and 7	23	Stanford & Binet & HFD	. 63
8 and 10	50	Stanford & Binet & HFD	. 55
11 and 12	14	Stanford & Binet & HFD	. 62
6 and 7	44	WISC & HFD	. 60
8	35	WISC & HFD	. 69
9	46	WISC & HFD	. 68
10	44	WISC & HFD	. 45
11	55	WISC & HFD	. 57
12	36	WISC & HFD	. 80

Table 2: Correlation between Developmental Assessment Score  
and I.Q. Scores. (Koppitz, 1968, Pp 31)

On the basis of these correlations, the meaning of each developmental assessment score was determined, and it was concluded that the developmental assessment scores could be interpreted to yield I.Q. ranges as follows:-

<u>HFD Developmental</u> <u>Assessment Score</u>	<u>Level of Mental Maturity</u>
8 or 7	High Average to Superior (I.Q. + 110)
6	Average to Superior. (I.Q. 90 - 135)
5	Average to High Average (I.Q. 85 - 120)
4	Average (I.Q. 80 - 110)
3	Low Average (I.Q. 70 - 90)
2	Borderline to Low Average (I.Q. 60 - 80)
1 or 0	Mentally retarded (If less than 76) or functioning at a retarded level due to very serious emotional disturbance.

(Koppitz, 1968, Pg 331.)

Several other validation studies were carried out by Koppitz (1965, 1968) in order to test different aspects of the definition of a developmental item. Using 45 boys and 49 girls aged 5 year 6 months to 6 years 9 months, she found that the "HFD's of Kindergarten pupils are but little influenced by the drawing medium used or by the instructions given." (Koppitz, 1965)

Another study was carried out to determine whether changes found on HFD's after a period of time were primarily due to the childrens increase in age and maturation or due to learning. The subjects in this study were 89 boys and 90 girls in their first year of schooling - with one test administered during the first week of the school year and a retest nine months later at the end of the school year. The results of this study showed an increase in Expected items and a decrease in exceptional items, and were found to be inconclusive in differentiating the effects of maturation and school learning. In a further study, (Koppitz, 1968) 35 pairs of subjects were matched for sex and for age within one month. One set of HFD's were obtained from 35 children who had been the oldest pupils at the beginning of the school year, during their first couple of days at school, and the second set of HFD's was taken from the children who had been the youngest in their classrooms at the beginning of the school year, and these were collected at the end of their first schooling year. The results of this study revealed "remarkably little difference in the frequency of occurrence of the developmental items on the HFD's of children who did and did not have one year of schooling." (Koppitz, 1968, pp 25), and thus Koppitz concluded that "school learning at the Kindergarten level does not effect

the drawing of a human figure to any appreciable degree."

(1968, pp 26)

However there are several criticisms which may be levelled against the Developmental Assessment Scoring System and Koppitz's studies. Problems with the scoring system arise since with each succeeding year the number of exceptional items decreases and the scoring system does not therefore effectively differentiate between children at the upper range of mental ability. So it is not possible for a child, boy or girl, of 7 years to score 8, while with the 11 and 12 year olds, the top score is 6. Another inherent problem is the I.Q. ranges attached to each score - in some instances the upper and lower I.Q. scores within a particular range differ by as much as 45 points, thus greatly diminishing the clinical usefulness of this test.

With respect to the validation studies, a repeated short-coming of Koppitz's research has been her limited samples. The age range for the test is 5 - 12 years, while most of the validation studies (1965, 1968) have been done on 6 year olds only. Further her sample sizes have on the whole been small, when one considers that these studies were validation studies on a new test. Further, she has used unsophisticated statistics, generally using percentages and straight numerical counting in many instances.

### 2.3. Emotional Indicators of Personality on Human Figure Drawings:-

An emotional indicator is defined as a sign on HFD's which

can meet the following criteria:-

- 1) It must have clinical validity i.e. it must be able to differentiate between HFD's of children with and without emotional problems.
- 2) It must be unusual and occur infrequently on the HFD's of normal children who are not psychiatric patients i.e. the sign must be present on less than 16% of the HFD's of children at a given age level.
- 3) It must not be related to age and maturation, i.e. its frequency of occurrence on HFD's must not increase solely on the basis of the children's increase in age."

(Koppitz, 1968, pp 35)

In order to satisfy all three of these criteria, it was necessary for Koppitz to carry out a number of investigations and experiments, the more important of which are briefly outlined below.

In order to satisfy criteria 1 and 2 above, Koppitz carried out a normative study, using the same (1856) drawings she had used in the developmental assessment normative study. She drew up a list of possible emotional indicators (these being drawn from the work of Machover, Hammer and Koppitz's own experience), and checked the drawings for the presence of these signs. It was found that 32 signs met criteria 1 and 2 above as emotional indicators. Then to test the emotional indicators for clinical validity, a comparison of HFD's of 76 clinic patients and 76 well-adjusted pupils, matched for age, I.Q. and sex, yielded significant results for 30 of the emotional indicators. This study (Koppitz, 1966 a) showed that 30 emotional indicators

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on Human Figure Drawings were able to differentiate between the drawings of clinic and well-adjusted children. The clinic patients who served as subjects showed a wide variety of emotional problems and symptoms. This group of subjects were selected solely on the basis of age, sex and I.Q. scores in order to match the well-adjusted pupils. So the next study was aimed at investigating whether any of the 30 emotional indicators on Human Figure Drawings are related to specific types of behaviour or symptoms in children - and Koppitz selected four specific groups of symptoms - shyness, aggressiveness, stealing behaviour and psychosomatic symptoms. To quote Koppitz:

"The Emotional Indicators on HFD's are believed to reflect a child's attitudes and concerns just as his overt behaviour and symptoms reveal much of his underlying attitudes and anxieties. A child who is overtly aggressive may be assumed to be impulsive, frustrated and angry, while an extremely shy child can be assumed to be lacking in self-confidence. The shy child is probably less impulsive than the overtly aggressive child, but he is apt to be anxious, self-depreciating, and unable to reach out towards others."

(1968, pp 43)

Thus Koppitz hypothesized that the child who directs his frustrations and anger toward others and is overtly aggressive will differ from the shy withdrawn child not only in his behaviour but also in the type of emotional indicators he will reveal on his HFD. Similarly, children who steal from others will show different Emotional Indicators on their HFD's than children who direct their hostility and anxieties against themselves and develop psychosomatic symptoms. The subjects used to investigate these hypotheses

were 114 psychiatric patients exhibiting any one of the following symptoms:

- (i) Overt aggression towards others including biting, kicking, hitting, etc.
- (ii) Extreme shyness or depression and withdrawal.
- (iii) Neurotic stealing - children who stole from necessity or for peer approval were excluded.
- (iv) A history of psychosomatic complaints, including gastrointestinal upsets, asthma, dizzy spells, headaches, tics etc. (Koppitz, 1966, b)

Subjects who were shy, and those who were aggressive were matched for age, sex and I.Q. scores, thereby giving 31 matched pairs of shy and aggressive patients. Also 35 subjects with a history of stealing behaviour were matched for age, sex and I.Q. score with 35 children who suffered from psychosomatic complaints. The HFD Test was administered to all subjects individually and the following emotional indicators tended to occur more frequently for the respective categories of children:

Shy:- shading body, tiny figure, short arms, hands cut off, no nose, no mouth, no feet.

Aggressive:- asymmetry, teeth, long arms, big hands, genitals, integration, big figure.

Psychosomatic Complaints:-short arms, legs together, clouds, no nose, no mouth.

Stealing:- big hands, no neck, shading body, slanting figure, tiny head, no body, no arms.

An important caution, as Koppitz stresses, is that it is not possible to make a meaningful diagnosis or evaluation of a child's behaviour or difficulties on the basis of any single sign on a Human Figure Drawing. The total drawing and the combination of various signs and indicators should always be considered and should then be analyzed on the basis of the child's age, maturation, emotional status, social and cultural background and should then be considered together with other available data. However Koppitz does list specific meanings which may be attached to each of the emotional indicators, and this list is to be found in summarized form in Appendix B.

NB

Since the publication of Koppitz's book in 1968, the Human Figure Drawing Test has become a widely used assessment device. It offers the same advantages as the other Human Figure Drawing Techniques (as mentioned on pp 1), as well as having the additional bonus of taking into account the close relationship of emotional, intellectual and developmental factors. However the Human Figure Drawing Test has not been the subject of many empirical investigations. Indeed, failure to find reports on the Human Figure Drawing Test in the Psychological Abstracts, led to direct communications with Koppitz, who was not aware of any investigations into the validity or reliability of her test, other than those carried out by herself prior to 1968. Therefore it seemed necessary that statistical studies be carried out on the validity and reliability of this test.

### Chapter 3

#### Objectives and Hypotheses

A major responsibility of the psychologist is to ensure that the techniques which he uses, actually do what they purport to do, and that they do so in a reliable fashion. Thus the objective of the present study is to statistically investigate the validity and reliability of Koppitz's Human Figure Drawing Test.

For the sake of greater clarity and ease of discussion, the validation research shall be discussed separately from the reliability investigations which were carried out in the present study.

#### 3.1. Part 1:- Construct Validity:-

The present study attempts to determine the construct validity of Koppitz's Human Figure Drawing Test.

" The construct validity of a test is the extent to which the test may be said to measure a theoretical construct or trait." (Anastasi, 1968, pp 114)

Anastasi (1968) has discussed the usefulness of factor analysis as a technique for establishing the construct validity of a test. However, as Peak (1953) pointed out, the procedure

of factor analysis demonstrates only the degree of factorial unity or homogeneity within a test, that is, it can only reveal the distinct factors which are responsible for variation in performance thereon. The so-called factorial validity is not necessarily empirical validity as the interpretive implications of the obtained factors are themselves meaningless unless we know their correlates in terms of important behaviour variables independent of the particular test. For this reason, the factors in the present study have been loaded with criteria variables which then make the factors more readily interpreted, the criterion variables being such that they may be considered to be representative of the theoretical constructs which the Human Figure Drawing Test is supposed to measure.

The factor analytic study by Nichols and Strümpfer (1969) of Draw-a-Person test scores, obtained from a sample of psychiatric and non-psychiatric adult patients, yielded a large "Quality of Drawing" factor which accounted for most of the common variance among the drawing scores, and which was found to be unrelated to gross adjustment levels of the psychiatric subjects.

Huysamen (1967) using an essentially similar design as that used by Nichols and Strümpfer (1969), but with child subjects, had similar results, there was a large "Quality of Drawing" factor while the criterion intellectual and emotional variables loaded on a different factor.

McEwan (1974), in a study which prompted the present research, found that the Human Figure Drawing Test did not load on the Intelligence or Emotional Factors. In this earlier study (McEwan, 1974) only group administrations were carried out, and it was felt that a large uncontrolled variable was inter-subject contamination, specially on the Human Figure Drawing Test. For this reason, an emphasis has been placed on individual assessment in the present study, and group administrations which minimize the problems which were encountered in the earlier study. Also due to problems which became evident in the earlier study two separate factor analysis were run in the present research, one for intelligence and one for the emotional aspects of personality. This decision was based on the rationale that it would be important to obtain an optimal balance between the number of variables and the number of subjects.

Therefore, the present study may be seen as an attempt to answer the following questions:-

- (i) Is the HFD Test a valid measure of intellectual maturity?
- (ii) Is it justifiable to use the HFD Test for the assessment of emotional aspects of personality?
- (iii) Or do human figure drawings tell us about nothing more than the artistic skill of the drawer in portraying a life-like human figure?

The criterion measures used in the Intellectual Analysis were:-

- (1) Koppitz's Human Figure Drawing Test
- (2) Goodenough Draw-a-Man Test
- (3) Wechsler Intelligence Scale for children
- (4) New South African Group Test

The criterion measures employed in the Emotional Analysis were:-

- (1) Koppitz's Human Figure Drawing Test
- (2) Rutter A2 Parent Questionnaire
- (3) Rutter B2 Teacher Questionnaire
- (4) California Test of Personality

### 3.2. Part II: Reliability:-

" Reliability concerns the precision of measurement

regardless of what is measured." (Nunnally, 1970, pp107)

A number of different types of reliability have been found to affect the precision of a test. Test - retest reliability refers to the consistency of scores obtained by the same individuals when re-examined with the same test on different occasions.

(Anastasi, 1968). Therefore retest reliability shows the extent to which scores on a test can be generalized over different occasions; the higher the reliability, the less susceptible the scores are to the random daily changes in the condition of the subject or of the testing environment. The problems encountered with test-retest reliability with young children in the Pre-Schematic stage of art development have already been discussed. (See Section 1.1.3). From a general understanding

of the schematic child's art production, it is clear that their drawings would be less susceptible to change, however the interval between the administrations of the test can not be long. The test is purported to be one of development and thus one could expect changes. Further, with respect to emotional indicators, Koppitz stresses that the Human Figure Drawing is a "portrait of the inner child of the moment", and that the Human Figure Drawings particular value is seen in its very sensitivity to change within the child. (Koppitz, 1968, pp4) However it is felt necessary to obtain an indication of the test - retest reliability of the Koppitz Human Figure Drawing Test.

Another type of reliability is concerned with the consistency of scoring of the test either (1) of identical drawings by different examiners; or (2) of rescoring of a single drawing by the same examiner on different occasions. Koppitz has found the inter-scorer agreement to be 95%, when she and another examiner checked a total of 203 developmental items on only 15 protocols. It is important that a more reliable indication of the scorer reliability be obtained.

### 3.3. Statement of Hypotheses:-

#### 3.3.1. Hypotheses pertaining to Construct Validity:-

##### Hypothesis No. 1:-

Koppitz Human Figure Drawing Test is not a significantly valid indicator of intelligence.

Hypothesis No. 2:-

Koppitz Human Figure Drawing Test is not a significantly valid indicator of emotional adjustment or personality.

3.3.2. Hypotheses pertaining to Reliability:-

Hypothesis No. 3:-

What is the test-retest reliability of the Human Figure Drawing Test with a

- (i) One week interval between testing administrations
- (ii) One month interval between testing sessions.

Hypothesis No. 4:-

What are the scorer reliabilities of the Human Figure Drawing Test both with respect to

- (i) inter-scorer reliability - with two scorers, both experienced in scoring the Human Figure Drawing Test; and
- (ii) intra- scorer reliability - two separate scorings of the same drawing by the same examiner.

## Chapter 4

### Method

#### 4.1. Part 1 : Construct Validity:-

##### 4.1.1. Subjects:-

Three hundred children aged 8 years 0 months to 11 years 0 months participated in this present study. The quota method of sample selection was used, subjects being individually selected to meet certain criteria of age, sex, home language and socio-economic status. These criteria were set so as to obtain as closely as possible a normal sample which could be regarded as representative of the total population. The various sample distributions were as follows:-

Table 3:-

##### (a) Sample Distribution by age and sex:-

<u>Sex</u>	<u>Age</u>	<u>No. in Sample</u>
Boys	8 years 0 months - 8 years 11mths.	50
	9 years 0 months - 9 years 11 mths.	50
	10 years 0 months - 10 years 11 mths.	50
Girls	8 years 0 months - 8 years 11 mths.	50
	9 years 0 months - 9 years 11 mths.	50
	10 years 0 months - 10 years 11 mths.	50

Table 4:-(b) Sample Distribution by Social Class with respect to Fathers'Occupation\*

	N.
Class I :- Aristocracy, millionaires, etc.	2
Class II :- Professionals, Executives, etc.	73
Class III:- White-collar workers, small businessman, clerical workers.	143
Class IV :- Skilled workers, tradesmen, apprentices.	75
Class V :- Semi-skilled Workers.	6
Class VI :- Unskilled workers, permanently unemployed.	0

\* These social classes are based on the abbreviated version, used at the Child Guidance Clinic, University of Cape Town, of the Classification of Occupations and Directory of Occupational Titles. Department of Employment, London, 1972.

Table 5:-(c) Sample Distribution by Intellectual Assessment:-

I.Q. Test	X	s.d.
WISC Verbal I.Q.	109.1	14.5
WISC Performance I.Q.	105.2	15.0
WISC Full Scale I.Q.	107.3	14.4
NSAGT Verbal I.Q.	108.4	16.0
NSAGT Non-Verbal I.Q.	105.5	16.1
NSAGT Total I.Q.	107.4	15.4
Goodenough DAM Test I.Q.	106.4	13.4
Koppitz HFD D.A. Score	4.9	1.0

(d) Home Language:-

Only children who were attending English-speaking schools and whose primary language was English were included in this sample. The reason for this being, that several of the tests used as criteria measures have neither been translated nor standardized on Afrikaans speaking children.

Note:- A preferable method of sample selection would be by random selection from the school population. However, due to the lengthy test battery, permission was not granted to test in the schools. Therefore the quota method of sample selection was used, and care was taken to avoid getting a biased sample, and to obtain a sample which could be regarded as representative of the total population.

4.1.2. Experimental Design:-

It was felt that a factor analytic study would be the most suitable statistical design to be employed. The basic assumption of this method is that the inter-correlations between a number of variables can be accounted for by a small number of common factors. It was therefore decided to "set up" factors of intelligence and personality. The basic rationale for this being, that if the Human Figure Drawing Test is a measure of intelligence, it should load on a factor of intelligence, and similarly for personality. Therefore a number of criteria measures were included to "set up" the factors, thus making the factors easily interpretable. Attention was also paid to the

correlation matrix, thereby obtaining the inter-correlations between the different measures. Anastasi (1968) has discussed the relevance of correlations with other tests as a technique of establishing construct validity, pointing out that these inter-test correlations should be moderately high. Further the correlation matrix was considered to be important since it could yield correlations between measures for different ranges of intelligence and emotional adjustment.

In order to obtain an optimal balance between number of subjects and number of variables, it was necessary to run two factor analyses, one for intelligence and one for emotional adjustment and personality. The respective criteria measures employed were as follows:-

A. Intelligence:-

- 1) Koppitz Human Figure Drawing Developmental Assessment Scores.
- 2) Goodenough Draw-a-Man Test.
- 3) Wechsler Intelligence Scale for Children.
- 4) New South African Group Test

B. Emotional Adjustment and Personality:-

- 1) Koppitz Human Figure Drawing Emotional Indicators of Personality.
- 2) Rutter Parent Scale (A2)
- 3) Rutter Teacher Scale (B2)
- 4) California Test of Personality

A full list of the variables is to be found in Appendices C and D.

#### 4.1.3. Description of Criteria Measures.

##### 4.1.3.1. Intellectual Measures:-

##### Koppitz Human Figure Drawing Test.

This test has been discussed in detail in Chapter 2, and the scoring schedule is given in Appendix A. Variables related to this test are as follows:-

<u>Variable No.:-</u>	<u>Description of Variable</u>
5	Koppitz Developmental Assessment Score
6	HFD Score 7/8 High Average - Superior (I.Q. +110)
7	HFD Score 6 Average - Superior (I.Q. 90 - 135)
8	HFD Score 5 Average - High Average (I.Q. 85 - 120)
9	HFD Score Average - Low Average (I.Q. 80 - 110)
10	HFD Score Low Average (I.Q. 70 - 90)
11	HFD Score Borderline (I.Q. 60 - 80)

Variable Numbers six to eleven were dummy variables, and were included in the general analysis, in case the Human Figure Drawing Test gave an accurate assessment of intelligence at certain intelligence ranges, while not at others.

##### Goodenough Draw-a-Man Test.

This test has also been discussed at length in the Introductory chapter (See chapter 1.2.) and a detailed copy of the scoring system is included in Appendix E. Variables related to

this test were as follows:-

<u>Variable No:-</u>	<u>Description of Variable</u>
12	Goodenough I.Q. Score ( $\frac{M.A.}{C.A.} \times 100$ )
13	Goodenough Category :- Superior (I.Q. +120)
14	Goodneough Category :- High Average (I.Q. 110 - 120)
15	Goodenough Category :- Average (I.Q. 90 - 110)
16	Goodenough Category :- Low Average (I.Q. 80 - 90)
17	Goodenough Category :- Borderline (I.Q. 60 - 80)

Variables Number thirteen to seventeen were dummy numbers.

#### Wechsler Intelligence Scale for Children (WISC):-

The WISC was the individual intelligence test selected as a covariable for the Human Figure Drawing Test Developmental Assessment. It yields a Verbal, Performance and Full-Scale I.Q. It consists of twelve subtests of which only the following ten were administered in the present study:-

<u>Verbal Subtests.</u>	<u>Performance Subtests.</u>
General Information	Picture Completion
Comprehension	Picture Arrangement
Arithmetic	Block Design
Similarities	Object Assembly
Digit Span	Coding

Norms and Standardization of the WISC:- The WISC yields a deviation type I.Q. with a mean of 100 and a standard deviation of 15. The standardization sample of the WISC included 100

girls at each age from 5 through 15 years, giving a total of 2,200 cases. Only white children were included in this sample taken from the schools. The distribution of subjects conformed closely to the 1940 United States census for the country at large, with respect to geographical area, urban-rural proportion, and parental occupation.

Reliability:- Test - retest Reliabilities over a four year follow-up period, have shown the WISC to be a stable measure - the Full Scale, Verbal and Performance I.Q.'s correlated , 77; , 77; and , 74, respectively. The Standard error of measurement of the three I.Q.'s ranges from 3,00 to 5,61 I.Q. points.

Validity:- Littell (1960) reports a number of independent investigations that have found concurrent validity co-efficients between WISC scores and achievement tests or other academic criteria of intelligence. Correlations between the WISC and Stanford - Binet vary widely with the age, intellectual level of the samples, but the majority are in the , 80's.

The following variables related to the WISC were included in this study:-

<u>No. of Variables.</u>	<u>Description of Variable.</u>
18	WISC Verbal I.Q.
19	WISC Performance I.Q.
20	WISC Full Scale I.Q.
21	WISC Category - Superior (I.Q. +120)
22	WISC Category - High Average (I.Q. 110 - 120)
23	WISC Category - Average (I.Q. 90 - 110)
24	WISC Category - Low Average (I.Q. 80 - 90)
25	WISC Category - <u>Borderline</u> (I.Q. 60 - 80)

Variable numbers 21 - 25 were dummy variables.

New South African Group Test - Form Junior K (English).

The New South African Group Test, published by the Institute for Psychometric Research of the South African Human Sciences Research Council (1965), is intended for white pupils from eight to eleven years of age. It was included in this sample since it has been derived especially for South African populations.

It consists of six timed subtests:

Non-Verbal subtests.

- Test 1 : Number series
- Test 3 : Figure Analogies
- Test 5 : Pattern Completion

Verbal Subtests.

- Test 2 : Classification of pairs of words
- Test 4 : Verbal Reasoning
- Test 6 : Analogies of Words

Each subtest contains thirty items, the first five being used as practice examples. The questions are of the multiple-choice type in which the child is required to indicate the correct answer from five possible answers.

Norms and Standardization of the NSAGT:- The test yields a non-verbal, verbal and Total I.Q. of the deviation type, with mean 100 and standard deviation of 15. For the calculation of

the common norms, a sample of 5,700 Afrikaans and English - speaking white pupils in South Africa were used. The normative sample distribution conforms with the general South African population with respect to geographical area, urban-rural proportion, Afrikaans : English - speaking and socio-economic status.

Reliability:- The reliability and standard error of measurement is given in the tables below.

Age	Number of pupils	Reliability K - R 21			Error of Measurement (I. Q. scores)		
		N. V.	V.	T.	N. V.	V.	T.
8.0 - 8.5	517	.91	.89	.94	4.5	5.0	3.7
8.6 - 8.11	567	.93	.92	.96	4.0	4.2	3.0
9.0 - 9.5	560	.93	.91	.96	4.0	4.5	3.0
9.6 - 9.11	568	.92	.91	.95	4.2	4.5	3.4
10.0 - 10.5	571	.94	.92	.96	3.7	4.2	3.0
10.6 - 10.11	562	.92	.91	.95	4.2	4.5	3.4
11.0 - 11.5	535	.92	.91	.95	4.2	4.5	3.4
11.6 - 11.11	568	.91	.90	.95	4.5	4.7	3.4

Test	Number of pupils	Reliability K - R 21	Error of Measurement		Maximum score
			Raw scores	I. Q. scores	
Afrikaans:					
Non-verbal	2923	.95	3.8	3.2	75
Verbal	2923	.94	3.9	3.6	75
Total	2923	.97	5.5	2.5	150
English:					
Non-verbal	1525	.95	3.8	3.3	75
Verbal	1525	.95	3.9	3.5	75
Total	1525	.97	5.5	2.5	150
Afrikaans and English:					
Non-verbal	4448	.95	3.8	3.2	75
Verbal	4448	.94	3.9	3.5	75
Total	4448	.97	5.5	2.5	150

Table 6:- Reliability and Standard Error of Measurement of the NSAGT.

The following variables were included in this study:-

<u>No. of Variable</u>	<u>Description of Variable</u>
26	NSAGT Verbal I.Q.
27	NSAGT Non-Verbal I.Q.
28	NSAGT Total I.Q.
29	NSAGT Category : Superior (I.Q. +120)
30	NSAGT Category : High Average (I.Q. 110 - 120)
31	NSAGT Category : Average (I.Q. 90 - 110)
32	NSAGT Category : Low Average (I.Q. 80 - 90)
33	NSAGT Category : Borderline ( 60 - 80)

Variable Numbers 29 - 33 were dummy variables.

#### 4.1.3.2. Emotional and Personality Measures:-

##### Koppitz Human Figure Drawing Emotional Indicators of Personality.

This test has been discussed in detail in Chapter 2, and the detailed description of the Emotional Indicators is to be found in Appendix B. Variables related to this test are as follows:-

<u>Variable No.</u>	<u>Description of Variable.</u>
5	HFD Total Number of Emotional Indicators
6	HFD Shyness
7	HFD Aggressiveness
8	HFD Psychosomatic Complaints
9	HFD Stealing

Rutter Parent Questionnaire (A2):-

This questionnaire was developed as part of a screening device for psychiatric disorder in the Isle of Wight Studies. (Rutter, Tizard and Whitmore, 1970) The parental questionnaire consists of three subsections, in which the parent is requested to indicate (1) the frequency of certain pathological behaviours and health problems (e.g. psychosomatic complaints, temper tantrums, truanting); (2) the presence or absence of certain abnormal behaviours and habits (e.g. stuttering, stealing, eating or sleeping difficulty) and (3) 18 descriptions of behaviour which the parent is asked to indicate whether each statement "does not apply", "applies somewhat", or "definitely applies." A copy of the questionnaire is included in Appendix F.

Norms and Standardization:- For the standardization, the Rutter Parent A2 Questionnaire was sent to the parents of 2199 children aged 10 to eleven years, this consisting of the total population in this age range on the Isle of Wight. Out of these 2199 questionnaires, 88,5 per cent were completed and were used as the standardization sample. Rutter, Tizard and Whitmore (1970) found that when a score of 2 was given for each statement marked "certainly applies", "yes - severe", or "at least once a week," and a score of 1 given for each statement marked "applies somewhat", "yes- mild," or "occasionally", a total score of 13 or more could serve as a cut-off point to differentiate between Non-disturbed and Psychiatrically Disordered children. In order to differentiate between types of psychiatric

disorder a "neurotic" subscore is obtained by summing the scores of items C, G, V, 6 and 15, and an anti-social subscore is obtained by summing the scores on items III, 3, 13, 17 and 18. The child is then designated neurotic if (1) he obtains a total score of 13 or more, and (2) if his neurotic subscore exceeds his anti-social subscore. A similar method is used for designation of anti-social and children with equal neurotic and anti-social subscores remain listed as mixed or undifferentiated.

Reliability:- The test - retest reliability coefficient was + 0,74 with a two month interval between testing sessions. Inter-parental rater reliability was obtained by getting the fathers and mothers of 35 nine to thirteen year old children to rate them independently, but simultaneously. The product moment correlation between the total scores of the mothers and fathers was + 0,64.

Validity:- The validity of this Parent's Questionnaire was obtained by comparing the scores of children in the general population with the scores of children attending psychiatric clinics for emotional or behavioural disorders. The clinic sample consisted of 72 boys and 48 girls, while the general population sample consisted of 99 boys and 99 girls. It was found that the questionnaire could correctly indentify 70,8 per cent of the boys and 66,6 per cent of the girls in the clinic sample as psychiatrically disturbed, while in the general population sample 15,1 per cent of boys and 8,1

per cent of girls obtained "disturbed" scores. A further indication of the validity of the parental scale is provided by comparing the questionnaire designation of "neurotic" or "anti-social" with a final psychiatric diagnosis made on the basis of intensive interviews and investigations. For children with a final diagnosis of neurotic disorder or anti-social disorder the questionnaire designation agreed in 78% of the cases. Thus as Rutter, Tizard and Whitmore (1970) conclude "the questionnaire subscore gave a good indication of the type of psychiatric disorder shown by the child, as well as a good indication of whether the child showed psychiatric disorder." (Pp351)

The rationale for the inclusion of this questionnaire as a criterion measure was on a multiple basis: (i) it is well validated as being a measure able to differentiate between disturbed and non-disturbed children, (ii) two subgroup designation of "neurotic" or "anti-social" are defined in a very similar fashion to Koppitz's definitions of "shyness" and "aggressiveness", (iii) it is a questionnaire which poses no problems for administration and scoring. The specific variables related to this questionnaire are as follows:-

<u>No. of Variable</u>	<u>Description of Variable</u>
10	Rutter Parent Scale A2 Total Score
11	Rutter Parent Scale A2 Non-disturbed
12	Rutter Parent Scale A2 Anti-Social
13	Rutter Parent Scale A2 Neurotic
14	Rutter Parent Scale Undifferentiated

Variable Numbers eleven to fourteen are dummy variables.

#### Rutter Teacher Questionnaire (B2):-

This questionnaire formed another part of Isle of Wight study and was used in collaboration with the Parent Questionnaire (A2) as a screening device for psychiatric disorder. It consists of twenty-six descriptions of behaviour against which the teacher was asked to indicate whether each description "does not apply", "applies somewhat" (score of 1) or "certainly applies" (score of 2) to the particular child. A copy of this questionnaire is to be found in Appendix G.

Norms and Standardization:- 2199 children aged ten to eleven years were studied as the standardization sample - this consisting of the total population of children in this age range on the Isle of Wight. Rutter (1967) found that a cut-off score of 9 could adequately differentiate between disturbed and non-disturbed children. A "neurotic" subscore is obtained by summing the scores of items 7, 10, 17 and 23; while an anti-social score is obtained by summing the scores of items

4, 5, 15, 19, 20 and 26. The procedure for designating a child neurotic, anti-social or undifferentiated is similar to that outlined for the Parent Questionnaire.

Reliability:- The retest reliability correlation co-efficient with a two month interval was + 0,89 (Rutter, 1967). Inter-Rater Reliability was obtained by getting four teachers to rate seventy children in the last term of infant school and four other teachers to rate the same children two to three months later in the children's first term in Junior School. The product-moment correlation between the total scores on the two occasions was + 0,72.

Validity:- The Teachers' Questionnaire was able to indentify 80% of the boys and 60% of the girls in the clinic sample as being psychiatrically disturbed, while only 11% of the boys and 3½% of the girls in the general population sample were designated as disturbed. The Questionnaire was also able to differentiate at a significant level of confidence between "neurotic" and "anti-social" children, in about 90% of "anti-social" children and 80% of "neurotic" children the questionnaire diagnoses and the clinical diagnoses were in agreement.

The Variables included in the analysis which are related to this criterion measure are as follows:-

<u>No. of Variable</u>	<u>Description of Variable</u>
15	Rutter Teacher Scale B2 Total Score
16	Rutter Teacher Scale B2 Non-disturbed
17	Rutter Teacher Scale B2 Anti-social
18	Rutter Teacher Scale B2 Neurotic
19	Rutter Teacher Scale B2 Undifferentiated

Variable Numbers 16 to 19 were dummy variables.

#### California Test of Personality (CTP):-

The California Test of Personality was designed by Thorpe, Clark, and Tiegs (1953) to identify certain levels of personal and social adjustment. Personality is defined as the manner and effectiveness with which the whole person meets his personal and social problems, and indirectly the manner in which the individual impresses his fellows. Thus the concept of personality upon which the CTP is based is very similar to that upon which the Koppitz Human Figure Drawing Test is based. The CTP is organized around the concept of life adjustment as a balance between social and personal adjustment.

The rationale for the inclusion of the CTP in the present study is that the CTP gives similar components of adjustment and definitions to those given by Koppitz, and thus facilitates comparison.

The test consists of two parts; personal adjustment and social adjustment. There are twelve subtests in all, six for each of personal and social adjustment and in addition there is a total adjustment score. It is felt necessary to include a discussion of each of the subtests, since these are regarded as being relevant to the present analysis.

#### Personal Adjustment.

Self-Reliance - an individual may be said to be self-reliant when his overt actions indicate that he can do things independently of others, depend upon himself in various situations, and direct his own activities. The self-reliant person is also characteristically stable emotionally and responsible in his behaviour.

Sense of Personal Worth - an individual possesses a sense of being worthy when he feels he is well regarded by others, when he feels that others have faith in his future success, and when he believes that he has average or better than average ability. To feel worthy is to feel capable and reasonably attractive.

Sense of Personal Freedom - an individual enjoys a sense of freedom when he is permitted to have a reasonable share in the determination of his conduct and in setting the general policies that shall govern his life. Desirable freedom includes permission to choose one's own friends and to have at least a little spending money.

Feeling of belonging - an individual feels that he belongs when he enjoys the love of his family, the well wishes of good friends, and a cordial relationship with people in general. Such a child will usually get along well with his teachers and usually feels proud of his school.

Withdrawal Tendencies - the individual who is said to withdraw is the one who substitutes the joys of a fantasy world for actual successes in real life. Such a person is characteristically sensitive, lonely, and given to self-concern.

Nervous Symptoms - the individual who is classified as having nervous symptoms is the one who suffers from one or more of a variety of physical symptoms such as loss of appetite, fequent eye strain, inability to sleep, a tendency to be chronically tired, or to show other psychosomatic complaints - physical expressions of emotional conflicts.

#### Social Adjustment.

Social Standards - The individual who recognizes desirable social standards is one who has come to understand the rights of others and who appreciates the necessity of subordinating certain desires to the needs of the group. Such an individual understands what is regarded as being right or wrong.

Social Skills - An individual may be said to be socially skillful or effective when he shows a liking for people, when he inconveniences himself to be of assistance to them, and when he is

diplomatic in his dealings with both friends and strangers.

So the socially skillful person subordinates his or her egotistic tendencies in favour of interest in the problems and activities of his associates.

**Anti-Social Tendencies** - An individual would normally be regarded as anti-social when he is given to bullying, frequent quarreling, disobedience, and destructiveness to property. The anti-social person is the one who endeavours to get his satisfaction in ways that are damaging and unfair to others. Normal adjustment is characterized by reasonable freedom from these tendencies.

**Family Relations** - The individual who exhibits desirable family relationships is the one who feels that he is loved and well-treated at home, and who has a sense of security and self-respect in connection with the various members of his family. Superior family relations also include parental control that is neither too strict nor too lenient.

**School Relations** - The student who is satisfactorily adjusted to his school is the one who feels that his teachers like him, who enjoys being with other students and who finds the school work adapted to his level of interest and maturity. Good school relations involve the feeling on the part of the student that he counts for something in the life of the institution.

**Community Relations** - The individual who may be said to be making good adjustments in his community is the one who mingles happily with his neighbours, who takes pride in community

improvements, and who is tolerant in dealing with both strangers and foreigners. (Test Manual, Thorp, Clark and Tiegs, 1953.)

**Norms and Standardization:-** The norms of this test are given in terms of percentile ranks which were derived from testing 4,500 pupils on the Primary Level form ( a copy to be found in Appendix H).

**Reliability:-** The Kuder-Richardson reliability co-efficients have been compiled, and these range from , 51 to , 88 for the various subsections. The reliability co-efficients for Personal Adjustment, Social Adjustment and Total Adjustment being , 83; ,80; and , 88, respectively.

**Validity:-** The test construction was such that it aimed at Face and Content Validity. The CTP manual lists several validation studies, most of which conclude that the "CTP correlated more closely with clinical findings than any other personality test." (in Thorpe, Clark, and Tiegs, 1953).

This test has been found to be particularly useful as a research instrument, and has been widely used as such. The specific variables included in the present study which relate to the CTP are as follows:-

<u>No. of Variable.</u>	<u>Description of Variable.</u>
20	CTP Self Reliance
21	CTP Personal Worth
22	CTP Personal Freedom
23	CTP Belongingness
24	CTP Withdrawal Tendencies
25	CTP Nervous Symptoms
26	CTP Personal Adjustment Total
27	CTP Social Standards
28	CTP Social Skills
29	CTP Anti-Social Tendencies
30	CTP Family Relations
31	CTP Community Relation
32	CTP Social Adjustment Total
33	CTP Total Adjustment
34	CTP Personal Categories :- Good (60th% or more)
35	CTP Average Adjustment (30 - 50th%)
36	CTP Poor Adjustment (5 - 20th%)
37	CTP Extremely Poor Adjustment (0 - 2nd%)
38	CTP Social Categories:- Good (60th% or more)
39	CTP Average Adjustment (30- 50th%)
40	CTP Poor Adjustment (5 - 20th%)
41	CTP Extremely Poor Adjustment (0 - 2nd%)
42	CTP Total Adjustment Category:- Good(60th% or more)
43	CTP Average Adjustment (30 - 50th%)
44	CTP Poor Adjustment (5 - 20th%)
45	CTP Extremely Poor Adjustment (0 - 2nd%)

Variable Numbers 34 - 45 were dummy variables.

#### 4.1.4. Testing Schedule:-

The test administration took place over two sessions, the following schedules being used:

##### Schedule A:-

- 1) Human Figure Drawing Test
- 2) Wechsler Intelligence Scale for children

##### Schedule B:-

- 1) Human Figure Drawing Test
- 2) New South African Group Test - Form Junior K.
- 3) California Test of Personality - Primary BB.

Schedule A was completed first by 175 subjects, and then exactly one month later, these subjects completed Schedule B in groups of eight to ten. The remaining subjects completed the Schedules in reverse order. In all cases, the first Human Figure Drawing was used in the main statistical analysis, and in the 175 cases who completed Schedule A first, the second drawing was used to obtain a measure of the test-retest reliability with a one-month interval between test administrations. It was felt that since the children were tested in small groups and were well separated from each other during group administrations, the problems associated with group ~~versus~~ individual assessments would be minimized, this point is further elaborated in Section 4.2.2.

The Rutter Parent (A2) and Teacher (B2) Questionnaires were handed to the parents on the first testing occasion. The teachers were then given the option of returning the completed Rutter Teacher (B2) Questionnaire by post or through the child.

#### 4.1.5. Statistical Analysis of the Data:-

The BMD Set of Analytic Programs was used on the UNIVAC 1106 Computer in the Computer Science Centre, University of Cape Town. The program conducted a Principal Axes Factor Analysis with rotation to the varimax criterion for the orthogonal rotation, while the oblique rotation was conducted to the oblimax criterion.

The Pearson Product-Moment Method of Correlation was used. In all cases the initial estimates of the communalities were squared co-efficients of multiple correlations. Cattell's (1966) Scree Test on the Eigenvalues was used to determine the number of factors to be rotated for, since it was felt necessary to account for the maximum amount of variance while minimizing the number of factors. (Gorsuch, 1974)

It was also decided that the level of salience to be used in the present study would be , 50. This relatively high level of salience was used since the factors had been specifically structured with co-variables which would be readily comparable with the Human Figure Drawing Test and thus it was felt justifiable to use a more rigid level of significance.

#### 4.2. Part II:- Reliability:-

##### 4.2.1. Test - Retest Reliability with a one week Interval.

Subjects:- The subjects for this part of the study were 224 school children aged 6 years 0 months to 12 years 11 months. They were the pupils of two private Roman Catholic Schools in the Cape Peninsula.

Procedure:- The Human Figure Drawing Test was administered in class groups and then one week later they were again requested to "draw - a - person."

Statistical Analysis:- The Pearson Product Moment Correlation Co-efficients were calculated separately for each age level and sex, as well as on the total sample as a group, for both Developmental Assessment Score and total number of emotional indicators present on the Human Figure Drawings.

##### 4.2.2. Test - Retest Reliability with a one month Interval.

Subjects:- 175 children aged 8 years 0 months to 11 years 0 months were randomly selected from the main subject sample of the present study.

Procedure:- On the first test administration the subjects were seen individually, then one month later the Human Figure Drawing Test was administered again, but on this occasion, the

subjects were seen in groups of eight to ten. This, of course, poses problems about the validity of the test - retest method used. However, since the groups were small and the children were well separated from each other, it was felt that the problems of inter-subject contamination, distractions and possible inhibition due to the presence of peers were minimized.

Statistical Analysis:- The Pearson Product Moment Correlation Co-efficients were computed for each age level and sex separately, as well as on the total sample group, for both the Developmental Assessment Scores and the Number of Emotional Indicators present on the Human Figure Drawing.

#### 4.2.3. Inter-Scorer Reliability:-

Scorers:- Two scorers, each independently assessed a random selection of 100 drawings, this selection being drawn from the main sample group. The one scorer holds an Honours degree in Psychology and has had experience in scoring the Koppitz Human Figure Drawing Test, while the other scorer was the present experimenter. The two scorers have trained and worked at different institutions.

Statistical Analysis:- The Pearson Product Moment Correlation Co-efficients were computed.

#### 4.2.4. Intra-Scorer Reliability:-

Subjects:- One hundred drawings were randomly selected from the main sample group.

Procedure:- These drawings were scored twice by one person on separate occasions, each of two raters re-scoring fifty drawings. The one scorer was not informed that she would be rescoring any of the drawings, however she did recognize several of them.

Statistical Analysis:- Pearson Product Moment Correlations were computed, independently for each scorer on the Developmental Assessment Score and on the number of Emotional Indicators present on the Human Figure Drawings.

## Chapter 5

### Presentation of Results.

#### 5.1. Part I: Construct Validity.

The intellectual and emotional analysis shall be presented separately.

##### 5.1.1. Intellectual Assessment:-

###### 5.1.1.1. Factor Analysis:-

Only the content intellectual variables were included in the factor analysis. The rationale for this being based upon the Final Communalities obtained on all the intellectual variables. (See Appendix C.) Further by including only the content intellectual variables it is possible to gain a clear insight into the factor structure. On the basis of the Scree Test, (Gorsuch, 1974) it was determined to rotate for two factors. The orthogonally rotated factor matrix is presented in Appendix I. However, it became clear from the orthogonally rotated factor matrix that the factors were correlated, and thus an oblique rotation to the oblimax criterion was performed.

The correlation co-efficient between Factors 1 and 2 is , 546, which is a statistically significant correlation at the , 01 level of confidence. The respective factor loadings were as follows:-

Factor 1:-

<u>Description of Variable:-</u>	<u>Factor Loading</u>
NSAGT Total I.Q.	, 970
NSAGT Verbal I.Q.	, 968
NSAGT Non-Verbal I.Q.	, 967
WISC Full Scale I.Q.	, 768
WISC Verbal I.Q.	, 745
WISC Performance I.Q.	, 734
Goodenough Draw-a-Man I.Q.	, 122
Koppitz HFD Developmental Assessment	-, 024

Clearly Factor 1 may be regarded as the "Intellectual Factor" since all the NSAGT and WISC I.Q. variables have highly salient loadings on this factor. On the other hand, neither the Koppitz Human Figure Drawing Developmental Assessment nor the Goodenough Draw-a-Man Test I.Q. have significant loadings on Factor 1.

Factor 2:-

<u>Description of Variable</u>	<u>Factor Loading</u>
Koppitz HFD Developmental Assessment	, 771
Goodenough DAM Test I.Q.	, 729
WISC Performance I.Q.	, 304
WISC Full Scale I.Q.	, 300
WISC Verbal I.Q.	, 256
NSAGT Non-Verbal I.Q.	-, 134
NSAGT Total I.Q.	-, 124
NSAGT Verbal I.Q.	-, 090

Both of the Human Figure Drawing Techniques have significant loadings on Factor 2, while there are non-significant loadings on the WISC and NSAGT I.Q. variables. Thus Factor 2 shall be regarded as the "Drawing Factor". It is interesting to note again the clear distinction between the "drawing" variables and the "intellectual" variables.

However, since these are correlated factors, and it must be stressed the correlations of , 546, between the two factors is statistically significant, it is very important that particular care be taken in the interpretation of these factors. Thus, in order to facilitate this interpretation another factor analysis was performed, with rotation for only one factor. The single factor loadings thus obtained being:-

<u>Description of Variable</u>	<u>Factor Loading</u>	<u>Final Commnality</u>
WISC Full Scale I.Q.	, 965	, 932
NSAGT Total I.Q.	, 936	, 875
WISC Performance I.Q.	, 934	, 872
WISC Verbal I,Q.	, 912	, 833
NSAGT Verbal I.Q.	, 885	, 783
NSAGT Non-Verbal I.Q.	, 850	, 723
Goodenough DAM I.Q.	, 632	, 400
Koppitz HFD Developmental Assessment Score	, 514	, 265

The Koppitz Human Figure Drawing Developmental Assessment does load significantly on this factor, however its final communality indicates that this test lies outside the factor structure i.e. it does not essentially measure the same basic

construct that the other intelligence tests are measuring, although there is some relationship between the constructs. Thus it would appear that there is a correlation between the construct or ability measured by the Koppitz Human Figure Drawing Developmental Assessment and the "Intellectual construct" measured by the WISC and the NSAGT. In order to obtain some further insight into the nature of the relationship between the two constructs, special consideration needs to be paid to the correlation matrix.

#### 5.1.1.2 Inter-Test and Inter-Variable Correlation Matrices:-

The correlation matrix can be a useful technique for establishing construct validity, as discussed above in Section 4.1.2.; and in view of the obtained correlated factors and factor loadings obtained on the single factor, much attention needs to be given to the inter-test and inter-variable correlation co-efficients. It is felt that greater clarity and insight is gained by presenting the correlation matrix in a series of tables which serve to high-light specific aspects of the tests and research.

Table 7:- The Correlation Matrix on Intellectual Score Variables:-

No.	Description of Variable:-	3	5	12	18	19	20	26	27	28
3	Age at time of testing	1								
5	HFD Developmental Score	-20	1							
12	DAM I.Q.	-17	71	1						
18	WISC Verbal I.Q.	-20	44	54	1					
19	WISC Performance I.Q.	-21	48	59	83	1				
20	WISC Full Scale I.Q.	-22	48	60	95	96	1			
26	NSAGT Verbal I.Q.	-22	32	47	81	75	81	1		
27	NSAGT Non-Verbal I.Q.	-25	32	44	66	77	75	73	1	
28	NSAGT Total I.Q.	-27	35	48	79	82	84	93	93	1

With reference to Table 7, there is a significant correlation between the Koppitz Human Figure Drawing Developmental Assessment and the Goodenough Draw-a-Man I.Q. ( $r = .71$ ) as would be expected from the construction of the Koppitz Human Figure Drawing Test; in the normative study, 30 developmental items were selected from the Goodenough - Harris scoring system and Koppitz's own experience (See section 2.3.) However, all other correlations between the Koppitz test and the other intelligence tests fail to reach the level of salience used in the present study. It is interesting to note also that the Goodenough Draw-a-Man I.Q. has salient correlations with the WISC I.Q., but not with the NSAGT I.Q.'s.

In the following series of five tables, the inter-correlations between various Intelligence Ranges for the Koppitz HFD Test, Goodenough, WISC and NSAGT, are presented. The limits of

these I.Q. ranges were based on Koppitz's I.Q. ranges, but in such a way that the ranges would be mutually exclusive.

However, the ranges of I.Q. which Koppitz ascribes to each Developmental Assessment Score are overlapping (e.g. HFD Score 6 = I.Q. 90,- 135, while HFD Score 5 = I.Q. 85 - 120) and thus all of the I.Q. Score Categories of the Koppitz HFD Test relevant at each I.Q. Range are presented.

Table No. 8:- Inter-Correlations in the Superior Ranges of Intelligence (I.Q. +120)

No.	Description of Variable	6	7	13	21	29
6	HFD High Average to Superior	1				
7	HFD Average to Superior	00	1			
13	Goodenough Superior	15	-25	1		
21	WISC Full Scale Superior	17	18	31	1	
29	NSAGT Total Superior	12	12	-17	52	1

There are non-significant correlations between the Human Figure Drawing Test Variables and the other Intelligence Tests within the Superior Range of Intelligence.

Table No. 9:- Inter-Correlations in the High Average Range of Intelligence (I.Q. 110 - 120):-

No.	Description of Variable	6	7	8	14	22	30
6	HFD High Average to Superior	1					
7	HFD Average to Superior	00	1				
8	HFD Average to High Average	00	00	1			
14	Goodenough High Average	-09	10	13	1		
22	WISC Full Scale High Average	-07	-03	11	25	1	
30	NSAGT Total High Average	-01	05	03	05	53	1

The Human Figure Drawing variables do not correlate with the WISC Full Scale I.Q. or the NSAGT Total I.Q. in the High Average Range of Intelligence.

Table No. 10:- Inter-Correlations in the Average Range of Intelligence (I.Q. 90 - 110):-

No.	Description of Variable	7	8	9	15	23	31
7	HFD Average to Superior	1					
8	HFD Average to High Average	00	1				
9	HFD Average to Low Average	00	00	1			
15	Goodenough DAM Average	-25	25	07	1		
23	WISC Full Scale Average	-04	11	02	23	1	
31	NSAGT Total Average	-07	13	-01	-06	59	1

The correlations between the Human Figure Drawing Variables and the WISC and NSAGT are again all non-significant.

Table No. 11 :- Inter-Correlations in the Low Average Range of Intelligence (I.Q. 80 -90):-

No.	Description of Variable	8	9	10	16	24	32
8	HFD Average to High Average	1					
9	HFD Average to Low Average	00	1				
10	HFD Low Average	00	00	1			
16	Goodenough DAM Low Average	-23	21	36	1		
24	WISC Full Scale Low Average	-10	06	25	27	1	
32	NSAGT Total Low Average	-07	06	16	01	60	1

Once again there are non-significant correlations, between the Human Figure Drawing Variables and the WISC and NSAGT in

the Low Average Range of Intelligence. However, for the first time in this series of tables, there is a correlation (, 36) between the Goodenough Draw-a-Man I.Q. and the Koppitz Human Figure Drawing Low Average I.Q. Category, which is significant.

Table No. 12:- Inter-Correlations in the Borderline Range of Mental Retardation (I.Q. 60 -80):-

No.	Description of Variable	10	11	17	25	33
10	HFD Low Average	1				
11	HFD Borderline	00	1			
17	Goodenough DAM Borderline	-18	49	1		
25	WISC Full Scale Borderline	04	61	58	1	
33	NSAGT Total Borderline	32	58	56	49	1

Within the Borderline Range for Mental Retardation (I.Q. 60 - 80), Koppitz's Human Figure Drawing Borderline Range (i.e. Score 2) does correlate significantly with both the WISC Full Scale I.Q. and the NSAGT Total I.Q., the correlations being , 614 and , 581 respectively, , 01 level of confidence. Once again there is a significant correlation between the Goodenough and the Koppitz Human Figure Drawing variable.

It is interesting to note that the profile of intercorrelations found between the Goodenough DAM Test and the WISC and NSAGT are similar to that obtained with the Koppitz Human Figure Drawing Developmental Assessments. In the case of the Goodenough DAM Test, the correlation co-efficients with the WISC and NSAGT range from - , 06 to , 31 for the Low Average, Average, High Average and Superior Ranges of Intelligence, while in the

Borderline Range, the correlation co-efficients are , 584 and , 563 respectively for the WISC Full Scale I.Q. and the NSAGT Total I.Q.

To summarize the results on the Construct Validity of the Koppitz Human Figure Drawing Developmental Assessment:-

- 1) Using an oblique rotation for 2 factors correlated by , 546, there is a clear distinction between (a) WISC I.Q.'s and the NSAGT I.Q.'s (Factor 1 - "Intellectual Factor"); and (b) the Koppitz Human Figure Drawing Developmental Assessment and the Goodenough Draw-a-Man Test I.Q. (Factor 2 - "Drawing Factor").
- 2) With respect to the inter-test correlation co-efficients, the Koppitz Human Figure Drawing Test does not correlate at a salient level with any of the criterion tests of intelligence.
- 3) On consideration of the inter-correlations for the respective tests within I.Q. ranges, the Koppitz Borderline Range for Mental Retardation correlates significantly with both the WISC and the NSAGT Borderline Ranges, but there are no other significant correlations between the Koppitz Human Figure Drawing Test and the other criterion measures within the I.Q. ranges of Superior, High Average, Average and Low Average.

### 5.1.2. Emotional Assessment:-

#### 5.1.2.1. Factor Analysis:-

Only the content emotional and adjustment variables were included in the Factor Analysis, and again the Scree Test (Gorsuch, 1974) indicated rotation for only two factors.

In case of possible confusion arising from the negative factor loadings obtained on some variables, an explanation is included: The scoring systems of the Rutter Questionnaire are such that the more disturbed an individual is, then the higher the score he would be expected to obtain i.e. a well-adjusted person should obtain a low score, while the psychiatrically disordered person should obtain a high score. The Koppitz Human Figure Drawing Test is based on the same system. On the other hand, however, the CTP is based on a percentile ranks scoring system where the expected trend would be the more disturbed, the lower the score. Thus when considering the relative factor loadings, the absolute value is considered, the particular sign being disregarded.

The respective Factor loadings were as follows:-

Factor 1:

<u>Description of Variable</u>	<u>Factor Loading</u>
CTP Total Adjustment	, 938
Rutter Parent Scale (A2) Total	-, 872
CTP Personal Adjustment Total	, 860
Rutter Teacher Scale (B2) Total	-, 848
CTP Social Adjustment Total	, 841
Rutter Teacher Scale (B2) Non-disturbed	, 826
Rutter Parent Scale (A2) Non-disturbed	, 798
CTP Anti-Social Tendencies	, 709
CTP Withdrawal Tendencies	, 648
CTP Belongingness	, 640
CTP Nervous Symptoms	, 551
CTP Family Relations	, 545
CTP School Relations	, 536
CTP Personal Freedom	, 526
CTP Personal Worth	, 511
Rutter Teacher Scale (B2) Anti-Social	-, 500
Rutter Parent Scale (A2) Anti-Social	-, 483
CTP Self Reliance	, 475
Rutter Teacher Scale (B2) Neurotic	-, 455
CTP Community Relations	, 452
Rutter Parent Scale (A2) Neurotic	-, 432
CTP Social Skills	, 430
Rutter Parent Scale Undifferentiated	-, 321
CTP Social Standards	, 310
Rutter Teacher Scale (B2) Undifferentiated	-, 279
Koppitz HFD Psychosomatic	-, 139
Koppitz HFD Shyness	-, 120

Koppitz HFD Total No. of Emotional Indicators	- , 116
Koppitz HFD Aggressiveness	, 114
Age at time of Testing	, 100
Koppitz HFD Stealing	- , 030

Factor 1 may be regarded as the "Emotional and Behavioural Adjustment Factor" because of the profile of factor loadings obtained by the CTP, the Rutter Parent Scale (A2) and the Rutter Teacher Scale (B2). On the other hand all of the Koppitz Human Figure Drawing Test variables have non-significant loadings, there being a clear demarcation between the Koppitz Human Figure Drawing variables and the other criterion measures.

Factor 2:-

<u>Description of Variable</u>	<u>Factor Loading</u>
Koppitz HFD Total No. of Emotional Indicators	, 936
Koppitz HFD Aggressiveness	, 728
Koppitz HFD Shyness	, 709
Koppitz HFD Stealing Behaviour	, 707
Koppitz HFD Psychosomatic Complaints	, 429
Rutter Parents Scale (A2) Undifferentiated	, 312
Rutter Teacher Scale (B2) Undifferentiated	, 237
Rutter Teacher Scale (B2) Neurotic	- , 220
Rutter Parent Scale (A2) Neurotic	- , 204
CTP Social Adjustment Total	- , 118
CTP Family Relations	- , 117
CTP Belongingness	, 103
CTP School Relations	, 098

CTP Anti-Social Tendencies	- , 098
Rutter Teacher Scale (B2) Total	, 092
Rutter Parent Scale (A2) Non-disturbed	- , 092
Rutter Parent Scale (A2) Anti-Social	, 090
Rutter Parent Scale (A2) Total	, 090
Rutter Teacher Scale (B2) Anti-Social	, 088
CTP Social Standards	- , 069
CTP Withdrawal Tendencies	, 068
CTP Personal Freedom	- , 057
CTP Personal Adjustment Total	, 056
CTP Social Skills	, 055
CTP Community Relations	- , 053
CTP Self Reliance	, 048
CTP Total Adjustment	- , 038
Age at time of Testing	, 037
Rutter Teacher Scale (B2) Non-disturbed	- , 029
CTP Personal Worth	- , 026
CTP Nervous Symptoms	, 017

Once again there is a clear distinction between the Human Figure Drawing variables loading and the loadings on the CTP and Rutter Scale. Factor 2 may be regarded as a "Drawing Factor" since the significant loadings are on all of the Human Figure Drawing variables, while the non-significant loadings are on all the CTP, Rutter Parent Scale (A2) and the Rutter Teacher Scale (B2) variables.

Purely for the sake of interest, a further factor analysis was carried out, using only the total score variables, and with rotation for only one factor. The results of this analysis

are presented in Appendix J, they serve only to support the results presented above. The Human Figure Drawing variables do not load on the same factor as the CTP and Rutter Questionnaire, that is, they lay outside the basic factor structure. Therefore, it appears that the Human Figure Drawing Test is measuring a different construct to that which is measured by the California Test of Personality, Rutter Parent Questionnaire (A2) and the Rutter Teacher Questionnaire (B2).

#### 5.1.2.2. Inter-Test and Inter-Variable Correlation Matrices:-

The full correlation matrix on all 43 "emotional" variables is presented in Appendix K. However in order to high-light certain aspects of the results, even though only to point out the importance of these results which are not significant, it was decided to present the correlation matrix in a series of tables.

The CTP and the Rutter Questionnaire had been selected specifically for the reason that, like Koppitz, they also give special attention to certain patterns of maladjustment. Therefore the theoretical level one would expect certain groupings of disturbed scores on the Koppitz Human Figure Drawing Test, CTP, and Rutter Scales, since the component categories of these tests are all said to measure particular patterns of pathology. The particular groupings which one could expect, purely from a theoretical basis are presented in the following tables which give the obtained intercorrelations.

Table No. B :- "Anti-Social" Inter-Correlations:-

No.	Description of Variable	5	10	15	27	30
5	Koppitz Aggressiveness	1				
10	Rutter A2 Anti-Social	-01	1			
15	Rutter B2 Anti-Social	09	66	1		
27	CTP Anti-Social Tendencies	-14	-36	-36	1	
30	CTP Social Adjustment Total	-16	-71	-62	75	1

The inter-correlations obtained between all variables except the Koppitz Aggressiveness Category are significant. However, the Koppitz Aggressiveness Category does not correlate significantly with any of the criterion measures for Aggressiveness and Anti-Social Behaviour, even though by definition, one would expect significant correlations.

Table No. 14:- "Shy and Withdrawn" Inter-Correlations:-

No.	Description of Variable	4	9	14	18	19	22	26	24
4	Koppitz Shyness	1							
9	Rutter (A2) Neurotic	-16	1						
14	Rutter (B2) Neurotic	-11	73	1					
18	CTP Self-Reliance	-02	33	38	1				
19	CTP Personal Worth	-16	31	32	33	1			
22	CTP Withdrawal Tendencies	-03	39	43	27	39	1		
26	CTP Social Skills	-09	30	33	20	16	26	1	
24	CTP Personal Adjustment Total.	-09	51	57	54	66	74	29	1

It is again important to note that the Koppitz Shyness Category does not correlate significantly with any of the criteria measures which are said to measure similar behaviour patterns of shyness, withdrawal, sensitivity and loneliness. The obtained inter-correlations between the various other criterion measures suggest, therefore, that the Koppitz Category of Shyness is not measuring the adjustment patterns associated with shy, sensitive and withdrawn children.

Table No. 15:- "Psychosomatic" Inter-Correlations:-

No.	Description of Variable	6	11	16	23	22	24
6	Koppitz Psychosomatic	1					
11	Rutter (A2) Neurotic	.02	1				
16	Rutter (B2) Neurotic	-.03	.80	1			
23	CTP Nervous Symptoms	-.15	-.33	-.33	1		
22	CTP Withdrawal Tendencies	-.01	-.27	-.33	.38	1	
24	CTP Personal Adjustment	-.16	-.35	-.39	.64	.74	1
	Total						

The Koppitz Category for Psychosomatic Complaints does not correlate significantly with any of the criterion measures which tap similar nervous symptoms and psychosomatic complaints.

Table No. 16:- "Stealing" Inter-Correlations:-

No.	Description of Variable	7	10	15	25	26	27	30
7	Koppitz Stealing	1						
10	Rutter (A2) Anti-Social	05	1					
15	Rutter (B2) Anti-Social	00	66	1				
25	CTP Social Standards	00	-13	-20	1			
26	CTP Social Skills	-13	-23	-30	19	1		
27	CTP Anit-Social Tendencies	-06	-36	-36	19	33	1	
30	CTP Social Adjustment Total	-10	-41	-42	43	55	75	1

Although none of the criterion measures specifically measure stealing behaviour, one would, on the basis of the definitions of the respective subtests, expect to have obtained significant correlations between the Koppitz Human Figure Drawing Category of Stealing and the criterion variables listed in Table 16. However there are again no significant correlations between the Koppitz Category and the Criterion measures which are theoretically tapping a similar pattern of maladjustment.

In Table No. 17, attention is given to a more global assessment of adjustment, in order to highlight the correlations obtained between the various scores that are expected to yield a more global assessment of disturbance and maladjustment.

Table No. 17:- "Global Assessment of Emotional and Behavioural Disturbance" Inter-Correlations.

No.	Description of Variable	3	8	13	24	30	31
3	Koppitz No. of Emotional Indicators	1					
8	Rutter (A2) Total Score	.15	1				
13	Rutter (B2) Total Score	.16	.83	1			
24	CTP Personal Adjustment Total	-.09	-.64	-.61	1		
30	CTP Social Adjustment Total	-.17	-.70	-.68	.64	1	
31	CTP Adjustment Total	-.15	-.73	-.70	.90	.88	1

Highly significant correlations are obtained between the Rutter (A2) and (B2) Total Scores, and the CTP Personal Adjustment Total, Social Adjustment Total and Total Adjustment. However the total Number of Emotional Indicators on the Koppitz Human Figure Drawing does not correlate significantly with any of these criterion measures, even though it is supposed to yield an indication of global emotional disturbance.

A further set of inter-correlations needs to be considered, and that is the correlations obtained with children judged to be poorly adjusted on the CTP and Psychiatrically Disturbed on the Rutter Scales.

Table No. 18:- Correlations obtained on Poorly Adjusted and Psychiatrically Disturbed Children.

No.	Description of Variable	3	10	11	12	15	16	17	34	35	38	39	42	43
3	HFD No. Of Emotional Indicators	1												
10	Rutter (A2) Anit-Social	06	1											
11	Rutter (A2) Neurotic	03	00	1										
12	Rutter (A2) Undifferen- tiated	16	00	00	1									
15	Rutter (B2) Anti-Social	07	66	-10	-06	1								
16	Rutter (B2) Neurotic	02	-08	80	-02	-16	1							
17	Rutter (B2) Undifferen-	10	-06	-07	78	-11	-08	1						
34	CTP Personal Poor Adjust- ment	02	14	17	16	20	24	13	1					
35	CTP Personal Extremely Poor	09	05	39	22	03	34	20	-16	1				
38	CTp Social Poor Adjust- ment	04	24	09	10	27	13	12	33	-04	1			
39	CTP Social Extremely Poor	17	27	20	19	26	16	11	08	47	-26	1		
42	CTP Total Poor Adjustment	12	33	21	15	37	26	11	62	-07	62	03	1	
43	CTP Total Extremely Poor	07	17	25	23	15	21	21	-05	79	-11	65	-18	1

When disturbed and poorly adjusted children only are considered the Koppitz Total No. of Emotional Indicators still does not correlate significantly with any of the criterion tests.

To conclude this subsection a summary of the results on the construct validity of the Emotional Indicators:-

1) On the orthogonally rotated Factor Matrix two distinct factors emerged;-

(i) Factor 1:- "Behavioural and Emotional Adjustment"

Factor: all the significant loadings were on the

CTP and Rutter Parent (A2) and Rutter Teacher (B2) Scale variables.

(ii) Factor 2:- "The Drawing Factor" : all the significant loadings were on the Human Figure Drawing variables.

2) Koppitz's Categories for Global Assessment, shyness, aggressiveness, stealing and psychosomatic complaints do not correlate significantly with any of the selected criterion variables which measure such behaviour patterns.

## 5.2. Part II:- Reliability:-

### 5.2.1. Test-Retest Reliability with a one week interval:-

The test-retest reliability co-efficients obtained with a one week interval between test administrations are presented in Table No. 19. The Pearson Product Moment Correlation Method was used.

The Developmental Assessment Scores show significant correlations at all age levels above 8 years 0 months for both boys and girls as does the emotional indicators; whereas the test-retest correlations for six and seven year olds boys and girls are not statistically significant. This is one of the reasons why six and seven year old children were not included in the sample of the present study.

The test-retest reliabilities on the Emotional Indicators of the Human Figure Drawing Test are all significant at the ,01 level of confidence, with the exception of seven year old girls

where the correlation co-efficient was only ,285.

Table No. 19:- Test-Retest Reliabilities with a one week interval between test administrations:-

Age and Sex of Subject	n	HFD Developmental Assessment Score	HFD No. of Emotional Indicators
6 year old boys	13	,146	,640*
6 year old girls	14	,492	,931*
7 year old boys	10	,349	,984*
7 year old girls	12	,125	,285
8 year old boys	14	,592*	,880*
8 year old girls	15	,800*	,651*
9 year old boys	11	,800*	,840*
9 year old girls	11	,808*	,810*
10 year old boys	15	,526+	,959*
10 year old girls	25	,661*	,936*
11 year old boys	27	,612*	,620*
11 year old girls	23	,705*	,800*
12 year old boys	9	1,000*	1,000*
12 year old girls	8	,705*	1,000*
Total	224	,646*	,811*

Note: \* - Significant at the ,01 level

+ - Significant at the ,05 level.

5.2.2. Test-Retest Reliability with a one month interval:-

The Test-Retest Reliability co-efficients obtained with a one month interval between test administrations are presented in Table No. 20. It is important to bear in mind the fact

that these subjects completed their first drawing with a one-to-one contact with the experimenter, while administration of the second drawing took place in small groups. However, as mentioned previously in Section 4.2.2., it was felt that the effects of inter-subject contamination (copying, inhibition among peers, distractions, etc.) were minimized by having small groups of children who were well separated from each other.

Table No. 20:- Test-Retest Reliability Co-efficients (one month interval between test administrations):-

Age and Sex of subjects	n	HFD Developmental Assessment Scores	HFD No. of Emotional Indicators
8 year old boys	30	, 632	, 802
8 year old girls	28	, 678	, 568
9 year old boys	30	, 813	, 813
9 year old girls	27	, 724	, 719
10 year old boys	30	, 731	, 938
10 year old girls	30	, 616	, 900
Total	175	, 702	, 752

The Test - Retest Reliability co-efficients obtained with a one-month interval between test administrations are essentially similar to those obtained with a one week interval for the respective age level and sexes. All of the obtained correlations with a one-month interval are statistically significant at the , 01 level of confidence.

#### 5.23. Intra-Scorer Reliability:-

The intra-scorer reliabilities, obtained by having the

same person rescore human figure drawings, are presented in Table 21.

Table 21 - Intra-Scorer Reliability Co-efficients:-

Scorer	n	HFD Developmental Assessment	HFD No. of Emotional Indicators
A - Present Experimenter	50	, 978	, 951
B - Colleague	50	, 985	, 902
Total	100	, 981	, 924

The obtained intra-scorer reliability co-efficients are all highly significant at the , 001 level of confidence.

5.2.4. Inter-Scorer Reliability:-

The correlations obtained by comparing scores allocated to drawings by Scorer A and scores allocated by Scorer B were , 921 on the Human Figure Drawing Developmental Assessment and , 886 on the Total number of Emotional Indicators on each Human Figure Drawing.

In summary, then the results of "Reliability Research" indicate:

- (i) acceptable levels of test - retest reliability, with both one week and one month intervals, for children aged 8 years 0 months or more.
- (ii) doubtful test - retest reliability on 6 year and 7 year old children, with respect to both developmental assessment and emotional indicators.

(iii) Highly significant inter-scorer, and intra-scorer reliability co-efficients were obtained.

## Chapter 6

### Discussion of Results

#### 6.1. Construct Validity

##### 6.1.1. Intellectual Assessment:-

The results indicate that the Koppitz Human Figure Drawing Developmental Assessment is of questionable validity as a measure of intelligence except as an indication of Borderline Mental Retardation.

In this section attention will be focused on various methodological considerations; a comparison between the Human Figure Drawing Techniques of Koppitz and Goodenough shall be made; a possible reason for the validity of the Koppitz Human Figure Drawing Test at the Borderline Range for Mental Retardation shall be proposed; and finally, various suggestions for future research areas will be indicated.

##### 6.1.1.1. Methodological Considerations:-

Before one can discuss possible implications of the obtained results, special consideration needs to be given to possible methodological flaws of this study.

As was mentioned in Section 4.1.1., the quota method of sample selection had to be used since permission to test in the schools was not granted. A frequently encountered disadvantage associated with the quota method of sample selection is that one

obtains a biased sample. In order to try to overcome this possible disadvantage great care was taken to obtain a sample which could be regarded as representative of the total population for which the Koppitz Human Figure Drawing Test was designed. Thus the children were individually selected to meet certain criteria of age, sex, and social class. Due to the nature of the South African society it is not possible to obtain a sample of white subjects which are proportionally related to the normal distribution for social class. Special consideration needs to be given to the sample distribution by intellectual assessment. (see Table No. 5, pp78) The standardized WISC mean is a 100 with a standard deviation of 15, while the sample mean of the present study is 107,3 with a standard deviation of 14,4. This indicates that the subject sample has a nearly normal distribution on the WISC I.Q., but with a slight shifting towards above average intelligence (see Figure 10a ). A similar normal distribution was obtained on the NSAGT - Junior K: the sample mean of the present study was 107,4, with a standard deviation of 14,5, while the standardized mean for the NSAGT is 100 with a standard deviation of 15 ( see Figure 10b ). Thus it is felt that the subject sample may be regarded as being fairly representative of the total population, bearing in mind though the very slight biasing toward above average intelligence in the subject sample.

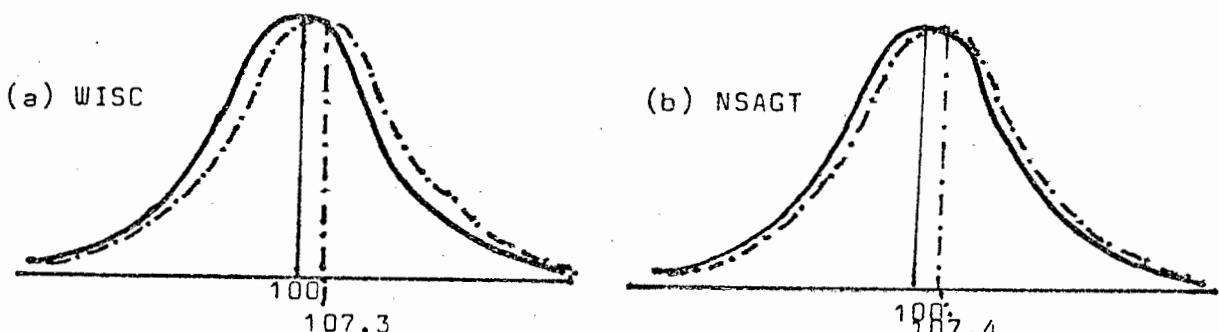


Figure 10: Population Distribution and Subject Sample Distribution

on (a) the WISC Full Scale I.Q. and (b) NSAGT Total I.Q.

6 \_\_\_\_\_ : Population Distribution    - - - - - : Sample Distribution

It is interesting to note in passing the similarities between the WISC and the NSAGT- Junior K, both with respect to the correlations obtained at the respective I.Q. Ranges and on the factor loadings. This was somewhat unexpected since the one is South African standardized, while the other is not; and further the WISC is individually administered, while the NSAGT is group administered on complicated scoring sheets. Despite these two factors however, the correlation obtained between the WISC Full Scale I.Q. and the NSAGT - Junior K Total I.Q. was ,84. Further the tests load on the same factor showing that they are basically measuring a similar construct of intelligence.

Another methodological difficulty was encountered in the types of intellectual assessment which each of the tests yields. The WISC and the NSAGT both yield deviation type I.Q., the Goodenough Draw-a-Man Test is scored in terms of mental age which can then be converted into the conventional I.Q. score. The Koppitz Human Figure Drawing Test, on the other hand, uses a simplified scoring technique where a score is interpreted into an I.Q. Equivalent Range, and not an absolute I.Q. value. The problem with this, however, as discussed in Section 2.2 and 5.1.1.2, is that the I.Q. ranges are large and are not mutually exclusive with respect to I.Q. points. From Figure 11 one can clearly see that the only Koppitz Range which corresponds with the criterion test ranges is the Borderline Range for Mental Retardation. Further it is possibly significant that the only range of the Koppitz Human Figure Drawing Test Developmental Assessment which was found to be a valid indicator of intelligence was the Borderline Range for Mental Retardation. However, it is felt that had this

comprised a major methodological flaw then (1) the Koppitz Human Figure Drawing Test should still have loaded significantly on the Intellectual Factor since only the global content variables were used in the Factor Analysis; and (2) the Koppitz Developmental Score should have correlated with the other global assessments of intelligence. A more probable reason the validity of the Human Figure Drawing Test at the Borderline Range for Mental Retardation is discussed below in Section 6.1.1.3.

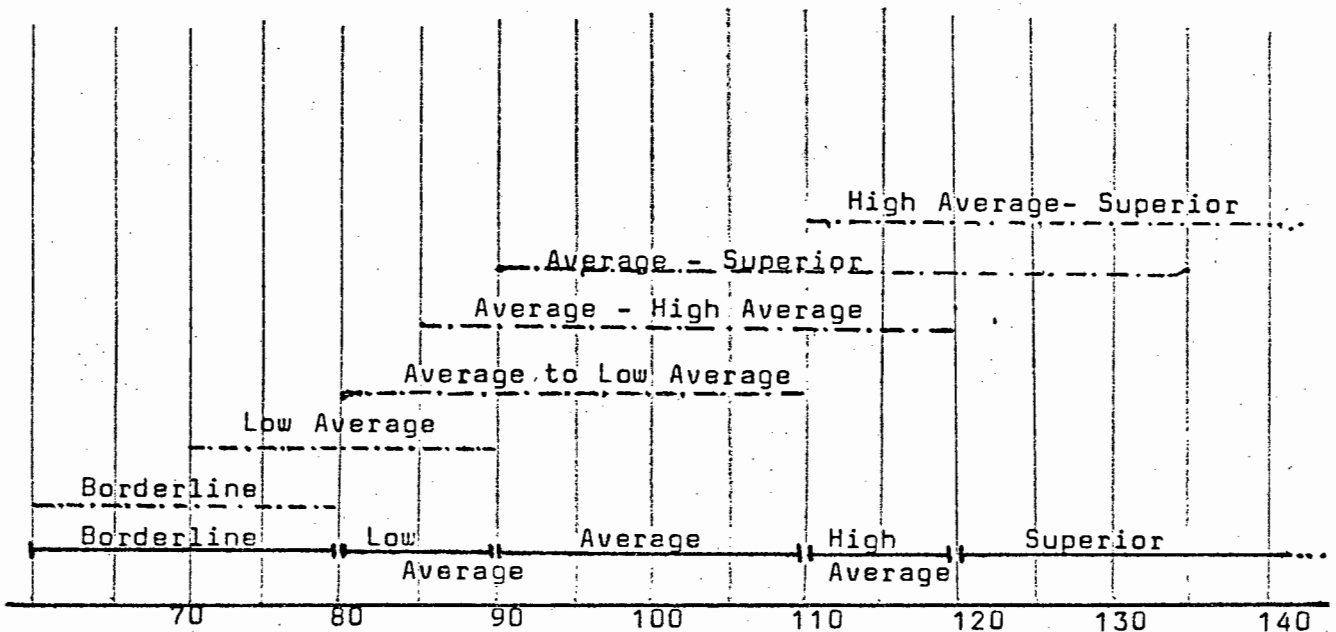


Figure 11:- Diagrammatic Illustration of problems associated with the interpretation of Human Figure Drawing Test I.Q. Equivalent Ranges.

6 \_\_\_\_\_ : Criterion Tests' Ranges ( WISC, NSAGT, and Goodenough)  
 -.-.-.-.- : Human Figure Drawing Test Ranges.

#### 6.1.1.2. The Human Figure Drawing Test and the Goodenough Draw-a-Man Test: A Comparison and Contrast:-

A very interesting pattern showing the relationship

between the two Human Figure Drawing Techniques emerged:

1) Both the Human Figure Drawing Techniques loaded significantly on Factor 2: the "Drawing Factor", and had nonsignificant loadings on Factor 1: the "Intellectual Factor".

2) When the Factor Analysis was computed for only one factor, the Goodenough had higher factor loadings than the Koppitz, and the final communalities showed that the "Intelligence Factor" could more readily encompass the Goodenough Test, than it could the Koppitz Human Figure Drawing Test. Further the correlation matrix on intellectual score variables (Table 7, pp 107) showed that higher correlations were obtained between the Goodenough I.Q. and the WISC and NSAGT I.Q.'s than between the Koppitz HFD Test and these criterion tests of intelligence. These two features would therefore suggest that the Goodenough would be the preferable test to be used to give a quick, but rough, indication of intelligence.

3) It was found that at the Superior, High Average and Average Ranges of Intelligence, the correlation between the Koppitz and the Goodenough are all non-significant and further the correlations between these human figure drawing techniques were also non-significant. This would suggest that neither of these human figure drawing techniques may be considered to be valid indicators of average and above average intelligence.

4) At the Low Average Range of Intelligence the correlation

between the Koppitz and the Goodenough is ,36, which would be regarded as significant by some investigators, although it does not reach the level of salience used in the present study.

5) At the Borderline Range for Mental Retardation both the Koppitz and the Goodenough correlate significantly with each other and with the criterion tests of intelligence. It is interesting to note that the Koppitz shows slightly higher correlations with the WISC and the NSAGT than does the Goodenough at this Borderline Range for Mental Retardation.

This pattern, outlined in 1 to 5 above, of the relationship between the Koppitz and the Goodenough can not be attributed solely to the fact that in selecting the developmental items Koppitz drew items from the Goodenough-Harris scoring system, although all thirty developmental items are basically included in the Goodenough Schedule for scoring. This fact could only account for the correlation of ,71 between the two tests and the fact that they both loaded on the same factor.

Rather it would appear that Koppitz has lost some validity in simplifying her scoring system into expected and exceptional items; as well as losing some clinical usefulness by using the I.Q. Equivalent Ranges. However the results of this study indicate an extraneous drawing variable in both the Koppitz Human Figure Drawing Test and the Goodenough Draw-a-Man Test.

### 6.1.1.3. The Drawing Variables:-

The present writer believes that both the Koppitz Human Figure Drawing Test and the Goodenough Draw-a-Man Test encompass certain drawing variables which can not be related to the construct of intelligence. Factor 2, the "Drawing Factor" seems to support this postulation, since both of the human figure drawing techniques load significantly on this factor.

In order to obtain a fuller understanding of the basis of the postulation that there is a drawing variable, careful consideration needs to be given to the theoretical basis of the Human Figure Drawings as techniques of intellectual assessment. Both of the human figure drawing techniques basically rest upon the postulation that "the child draws what he knows, not what he sees" (Goodenough, 1926, pp52). Goodenough, as quoted on page 38 of this thesis, then also includes more "abstract concepts" such as spatial and quantitative relationships, proportions and organization of elements into recognizable wholes, including these features in her scoring system. Koppitz does likewise, but to a different degree, including such items as proportions among her Exceptional Items list, and in the Expected Items one finds such requirements as arms and legs in two dimensions, arms pointing downwards, arms correctly attached at the shoulder position, which also embrace the more "abstract concepts" of relationships, proportions and organization. However the present writer believes that these "abstract concepts" are more reflective of drawing ability than they are of intelligence, and that by

including such features both Koppitz and Goodenough

- 1) depart from their basic postulation that a child "draws what he knows, not what he sees," by now including "how the child draws what he knows and sees"; and
- 2) introduce the extraneous variable of drawing ability.

To relate this postulation to the results of the present study: in order to score in the average, high average or superior ranges of intelligence, the child aged eight, nine or ten years, must include at least some of these "abstract concepts" of proportions, relationships and organization. However the present study found that the human figure drawing variables were not valid indicators of average and above average intelligence. On the other hand, at the Borderline Range of Intelligence, both the Koppitz and the Goodenough correlate significantly with the selected criterion measures of intelligence, and in order to score in this range the child needs only to draw what he knows, and not to include aspects of organization and proportional relationships between the elements of the drawing, that is, not to show evidence of any drawing ability.

It is therefore suggested that drawing ability and intelligence are two distinct constructs, which are not mutually exclusive, but which do need to be recognized as separate abilities. And neither the Koppitz Human Figure Drawing Test nor the Goodenough Draw-a-Man Test recognize and acknowledge the independence of these constructs, and thus the present study finds them to be invalid indicators of intelligence, except where the "drawing variables" are not included in the scoring schedule, that is,

at the Borderline Range for Mental Retardation.

6.1.1.4. Implications for Future Research:-

The postulation that such "abstract concepts" as proportions, relationships and organization are "drawing variables" needs to be explicitly verified by empirical research, investigating also the nature of the relationship, if there is any, between the drawing variables and intelligence.

6.1.2. Emotional Assessment:-

The Koppitz Human Figure Drawing Test was found to be an invalid measure of emotional and behavioural adjustment, since (i) there is a clear distinction between the human figure drawing variables and the selected criterion measure: the California Test of Personality, the Rutter Parent(A2) Scale and the Rutter Teacher (B2) Questionnaire, with respect to the factor loadings, and (ii) none of the Koppitz Human Figure Drawing Psychiatric Categories for global emotional adjustment, shyness, aggressiveness, stealing behaviour or psychosomatic complaints correlate significantly with any of the selected criterion variables which measure such behaviour patterns.

In this section various methodological considerations shall be discussed, before stating the implications of the obtained results.

#### 6.1.2.1. Methodological Considerations:-

There are three main methodological issues which need to be discussed: (1) the subject sample; (2) the criterion tests; and (3) the problems associated with projective techniques as opposed to more empirically based techniques of personality assessment.

##### 1) Subject Sample:-

Most studies on the validity of assessment devices for psychiatric disorder have used clinic or hospital populations, since it has been found that a large subject sample could obscure trends present in the clinic group only. However it is, also generally agreed that due to (i) the very limited clinic services that are available, especially in South Africa, (ii) a possible host of uncontrolled clinic variables which may be introduced, and (iii) that it is not possible to label all children who attend clinics disturbed in the strict psychiatric sense; thus it was felt that it would be preferable in this study to include subjects from the general population only. Further by using the Pearson Product Moment Correlation Co-efficient it was hoped that patterns on the psychiatrically disturbed children would not be obscured and submerged by the general trend.

However it is interesting to look at the inter-correlations which were obtained using only the children who scored in the extremely poorly adjusted range of the California Test of Personality and the Disturbed Ranges on the Rutter Parent(A2) and Teacher(B2)

Scales as given in Table No. 18 (pp 121). With respect to these correlations, the Koppitz Human Figure Drawing Test does not correlate significantly with any of the criterion categories of psychiatrically and poorly adjusted. Therefore it would appear that by using a normal subject sample, trends present in the "Clinic Group" only have not been obscured, although there are certain considerations which must be borne in mind with respect to the criterion tests, as discussed below.

2) The Criterion Tests of Behavioural and Emotional Adjustment:-

In selecting the criterion tests which were to be used as covariables for the Koppitz Emotional Indicators, emphasis was placed on selecting tests which measure similar aspects of behavioural and emotional adjustment to those which the Koppitz Human Figure Drawing Test is said to identify. For this reason, three tests which met this criteria were selected: the California Test of Personality gives an evaluation of these types of behaviour and emotional disturbance from the child himself; the Rutter Parent (A2) Questionnaire gives the parent's assessment; and the Rutter Teacher (B2) Questionnaire gives the teacher's point of view. These tests all consist of descriptions of behaviour, the nature of which are frequently used in the psychiatric interview, to which the respondent, be it the child, parent or teacher indicates the applicability of these statements to the particular child being assessed. An interesting feature of the obtained results was the highly significant correlations obtained

between the child's, the parents' and the teachers' assessment of the child's behaviour, indicating a very high level of agreement between the child, the parent and the teacher (see Table No. 17 pp 120) This is particularly interesting, since one of the criticisms which have been levelled against the California Test of Personality is that, because of the operation of defence mechanisms, for example repression and denial, the child will not be able to give a valid reflection of his own adjustment level. The results of this study do not support this criticism, and in fact would indicate that the child is able to accurately give a valid reflection of his own adjustment level.

The high correlations obtained between the California Test of Personality, the Rutter Parent (A2) Scale and the Rutter Teacher (B2) Scale are also interesting from the point of view of their places of origin. The California Test of Personality is an American Test, while the Rutter Scales (A2 and B2) were standardised in Britain. The correlations obtained in this research between the CTP Total Adjustment and the Rutter Parent (A2) Scale was  $r = -.73$ ; and between the CTP Total Adjustment and the Rutter Teacher (B2) Scale Total was  $r = -.70$ .

However, with respect to the California Test of Personality it appears that it would have been preferable to have used raw scores and not the percentile ranks. The expected population mean on the CTP is the 50th percentile rank, however in the present study the obtained sample means were 37,6% on the CTP Personal Adjustment Total; 24,5% on the CTP Social Adjustment

Total; and 31,0% on the Total Adjustment of the CTP. This would suggest the following:

- 1) the subject sample as a whole were a poorly adjusted group, although there is no apparent evidence to support this possibility.
- 2) the CTP tends to give an underassessment of the Adjustment level of the South African population.
- 3) the CTP may not be regarded as a totally valid test to be used on South African populations. This possibility is rejected since the correlations obtained between the CTP Total Scores and the Rutter Scales (A2 and B2) were highly significant, and both the Rutter Scales and the CTP load significantly on the same factor, indicating that they measure basically the same construct of behavioural and emotional adjustment.

Thus there remains the possibility that the California Test of Personality tends to give an under-assessment of the Adjustment level of the South African population, however this possibility needs to be substantiated by empirical research studies.

### 3) The Use of Projective versus Empirical Techniques:-

It may be argued by some critics that by validating a projective technique by comparing it with more empirically based techniques of personality assessment one is ignoring the basic premise of projective techniques: the sensitivity to unconscious or latent aspects of the personality which may be painful for the ego to admit. This argument, however, is completely rejected.

with respect to the present study.

Although the Koppitz Human Figure Drawing Test is of course, a projective technique it is felt that this test does not tap unconscious or latent aspects of the personality which may be painful for the ego to admit, since the psychiatric categories used by Koppitz are all such that they have an overt manifestation. The aggressive child bites, kicks and hits other children. The shy child is withdrawn and has extreme difficulties in social situations which he is often too aware of himself. Children who steal and children with psychosomatic complaints are of great concern to their teachers and parents, and the child too is aware of these difficulties. Thus it is evident that the psychiatric categories selected by Koppitz are clearly adjudged on their overt manifestations of behaviour which would be visible to the parent, and the teacher and even to the child himself in many instances, as is evidenced in the highly significant correlations obtained between the child, the parent and the teacher's assessment of the child's behaviour (see Table No. 17, pp 120). Therefore taking this into account, as well as considering the nature of the Koppitz psychiatric categories, it is felt that the basic premise of projective techniques, the sensitivity to latent and unconscious material, has not been ignored by comparing the Koppitz Human Figure Drawing Test with more empirically based personality assessments.

6.1.2.2. Implications of the Results on the Construct Validity of the Emotional Indicators:-

The results of this research cast grave doubt on the validity of the Human Figure Drawing Test as an indicator of emotional and behavioural adjustment. Despite the similarities between the definitions of the Koppitz psychiatric categories and the definitions of the criterion tests' ( the CTP, the Rutter Parent Scale (A2) and the Rutter Teacher Scale (B2)) subtests, the Koppitz psychiatric categories did not correlate significantly with any of the criterion subtests. Neither did the Koppitz total number of emotional indicators correlate significantly with any of the criterion tests' global assessments of behavioural and emotional adjustment.

In view of this lack of validity of the Human Figure Drawing Test as a projective technique of personality assessment, it is most disturbing to note that the Human Figure Drawing Techniques are among the most widely used assessment devices (Sundberg, 1961, 1971; CRM Books, 1972). One would therefore hope that clinicians would stop being impressed when the test, by some coincidence, gives an indication of the nature of the patient's problems, and come off their random partial reinforcement schedule, and take note of the mounting body of empirical evidence which discredits the validity of these techniques.

The results of this study, further indicate the dangers of coming to a "professional psychiatric" opinion on the basis of one test alone.

## 6.2. Part II; Reliability:-

The results of the Reliability research indicate that

- (i) there are acceptable levels of test-retest reliability with both one week and one month intervals between assessments, for children aged eight years or more.
- (ii) there is doubtful test-retest reliability on six and seven year old children with respect to both developmental assessment and emotional indicators after a one week interval.
- (iii) highly significant inter-scorer and intra-scorer reliabilites were obtained.

The discussion of the results on test-retest reliability and that on the scorer reliabilities shall be dealt with separately.

### 6.2.1. Test-Retest Reliability:-

Two measures of test-retest reliability were obtained for children aged eight years to eleven years, and it is interesting to note the similarities of the obtained correlation co-efficients after one week and one month intervals (See Table No. 22, overleaf) Consideration of Table No. 22 shows clearly the great similarity in drawings obtained over a one week and a one month interval. This was in certain respects, somewhat unexpected when one considers, that with respect to the one month test-retest reliabilities, the one administration was done on an individual

basis, while the second drawing was done in small groups. It had been felt therefore that this assessment would not give a truly fair reflection of the test-retest reliability coefficient, but the results which emerged leads one to think that the child's drawing was impervious to the influences which may be associated with group and individual assessments. This may be understood in terms of the Developmental Stages of Art Production which were presented in Section 1.1, Children in the age group eight to eleven years would be in the Schematic Stage of Art Development, they have arrived at a definite concept of man and his environment as is evidenced in his drawing schema of a man which he repeats again and again. The results of this study support this developmental concept, showing that a child's schema of a man is impervious to the influences of group and individual assessment.

Table No. 22: Test-Retest Reliability co-efficients:

Age and Sex of Subjects	Developmental Assessment		Emotional Indicators	
	1 week	month	1 week	1 month
8 yr. old boys	,59	,63	,88	,80
8 yr. old girls	,78	,68	,65	,57
9 yr. old boys	,80	,81	,84	,81
9 yr. old girls	,81	,72	,81	,72
10 yr. old boys	,53	,73	,96	,94
10 yr. old girls	,66	,62	,94	,90
Total*	,65	,70	,81	,75

\* the Total correlation coefficients were obtained for 6 to 12 yr.

olds for one week, and only 8 to 1 yr. olds for one month reliabilities.

Consideration of the Developmental Stages also explains the markedly lower reliabilities obtained for children aged six and seven years. These children are still in the Preschematic Stage of Art Development and therefore their drawings may not be expected to show high test-retest reliabilities, since the preschematic child has not yet arrived at a definite concept and schema for his drawing of a man.

#### 6.2.2. Scorer Reliabilities:-

The inter-scorer and the intra-scorer reliabilities were very high, indicating a high level of agreement between the two scorers. This is seen to be a reflection of the clarity, conciseness and communicability of the Koppitz scoring systems. It is also interesting to note that on only fifteen drawings Koppitz obtained 95% agreement between the two scorers in her study, while the present study on one hundred drawings and two scorers had a correlation co-efficient of ,92 on the Developmental Assessment, and ,89 on the Emotional Indicators.

#### 6.3. Validity and Reliability:-

It is interesting to note that although the results of this research cast grave doubt on the construct validity of the Koppitz Human Figure Drawing Test, high levels of both test-retest and scorer reliabilities were obtained. This very

clearly illustrates how a test, lacking in validity, may be highly reliable, and serves to underline the necessity for a test to have both validity and reliability, before it may be regarded as a truly useful technique of psychometric assessment. The results of the present study indicate that the Koppitz Human Figure Drawing Test may not be regarded as a truly useful technique of assessment, since it lacks validity, even though it has a high level of reliability.

## Chapter 7

### Conclusions

This research was designed to statistically investigate the construct validity and reliability of the Koppitz Human Figure Drawing Test. The results support the hypotheses that:-

1. The Koppitz Human Figure Drawing Test is not a significantly valid indicator of intelligence in the average and above ranges of intelligence, although it may be valid at the Borderline Range for Mental Retardation.
2. The Koppitz Human Figure Drawing Test is not a valid indicator of emotional and behavioural adjustment.
3. The Koppitz Human Figure Drawing Test may be regarded as a reliable assessment device with respect to both test-retest and scorer reliabilities.

In view of these conclusions, it is felt that the Koppitz Human Figure Drawing Test may not be regarded as a useful technique for emotional and/or intellectual assessment, since it seems that the Human Figure Drawing Test tells one nothing more than the drawing skill of the child in portraying a life-like human figure. Indeed it is felt that the Human Figure Drawing, if used as a clinical psychometric tool could be very misleading, giving a totally inaccurate assessment of the patients' intelligence and/or emotional adjustment level.

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TABLE OF APPENDICES

- A : Koppitz Scoring Schedule for Expected and Exceptional Items.
- B : The Reputed Significance of Koppitz's Emotional Indicators.
- C : The Intellectual Variables
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- E : Goodenough Draw-a-Man Test Scoring Schedule.
- F : Rutter Parent Questionnaire (A2)
- G : Rutter Teacher Questionnaire (B2)
- H : California Test of Personality - Primary BB
- I : Orthogonally rotated Factor Matrix on Intellectual Variables.
- J : Factor Matrix with only one Factor on Emotional Variables.



## REPUTED SIGNIFICANCE OF THE EMOTIONAL INDICATORS

Emotional Indicator	Relevant Ages	Description of E.I.	Found on HFD's of	Reflection of or Associated with
Integration	Boys - 7 Girls - 6	One or more parts not joined to the rest of the figure; part only connected by a simple line, or barely touching	clinic patients overtly aggressive poor school beginners special class brain injured	Instability; poorly integrated personality; poor co-ordination; impulsivity and/or immaturity.
Shading Body	Boys - 9 Girls - 8		clinic patients psychosomatic stealing	Body anxiety
Shading hands	Boys - 8 Girls - 7	Light even shading of face and hands to represent skin colour. is not scored	highly anxious children	Anxiety over some real or imagined activities involving the hands
Shading neck	Boys - 8 Girls - 7		highly anxious children	All the children who shaded the neck were engaged in noticeable struggles to control their impulses.
Gross assymetry of limbs		One arm or leg differs markedly in shape from the other	clinic patients overtly aggressive brain-injured special class	Poor co-ordination and impulsive-ness, child's feeling of not being well co-ordinated and of being out of balance
Figure slanting by 15° or more				Suggests a general instability or lack of balance

Emotional Indicator	Relevant Age	Description of E.I.	Found on HFD's of	Reflection of or Associated with
Tiny figure		Figure 2" or less in height	clinic patients shy children brain-injured special class	Extreme insecurity, withdrawal and depression
Big figure	Boys - 8 Girls - 8	9" or more in height	clinic patients overtly aggressive stealing	Expansiveness, immaturity and poor inner controls
Transparencies		a) the child draws the outline of a figure and then draws clothes around the figure. b) the child focusses on 1 particular portion of the figure by means of a transparency of a specific and limited area	stealing overt aggression	Immaturity, impulsivity, and acting-out behaviour.
Short arms		arms not long enough to reach the waistline	psychomatic special class shy children	Usually in the genital region, points to acute anxiety, conflict, or fear, usually in the areas of sex, childbirth and bodily mutilation
Big hands		hands as big or bigger than face of figure.	overtly aggressive stealing	Difficulty in reaching out into the world and towards others; tendency to withdraw, to turn inward toward oneself and to inhibit one's impulses.
				Aggressive acting-out behaviour involving the hands, either directly or indirectly.

Emotional Indicator	Relevant Age	Description of E.I.	Found on HFD's of	Reflection of or Associated with
Hands cut off		Arms with neither hands nor fingers, hands behind back or in pockets not scored	clinic patients shy children stealing psychosomatic	Feelings of inadequacy or guilt over failure to act correctly and the inability to act at all.
No neck	Boys -10 Girls - 9		stealing clinic patients brain-injured	Immaturity, impulsivity, and poor inner controls
Shading face		Deliberate shading of whole or part of face, including freckles and measles, etc. or even, light shading of face and hands to represent skin colour is not scored	Overtly aggressive stealing	Extreme anxiety and very poor self-concept - entire face Shading of a part of face - anxiety about those features that are shaded
Tiny head		Height of head less than one-tenth of total figure	maladjusted children (rare)	Intense feelings of intellectual inadequacy
Teeth			Overtly aggressive well-adjusted and clinic patients	Only an E.I. if present with other indicators; aggression
Long arms		Arms long enough to reach below the knee, or where the knee should be.	Overtly aggressive	An aggressive reaching out into the environment.

Emotional Indicator	Relevant Age	Description of E.I.	Found on HFD's of	Reflection of or Associated with
Arms clinging to side of body			clinic patients	A rigid inner control and a difficulty in reaching out toward others; poor interpersonal relationships; lacking in flexibility.
Legs pressed together		Both legs touch with no space in between; in profile, only one leg is shown	clinic patients psychosomatic children exposed to sexual trauma	Tenseness and a rigid attempt to control his sexual impulses or his concern over a sexual attack by others
Genitals		Realistic or unmistakably symbolic representation of genitals	extremely disturbed overtly aggressive	A sign of serious psychopathology involving acute body anxiety and poor impulse control.
Monster or grotesque figures		Figures representing nonhuman, degraded or ridiculous person; the grotesqueness must be deliberate and not a result of his immaturity or lack of drawing skill.		Reflects feelings of intense inadequacy and a very poor self-concept.
	Nonhuman monsters or robots			Perceive themselves as being different and not quite human.

Emotional Indicator	Relevant Age	Description of E.I.	Found on HFD's of	Reflection of or Associated with
		Clown or tramp		Think of themselves as being rather ridiculous individuals, who are laughed at and not fully accepted by others.
		Figures of prehistoric times or minority groups of which they are not members		Feel they are outsiders who do fully belong to the society they live in
3 or more figures spontaneously drawn		Several figures who are interrelated or engaged in meaningful activity or child's family <u>not</u> scored	Poor school achievement Exclusively on HFD's of children of limited ability who come from large, culturally deprived families	Lack of feeling of identity, of being a person in their own right; frequently one of a crowd of children at home and have never received a great deal of individual attention
Clouds, rain, snow			Very anxious psychosomatic	The child feels threatened by the adult world, especially by the parents; the child, in effect, is standing under a cloud, under pressure from above.
No eyes			Socially isolated	Tendency to deny their problems, refused to face the world, and escaped fantasy

Emotional Indicator	Relevant Age	Description of E.I.	Found on HFD's of	Reflection of or Associated with
No nose			Special class shy children psychosomatic	Shy and withdrawn behaviour and a lack of overt aggression, feeling of immobility and helplessness, or inability to go forward with self-assurance
No mouth			Children with high incidence of fear, anxiety, perfectionism and depression shyness	Feelings of anxiety, insecurity, withdrawal, and the child's inability or refusal to communicate with others
No body	Boys - 6 Girls - 6		Mental retardates brain-injured emotionally disturbed immature stealing	A serious sign of psychopathology
No arms			clinic patients poor students special class overtly aggressive stealing	Anxiety and guilt over socially unacceptable behaviour involving the arms or hands
No legs			Clinic patients poor students	Anxiety and insecurity
No feet	Boys - 9 Girls - 7		clinic patients very shy children	A general sense of insecurity and helplessness, and feeling of having "no feet to stand on".

APPENDIX CTHE INTELLECTUAL VARIABLES

THIS LIST IS IN THE FORM AS PRESENTED FOR CARD PUNCHING TO  
THE DATA EXTRACTION DEPARTMENT OF THE COMPUTER SCIENCE  
DEPARTMENT, UNIVERSITY OF CAPE TOWN.

Intellectual Assessment:

Card No.

Subject No. Name: .....

Sex:- Female - 1, Male - 2

Age in months at time of testing

Oppitz D.A. Score

Oppitz category: 7/8 High average to superior (I.Q. +110)

6 Average to superior (I.Q. 90-135)

5 Average to High average (I.Q. 85-120)

4 Average to low average (I.Q. 80 - 110)

3 Low average (I.Q. 70 - 90)

2 Borderline (I.Q. 60 - 80)

Goodenough-Harris I.Q. score (

Goodenough-Harris Category:) Superior (I.Q. +120)

High Average (I.Q. 110 - 120)

Average (I.Q. 90 - 110)

Low Average (I.Q. 80 - 90)

Borderline (I.Q. 60 - 80)

WISC Verbal I.Q.

Performance I.Q.

Full Scale I.Q.

WISC Category Superior (I.Q. +120)

High Average (I.Q. 110 - 120)

Average (I.Q. 90 - 110)

Low Average (I.Q. 80 - 90)

Borderline (I.Q. 60 - 80)

New South African Group Test: Verbal I.Q.

Non-verbal I.Q.

Total I.Q.

New South African Group test category: Superior (I.Q. + 120)

High Average (I.Q. 110-120)

Average (I.Q. 90 - 110)

Low Average (I.Q. 80 - 90)

Borderline (I.Q. 60 - 80)

			1	
2-4				
			5	
6-8				
			9	
			10	
			11	
			12	
			13	
			14	
			15	
16-18				
			19	
			20	
			21	
			22	
			23	
24-26				
27-29				
30-32				
			33	
			34	
			35	
			36	
			37	
38-40				
41-43				
44-46				
			47	
			48	
			49	
			50	
			51	

Personality Assessment:-

Card Number

Subject Number

Sex :- Female 1 ; Male 2 ;

Age in months at time of testing

Koppitz Total number of emotional indicators

Koppitz categories:- Shyness  
Aggressiveness  
Psychosomatic Complaints  
Stealing

Kutter Parent Scale A2:- Total Score

Non-disturbed  
Anti-Social  
Neurotic  
Mixed or undifferentiated

Kutter Teacher Scale B2:- Total Score

Non-disturbed  
Mixed or Anti-Social  
Neurotic  
Mixed or undifferentiated

California Test of Personality:- Self Reliance

Personal Worth  
Personal Freedom  
Belongingness  
Withdrawal Tendencies  
Nervous Symptoms  
Personal adjustment Total  
Social Standards  
Social Skills  
Anti-social Tendencies  
Family Relations  
Community Relations  
Social Adjustment Total  
Total Adjustment

C.T.P. Personal Categories: Good Adjustment (50th% or more)

Average Adjustment (20 - 50th %)  
Poor Adjustment (2 - 20 th%)  
Extremely poor adjustment(0 - 2nd%)

C.T.P. Social Categories:= Good Adjustment (50th% or more)

Average Adjustment (20 - 50th%)  
Poor Adjustment (2 - 20th %)  
Extremely poor adjustment (0 - 2nd%)

C.T.P. Total Categories:- Good adjustment(50th% or more)

Average adjustment (20 - 50th% )  
Poor adjustment (2 - 20th %)  
Extremely poor adjustment (0 - 2nd%)

	1	2
2-4		
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6-8		
9-10		
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APPENDEK EGoodenough Drawing Test Scoring Schedule

One point is given for each of the following:

1. Head - enclosing head line must be present.
2. Legs - 2 from front view, 1 or 2 from side.
3. Arms - can be attached anywhere; if fingers only given, space must be left between fingers and body; 2 front view; 1 or 2 side view.
- 4a. Body - even a straight line scores.
- 4b. Length of body greater than breadth - cannot be scored if body is merely straight line.
- 4c. Shoulders - bend both at neck and shoulders.
- 5a. Arms and legs joined to body at any point or arms to neck or at junction of head and body if neck absent. No score if body absent.
- 5b. Legs attached to body, arms to shoulders or shoulder position. Mark strictly.
- 6a. Neck.
- 6b. Outline of neck continuous with that of head and body.
- 7a. Eyes - one or two.
- 7b. Nose - any method.
- 7c. Mouth - any method.
- 7d. Nose and mouth in two dimensions, two lips necessary.
- 7e. Nostrils - two little holes will do.
- 8a. Any hair.
- 8b. Hair without outline of head showing through.
- 9a. Clothes - any indication e.g. buttons, hat.
- 9b. 2 pieces clothing - not transparent; buttons do not score; hat must cover part of head to score.

- 9c. Both sleeves and trousers - not transparent.
- 9d. 4 pieces clothing of following: hat, shoes, coat, shirt, collar, tie, belt, trousers.
- 9e. Definite costume - suite of clothes, uniform, cowboy etc: if hat belongs it must be there. Mark strictly.
- 10a. Fingers - any method - if both hands shown, fingers on both.
- 10b. Right number of fingers - of both hands shown, right number on both.
- 10c. Finger detail correct.
- 10d. Opposition of thumb - angle larger than between other fingers.
- 10e. Hand as distinguished from fingers and arms.
- Note: some children place hands in pockets; in such cases score 10a, 10b and 10c if small part of the hand shown: do not score 10d.
- 11a. Arm joint shown - elbow, shoulder or both, elbow must be definite bend, not curve and more or less in middle of arm, shoulder must be bent at attachment to body.
- 11b. Leg joint - knee, hip or both - knee, sharp bend or narrowing hip can be scored if inside leg lines run towards one another.
- 12a. Proportion Head surface not more than  $\frac{1}{2}$  and not less than  $\frac{1}{10}$  of body.
- 12b. Proportion arms - as long as or slightly longer than body, breadth less than body.
- 12c. Proportion legs - not less than body in length, but not more than twice body length: breadth less than trunk.
- 12d. Proportion feet - 2 dimensions for legs and feet necessary to score: length of feet greater than width, and not more than  $\frac{1}{3}$  or less than  $\frac{1}{10}$  leg.
- 12e. Two dimensions - Arms and legs in 2 dimensions, though hands and feet single line.
13. Heel - any method, and if suggested by position of feet front view.
- 14a. Motor Co-ordination - Line A - firm lines meeting without gaps.
- 14b. Motor Co-ordination - Line B - firm - accurate joins - mark strictly.

- 14c. Motor Co-ordination - Head outline without irregularities - primitive circle or ellipse not scored.
- 14d. Motor Co-ordination - Trunk outline - as head.
- 14e. Motor Co-ordination - Arms and legs - as above. 2 dimensions necessary to score.
- 14f. Motor Co-ordination - Features: In proportion, symmetrical and in right place.
- 15a. Ears - any method
- 15b. Ears - right position and proportion (placed in 2nd  $\frac{1}{3}$  rd of head.)
- 16a. Eye details - Brows or lashes or both.
- 16b. Eye - pupils shown.
- 16c. Eye - Proportion - Length greater than breadth.
- 16d. Eye - Profile only - pupil to be shown correctly.
- 17a. Chin and Forehead - eye and mouth must be present - and space left for chin and Forehead.
- 17b. Chin marked off from underlip - in full face extra line under mouth.
- 18a. Profile A Head, trunk and feet in profile without error: one of following errors only:
1. One transparency, e.g. body outline seen through arms.
  2. Legs not in profile e.g. one not partly or completely hiding other.
  3. Arms attached to spine.
- 18b. Profile B True profile without fault except that eye may be malformed.

TABLE OF NORMS FOR THE GOODENOUGH DRAWING TEST

Score	1	2	3	4	5	6	7	8	9	10	11	12
	Yrs. mths.											
M.A.	3.3	3.6	3.9	4.0	4.3	4.6	4.9	5.0	5.3	5.6	5.9	6.0
Score	13	14	15	16	17	18	19	20	21	22	23	24
M.A.	6.3	6.6	6.9	7.0	7.3	7.6	7.9	8.0	8.3	8.6	8.9	9.0
Score	25	26	27	28	29	30	31	32	33	34	35	36
M.A.	9.3	9.6	9.9	10.0	10.3	10.6	10.9	11.0	11.3	11.6	11.9	12.0
Score	37	38	39	40	or more.							
M.A.	12.3	12.6	12.9	13.0								

**STRICTLY CONFIDENTIAL**

**FOR OFFICE USE ONLY**

**SCALE A (2)**

**TO BE COMPLETED BY PARENTS**

Name of Child ..... Boy/Girl ..... Date of Birth .....

Address ..... School .....

**HOW TO FILL IN THIS FORM**

The questionnaire asks about various kinds of behaviour that many children show at some time. Please give the answers according to the way your child has been during the PAST 12 MONTHS.

**HEALTH PROBLEMS**

Below is a list of minor health problems which most children have at some time. Please tell us how often each of these happens with your child by putting a cross in the correct box.

**FOR OFFICE USE ONLY**

	Never	Occasionally, but not as often as once per week	At least once per week	
A. Complains of headaches .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Has stomach-ache or vomiting .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Asthma or attacks of wheezing .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Wets the bed or pants .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Soils or loses control of bowels .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Has temper tantrums (that is, complete loss of temper with shouting, angry movements, etc.) .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Had tears on arrival at school or refused to go into the building .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Truants from school .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**HABITS.** Please place a cross in the box by the correct answer.

I. Does he/she stammer or stutter? .. ..  No.  Yes—mildly.  Yes—severely.

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USE ONLY

II. Is there any difficulty with speech other than  
stammering or stuttering? .. ..  No.  Yes—mild.  Yes—severe.

If "Yes", please describe the difficulty: .....

.....

.....

III. Does he/she ever steal things? .. ..  No.  Yes—occasionally.  Yes—frequently.  
If "Yes" (occasionally or frequently),  
does it involve

- minor pilfering of pens, sweets, toys, small sums of money, etc.
- stealing of big things
- both minor pilfering and stealing of big things

is stealing done

- in the home
- elsewhere
- both in the home and elsewhere

is stealing done

- on own
- with other children or adults
- sometimes on own, sometimes with others

IV. Is there any eating difficulty? .. ..  No.  Yes—mild.  Yes—severe.  
If "Yes", is it

- faddiness
- not eating enough
- eating too much
- other, please describe: .....
- .....
- .....

V. Is there any sleeping difficulty? .. ..  No.  Yes—mild.  Yes—severe.  
If "Yes", is it difficulty in

- getting off to sleep
- waking during the night
- waking early in the morning
- other, please describe: .....
- .....
- .....

FOR OFFICE  
USE ONLY

Below are a series of descriptions of behaviour often shown by children. After each statement are three columns—“Doesn't Apply”, “Applies Somewhat”, and “Certainly Applies”. If your child definitely shows the behaviour described by the statement place a cross in the box under “Certainly Applies”. If he or she shows the behaviour described by the statement but to a lesser degree or less often, place a cross under “Applies Somewhat”. If, as far as you are aware, your child does not show the behaviour, place a cross under “Doesn't Apply”.

Please put one cross against each statement.

STATEMENT	Doesn't Apply	Applies Somewhat	Certainly Applies	
Very restless, has difficulty staying seated for long .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Squirmy, fidgety child .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often destroys own or others' property .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequently fights or is extremely quarrelsome with other children ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not much liked by other children .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often worried, worries about many things .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tends to be on own—rather solitary .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irritable. Is quick to 'fly off the handle' .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often appears miserable, unhappy, tearful or distressed .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has twitches, mannerisms or tics of the face or body .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequently sucks thumb or finger .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequently bites nails or fingers .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is often disobedient .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cannot settle to anything for more than a few moments .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tends to be fearful or afraid of new things or new situations ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fussy or over-particular child .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often tells lies .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bullies other children .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ARE THERE ANY OTHER PROBLEMS?

Signature: Mr./Mrs. ....

THANK YOU VERY MUCH FOR YOUR HELP

APPENDIX GRUTTER TEACHER QUESTIONNAIRE (B2)



**SCALE B(2)**  
TO BE COMPLETED BY TEACHERS

Name of Child \_\_\_\_\_ Boy/Girl \_\_\_\_\_ School \_\_\_\_\_

Date of Birth \_\_\_\_\_ Form \_\_\_\_\_

Below are a series of descriptions of behaviour often shown by children. After each statement are three columns:— "Doesn't Apply", "Applies Somewhat" and "Certainly Applies". If the child definitely shows the behaviour described by the statement place a cross in the box under Column 2 "Certainly Applies". If the child shows the behaviour described by the statement but to a lesser degree or less often place a cross in the box under Column 1 "Applies Somewhat". If, as far as you are aware, the child does not show the behaviour, place a cross in the box under Column 0 "Doesn't Apply".

Please complete on basis of child's behaviour **IN THE PAST 12 MONTHS.**

Put ONE cross against EACH statement. Thank you.

STATEMENT				FOR OFFICE USE ONLY			
	0 Doesn't Apply	1 Applies Somewhat	2 Certainly Applies				
1. Very restless, has difficulty staying seated for long .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
2. Truants from school .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
3. Squirmy, fidgety child .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
4. Often destroys or damages own or others' property .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
5. Frequently fights or is extremely quarrelsome with other children ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6. Not much liked by other children .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7. Often worried, worries about many things .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8. Tends to be on own—rather solitary .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
9. Irritable. Touchy. Is quick to 'fly off the handle' .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
10. Often appears miserable, unhappy, tearful or distressed .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
11. Has twitches, mannerisms, or tics of the face or body .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
12. Frequently sucks thumb or finger .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
13. Frequently bites nails or fingers .. .. .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			



APPENDIX HCALIFORNIA TEST OF PERSONALITY - PRIMARY BB

APPENDIX DTHE "EMOTIONAL ADJUSTMENT" VARIABLES



Primary form BB

# California Test of Personality

1953 Revision

Devised by

LOUIS P. THORPE, WILLIS W. CLARK, AND ERNEST W. TIEGS



(CIRCLE ONE)

Name..... Last First Middle Grade..... Boy Girl

School..... City..... Date of Test..... Month Day Year

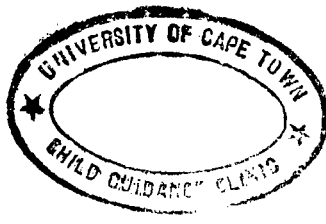
Examiner..... (.....) Pupil's Age..... Date of Birth..... Month Day Year

### TO BOYS AND GIRLS:

This booklet has some questions which can be answered YES or NO. Your answers will show what you usually think, how you usually feel, or what you usually do about things. Work as fast as you can without making mistakes.

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.





### PRACTICE QUESTIONS

- A. Do you have a dog at home? YES NO
- B. Did you walk all the way to school today? YES NO



## SECTION 1 A

1. Can you do things even when they are hard? YES NO
2. Do you like to help other children with their games? YES NO
3. Is it hard for you to look out for yourself? YES NO
4. Do the children think you are afraid of things? YES NO
5. Can you keep from feeling bad if people are mean to you? YES NO
6. Do other children usually tell you what to do? YES NO
7. Can you get other children to play games you like? YES NO
8. Do you make a fuss when things go wrong? YES NO

Section 1 A (number right) .....
-------------------------------------

## SECTION 1 B

1. Are you wanted at most of the parties that you like? YES NO
2. Do the other children see how well you can behave? YES NO
3. Do the children forget to ask you to play with them? YES NO
4. Do the boys and girls know how nice you are? YES NO
5. Do you think you are going to do well when you grow up? YES NO
6. Do the children think you can do hard things? YES NO
7. Are most of the boys and girls mean to you? YES NO
8. Do you often feel bad because people don't like you? YES NO

**SECTION 1 C**

1. Do your folks let you pick your friends? YES NO
2. Do you have too little time to play? YES NO
3. Do your folks let you do many of the things you like? YES NO
4. Do you have to do too many things? YES NO
5. Do you have as much time to play as other children? YES NO
6. Does someone try to boss you too much? YES NO
7. Are you allowed to do some things by yourself? YES NO
8. Do too many people tell you what you should do? YES NO

Section 1 C  
(number right) .....

**SECTION 1 D**

1. Do you think other children do not like you? YES NO
2. Is it hard for you to talk, even with people you know? YES NO
3. Do the boys and girls like to talk to you? YES NO
4. Do the other children often do things for you? YES NO
5. Do you feel bad because the children don't like you? YES NO
6. Do the other children like to have you with them? YES NO
7. Are you as big and strong as most of the boys and girls in your group? YES NO
8. Do many of the boys and girls stay away from you? YES NO

Section 1 D  
(number right) .....



## SECTION 1 E

1. Do you like to stay away from many of the children? YES NO
2. Do you like to stay alone so people will not bother you? YES NO
3. Do you feel bad because you can't do things well enough? YES NO
4. Would you rather do things alone than with other people? YES NO
5. Is it hard for you to forget your troubles? YES NO
6. Do you dislike having people see what you are doing? YES NO
7. Do the children think that you say bad things about them? YES NO
8. Are you often afraid of things? YES NO

Section 1 E (number right) .....
-------------------------------------

## SECTION 1 F

1. Do you often bite your fingernails? YES NO
2. Do you have many colds? YES NO
3. Do you miss school often because of sickness? YES NO
4. Do you often feel as if you are going to be sick? YES NO
5. Do people say you are too restless? YES NO
6. Do you have more headaches than most children? YES NO
7. Do you often have a stomach ache? YES NO
8. Is it hard for you to go to sleep? YES NO

Section 1 F (number right) .....
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1. Should children be nice to people from another country? YES NO
2. Should a person keep a promise that he wishes he hadn't made? YES NO
3. Should children be mean to people who are not kind? YES NO
4. Should a person try to get even with someone who has been mean? YES NO
5. Should children do as they please to other people? YES NO
6. Is it wrong to talk back to people who are not nice? YES NO
7. Should boys and girls do what is right? YES NO
8. Should one be nicer to bright children than to others? YES NO

**SECTION 2 A**

Section 2 A  
(number right) .....

1. Do the children seem to think that you are nice to them? YES NO
2. Do you tell mean children what you think of them? YES NO
3. Do you try to get your own way most of the time? YES NO
4. Do you usually keep from hurting other people's feelings? YES NO
5. Do you usually show it when you are angry? YES NO
6. Is it usually easy for you to tell people when you are wrong? YES NO
7. Would you rather go to parties than stay at home? YES NO
8. Do you talk back to people when they think you are wrong? YES NO

**SECTION 2 B**

Section 2 B  
(number right) .....

## SECTION 2 C

1. Would it be hard for anyone to like most of the people you know? YES NO
2. Do many of the children start quarrels with you? YES NO
3. Are things at school so bad that you try to stay away? YES NO
4. Do people try to argue with you a great deal? YES NO
5. Do many people you know say mean things about you? YES NO
6. Do some people say that you make trouble for them? YES NO
7. Are some people so mean that you have to be unfair to them? YES NO
8. Are some people so unfair that you try to cheat them? YES NO

Section 2 C (number right) .....
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## SECTION 2 D

1. Do your folks ever take time to do things with you? YES NO
2. Do you feel that no one at home loves you? YES NO
3. Do your folks think that you are as good as they are? YES NO
4. Do you feel that your folks do not believe you when you tell them something that is true? YES NO
5. Have you found that someone is jealous of you at home? YES NO
6. Do the people at home tell you about your good points? YES NO
7. Do you feel that there are too many bosses in your home? YES NO
8. Do your parents blame you a lot but seldom praise you? YES NO

Section 2 D (number right) .....
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**SECTION 2 E**

1. Are you considered a good sport at school? YES NO
2. Do your classmates often say things that hurt your feelings? YES NO
3. Do you do as well as most of the children at school? YES NO
4. Do you think that most of the children in your school are trying to keep away from you? YES NO
5. Do you think that the teachers are more friendly to other children than to you? YES NO
6. Are you often unhappy because of getting low marks in school? YES NO
7. Do you feel that some of the teachers "have it in for" you? YES NO
8. Do the children like to play with you at school? YES NO

Section 2 E  
(number right) .....

**SECTION 2 F**

1. Are there places near your home where you can have good times? YES NO
2. Is there a nice group of children of your own age near your home with whom you play? YES NO
3. Do you feel that very few of your neighbors are interesting people? YES NO
4. Does some trouble keep you from being friends with your neighbors? YES NO
5. Are the people near your home as nice as you would like them to be? YES NO
6. Are some of the people near your home so mean that you like to do things to make them angry? YES NO
7. Are there good places to play near your home? YES NO
8. Do you go around with the neighbors' children because you like them? YES NO

Section 2 F  
(number right) .....

**STOP** NOW WAIT FOR FURTHER INSTRUCTIONS

APPENDIX IOrthogonally Rotated Factor Matrix on Intellectual Variables:

<u>Description of Variable</u>	<u>Factor</u>	
	1	2
Age in months at time of testing	-,25513	-,05581
Koppitz Developmental Assessment	,45457	,60619
Goodenough Draw-a-Man Test IQ	,57436	,56033
WISC Full Scale IQ	,95141	,16399
WISC Verbal IQ	,90167	,13283
WISC Performance IQ	,91911	,17016
NSAGT Total IQ	,96380	-,19384
NSAGT Verbal IQ	,90768	-,16026
NSAGT Non-Verbal IQ	,87864	-,19459

APPENDIX JFactor Matrix with only one Factor on Emotional Variables:

<u>Description of Variables:</u>	<u>Factor Loading</u>	<u>Final Communality</u>
CTP Total Adjustment	,910	,828
Rutter Parent (A2) Scale. - Total	-,899	,808
Rutter Teacher Scale (B2) - Total	-,876	,768
CTP Social Adjustment Total	,835	,698
Rutter Teacher Scale (B2) - Nondisturbed	,817	,668
CTP Personal Adjustment Total		
CTP Personal Adjustment Total	,801	,642
Rutter Parent (A2) Scale - Nondisturbed	,797	,635
Koppitz HFD Total No. of Emotional Indicators	-,102	,027

