CHAPTER 2

LITERATURE REVIEW

Theories of DAP

There are two major approaches to the interpretations given to the DAP test. One approach is where the DAP is regarded as a developmental test of mental maturity. The other approach is where the DAP is regarded as a projective test, the drawings are used for signs of unconscious needs, conflicts and personality traits.

The developmental theory of the DAP test is based on the findings that as the child develops physically and intellectually by developmental stages, there is a universal and corresponding development in the child's drawings of the human figure. The child's mental growth depends on conceptual thinking. For example a child of 5 years would in his drawing of the human figure have fewer items then the number of items drawn by a child of 10 years in his drawing of the human figure. Each item of the human figure drawing is scored on a scale, and the points added up. When the mental growth of a child is accelerated then he may score more points on his human figure drawing, for example at the age of 5 years he may score points usually scored by a 6 year old. This would mean that his mental growth is accelerated by a whole 12 months i.e. he is ahead in mental growth from the average 5 year old. But if the 5 year old scores points that is usual for a 4 year old, this would mean that his mental growth is lagging behind the 5 years old group by 12 months.

Goodenough, (1926) was the first to use children's drawings of the human figure as an assessment of intelligence in children, using the developmental approach. She devised the first scale for an evaluation of the human figure drawing as an expression of Mental Age. She developed a quantitative scoring system, the Goodenough Inteligence Scale, by establishing norms which were reliable and valid for children from 4 years to 10 years. At present the scale consists of 51 points. She also introduced some qualitative points that were evidence of disintegration of mental function and were in her opinion indicators of psychopathy.

Goodenough, (1926). The study for the standardization of the scale consisted of

drawings from 3593 children, ranging in age from 4 to 10 years, studying in Kindergarten to fifth grade in six schools of New Jersey and New York City. The children came from various socio-economic status and the range of their nationalities was extensive. A 51 point scale was developed and age norms were devised. By substituting the age norms given in the table for the point score earned on the drawing, the approximate mental age of a child may be found. The IQ is obtained by dividing the mental age by the chronological age and multiplied by 100.

Reliability Study:

For the test and retest reliability was .937 $\pm$ .006 for 194 first grade children. The average reliability using the 'split-scale' method, Spearman - Brown Formula was found to be .77 for ages 5 to 10 taken separately. The probable error of estimate of a true I.Q. earned on the drawing test is approximately 5.4 points at all ages from 5 to 10 years.

Validity Study:

Showed that a significant correlation exists between test score and grade placement. 162 children who had been tested in the first grade showed that the test had a distinct value in predicting future school success during a three semester period. No child in the group whose I.Q. was below 100 made an extra promotion, and every child whose I.Q. was below 70 failed promotion at least once during this period.

Harris, (1963) reevaluated Goodenough's HFD Test, he revised it and extended it to older groups and developed an 'alternate form' of the test by adding to the drawing of a man, a drawing of a woman, and a drawing of the self. He established separate norms for boys and girls.

In 1970 the Goodenough - Harris Drawing Test was restandardized by a study done on 7000 USA children by the National Center for Health Statistics which recommended refinement of the Goodenough - Harris Drawing Test.

Harris, (1963) hypothesized that the human being is a useful index of the growing complexity of the child's concepts generally. Furthermore the human being is a frequently experienced object, and because it is important to him affectively as well as cognitively, it is probable that the human figure is a better index than for example a house or a automobile. The

concept of a person as a concrete object undergoes more elaborate differentation with age. The human figure both in its part and as a whole must include a richer store of associations as 'meaning' than most other complex objects. Concept fromation involves perception. Thus Harris states that the analysis of a child's earliest drawings must take into account the psychology of perception as well as the organization of perceptual responses into the systematic pattern called concepts. Harris states that the Draw-A-Man Test measures mental maturity and is not a test of traits and personality dynamics.

Machover (1949, 1953, 1960); Levy (1959); Hammer (1958); and Jolles (1959) state that the Human Figure Drawings (HFDs) are projective instruments. Machover based her theory on psychoanalytic theory regarding signs on HFDs. She did not offer any scoring system, and there is no controlled research data to support her claims. Many studies by a number of psychologists have been designed to test Machever's hypotheses, but they have ignored or minimized the developmental aspects of figure drawings.

Koppitz, (1968), approach to the HFD is that it can be a developmental as well as a projective test. She used the HFD as a development of mental maturity and also as a projection of a child's interpersonal attitudes and concerns. She developed systematic and standardized scoring systems for HFD's of children ages 5 years to 12 years for both of these approaches to the HFDs. There are 30 developmental items and 30 emotional indicators in each scoring system.

Koppitz carried out a normative study for the development of the 30 Developmental items on HFDs of 1956 children, both boys and girls ages 5 through 12 years, representing 86 entire classes, Kindergarten through sixth grade, in 10 different elementary schools. The children came from low-income, middle income and high income communities.

Koppitz (1967), designed a study where the expected and exceptional items on HFDs were used to asess a child's general level of mental maturity, no definite IQ scores were given. The study was done on 1856 boys and girls, and a list of expected and exceptional items at each age level was tabulated. Each expected and exceptional item was given the value of 1, Omission of an expected item was scored - 1, while the presence of an exceptional item was scored +1. In order to avoid negative scores the value of 5 was added to the sum of all positive and negative scoring points a child scored on his HFD. This method of interpretation translates HFD scores into broad categories of intellectual functioning rather than into

specific IQ scores. Which she considered sufficient for differentiating between children who are mentally retarded and those who have average or above average ability.

The same 1856 children who had served as the normative population for the study of Developmental items were used for the normative study of Emotional Indicators. The 30 emotional indicators were related to quality signs, special features and omissions. The sign must be unusual and occur in frequently. On the normal population the sign must be present on less than 16% of the HFDs at a given age level. It must not be related to age and maturation, its tendency to increase must not increase solely on the basis of the children's increase in age. When absence of expected items at a given age are rare, it must be considered clinically significant. Such omissions may reflect immaturity or malfunctioning due to mental retardation or emotional problems.

Reliability of the DAP

Reliability of a test refers to the consistency of scores that an individual obtains when retested with the same test at different times. "The reliability indicates the extent to which individual differences in test scores are attributable to "true" differences in the characteristics under consideration and the extent to which they are attributable to chance errors". Anastasi, (1976).

Reliability of test is one of the most important quality of a test hence in order to make the test scores more reliable standard conditions and maintainence of uniform testing conditions by controlling the testing environment is highly essential. In order to achieve the reliability of a test it is imperitive that uniformity is maintained in the instructions, time limits, and other factors. Test are standardized on a normative sample under certain conditions, the measure of reliability for this is specified. When the same test is used on another sample under different conditions in a different environment i.e. culture, its reliability has to be ascertained i.e. it has to be restandardized, keeping in view the changed conditions and environment.

A number of studies have been conducted on the reliability of the DAP in the advanced countries.

Brown (1978). During the collection of data from a study of 386, 3-11 years old children's artistic development using clay, the children were asked to draw two figures of a man to test

the reliability of the first products and to compare the children's development in the two and three dimensional media. It was found that the first drawings were reliable for example of what the children would do when asked to draw a man at least over a two week period.

Dileo, (1973). found consistency when the drawing of a single human figure was scored for intellectual maturity due to the reasons that the variables were reduced to the minimum for example, individual session setting were used for the test and the room environment were uniform.

Goodenough, (1926). Reliability on the Draw-A-Man (DAM) was found by correlation between the original scores and the scores of a retest on the following day. .937 $\pm$.006 (.90) for 194 first grade children. The average reliability computed by the 'split scale' method using the Spearman Brown formula was found to be .77(.80) for ages 5-10 years taken separately. The probable error of estimate of a true I.Q. earned on the Draw-A-Man Test is approximately 5.4 points at all ages from 5-10 years.

Harris, (1963). Readministered the Draw-A-Man Test to groups of kindergarten children on consecutive days and found no significant difference in the performance on different days.

Koppitz, (1968) Devised a method of scoring the HFDs for Developmental items and for Emotional Indicators. The reliabllity of this scoring system was based upon inter scorer reliability which was determind by Koppitz and another qualified psychologist. Each of them scored independently of each other the HFDs of 10 rendomly selected second-grade pupil and of 15 children referred to the school psychologist because of learning and behaviour problems.

The 25 HFDs were scored for the 30 Developmental items and the 30 Emotional Indicators.

95% of the total items scored were checked by both psychologists.

5% were scored only by one or the other of the scorers. On 10 of the HFDs there was perfect agreement of scoring. For 15 of the HFDs there was a difference of only one or two points.

McCarthy, (1944). In an investigation with 386, third and fourth grade school children the reliability on the retest correlation after a one week interval was .68 and split half reliability was .89. Rescoring of the identical drawings by a different scorer yielded a score reliability of .90 and rescoring by the same scorer correlated .94.

Martin and Damrin, (1951) in an analysis of the reliability and factorial composition of ratings of children;s DAP found a convincing interjudge reliability.

Handler and Reyher, (1964) found .87 interrater reliability using their 21 anxiety indices. In 1967 Handler reported .67 to 1.00 reliability.

The interrater reliability of of .90 was obtained by Attkinsson, et. al (1974), using the same Handler scoring system. Maloney and Glasser, (1982) evaluated the Handler scoring system and obtained .48 to .78 inter rater reliability coefficient, consistent with those of Attkinsson (1974) and Handler, (1976). And for three global ratings the inter rater reliabilities ranged from .42 to .74. These were however lower.

Strumpfer, (1963) assessed the reliability fo five stndardized methods of ratings overal aspects of the DAP, and obtained inter rater reliability that ranged from .79 to .94, and retest reliabilities that ranged from .46 to .89.

Lehner and Grunderson, (1952) obtained a good interjudge agreement in rating 21 graphic traits, ten descriptive categories of the DAP.

Lewisohn and May, (1963) obtained an interjudge reliability of .85 for overall quality on a 9 point scale.

Swensen, (1968) reported that the reliabilities of traditional scoring method of Machover, (1949) were too low to be a basis for any reasonable clinical judgement. But they found the later method of global ratings of the DAP to achieve levels of reliability that generally would be considered satisfactory for psychometric purposes.

Adler, (1970) in evaluating the DAP's reliability as a diagnostic tool obtained respectable interjudge reliabilities for a number of items, all except a number of the pathological indicators.

Rubin, (1984) found that drawing scores based on one or even two figure drawings whether used to determine developmental (Harris, 1963) or E.I. (Koppits, 1968) are more reliable at some ages than at others.

Goodenough, (1926) in a study of primary grade students, obtained an average of .44 correlation with teachers judgement of intelligence of their students and the DAP, IQ scores. In another study the DAP, IQ scores were correlated with the IQ scores obtained on the Stanford Binet, a .741 reliability was found.

Guinan and Hurley, (1965) investigated the reliability of HFDs and found clinician - judges able to match almost without error sets of figure drawings done by a group of normal subjects on two occasions five weeks apart.

Harris, (1972) evaluated the HFD tests (Koppitza) developmental items and emotional indicators. He states that the chief advantages of both scales are brevity and ease of scoring the items are simple and "self evident" and thus quite objective. Koppitz interscorer reliability for both scales 95% agreement of total judgements. Koppitz has a cutoff score of two or more E.I. as significant of disturbance. Harris suggests a score based on the number of E.I. would be more reliable and perhaps more definitive than any one item or combination of few items. But Koppitz is reluctant to use this method as it would imply an "average" degree of disturbance which to her is nonsensical.

The fullest psychodiagnostic study of personality stability and change is reported by Harrower, (1958). In the study the WAIS, DAP, Rorschach and four other tests were administered to a large number of patients on two separate occasions. Employing rating scales to derive a single adjustment-level score for her patients. Harrower observed the course of their measured adjustment over short and long retest intervels, during brief and intensive psychotherapy and following positive and negative environmental events. Her findings were: 1. No change in adjustment score among patients retested after a thirty day interval during which there was no significant environmental event. They had undergone brief psychotherapy and been rated by the therapists as unimproved. 2. Moderate gains in adjustment score gains among patients retested after one uneventful year, among patients who were considered by their therapists to have benefited from brief psychotherapy. 3. Marked adjustment score gains in patients undergoing intensive psychotherapy or who had experienced a definite positive environmental change. 4. Marked losses in patients who were referred for retesting

at a time when their therapists reported noticable worsening of their condition. The clear congruence of Harrower's data between change or lack of change in psychodiagnostically assessed adjustment and true adjustment level is inferred external criteria significantly demonstrates the potential reliability of the psychodiagnostic battery.

Holtzman, (1952) in a study to test the reliability of the DAP test, tested the examiner as a variable in the DAP test. Found no variability in drawings attributable to the examiner's personality, sex, or physical appearance.

Lehner and Gunderson, (1952) in a study of reliability of graphic indices in a projective test (the DAP) found good agreement among judges rating each of 21 graphic traits on 10 descriptive categories.

Lewinsohn and May, (1963) obtained an interrater reliability of .85 among judges rating figure drawings for their over-all quality on a 9 point scale.

Mebane and Die, (1970) in a study using a scoring system for HFD as a measure of personality at Level III of the Leary Interpersonal Diagnostic System, found that on this scoring system only gross discriminations among subjects were found possible.

Starr and Marcuse, (1959) obtained good reliability on 5 of 7 DAP characteristics studied with both immediate and one month retest.

Swensan, (1955) developed the 9 point sexual differentiation scale and obtained a reliability of .84.

Wright and McIntyre (1982) calculated that the Family Drawing Depression Scale is a useful and reliable measure of depression.

Validity of the DAP:

"Validity of a test concerns with what the test measures and how well it does so." Anastasi, (1976). Validity of a test is important so that the relationships between performance on the test, other independent observerable behaviour characteristics which are under consideration are evaluated.

The validity of the DAP has been investigated by a number of psychologists using various methods.

Goodenough, (1926). Enumerates various forms of validity of the Draw-A-Man Test (DAM) and the studies used to illustrate them. Children of the same age vary widely in this performance of the test, and the there is a significant correlation between test scores and grade placement. This is illustrated by a study of the promotions made during a 3 semester period by 162 children who had been tested in the first grade. The Test could predict future school success. No child in the group whose IQ was below 70 failed promotion at least once during the period.

In a study to determine whether the DAM Test contributed to prognosis of school success, a group of 286 fourth and fifth grade children were given the Army Alpha, the drawing Test, and Form B of the Trabue Completion Teacher rating on a 5 point scale was also obtained. A grade progress ratio was computed for each child by dividing the number of grades skipped or repeated by the childs age. The correlation between the drawing test and the grade progress ratio was .377, which was the highest.

In another study 334 children were given both the drawing Test and the Stanford-Binet. Correlations between drawing scores and Binet mental age were computed for separate age groups. They were highly significant for all age groups between 4 and 10 years, correlation between drawing IQ was .741 which is significant. Correlation between teachers judgements of intelligence of their students and drawing test score was significant average about .44 for primary grade classes.

Hammer, (1969) questioned the validity of clinical judgement based on Human Figure Drawings. Wanderer's study was used as a basis for the criticism. They highlighted these drawbacks of the study: 1. Wanderer's study had failed to demonstrate that psychologists can offer valid diagnoses on the basis of figure drawings. 2. The Hypotheses were handicapped. 3. Scientific method was abandoned; Experimental design was lacking. 4. Proper statistics were not employed. 5. There was overlapping of groups in the sampling.

Hammer states that the mentally defective group can be diagnosed validly by the use of this test. He further states that the DAP should not be used by itself as a diagnostic tool.

It can be only used as a part of a battery of tests or as a substitute for a projective test in a battery. Hammer himself uses DAP as an integral part of a battery of tests which can supplement the information gained by other tests and not as an independent tool of psychodiagnosis.

Morval, (1974) examined the validity and reliability of the Draw-A-Family test. She specially examined its discriminated power and the nature of the projections elicited by this test. Data from several studies which involved more than 400 subjects ranging between 5 and 11 years of age were used in her study. She came to the conclusion that the test is effective in investigating attitudes towards parents and siblings, and the structure of the family itself. It is not effective for exploring the subjects self image or for evaluting his normality. Results with this test vary with the instructions given, which should be adopted to the problem studied.

Wanderer, (1969) investigated the validity of Clinical Judgements based on the Human Figure Drawings. In a study considering clinical as well as experimental specifications for a suitable methodology. He found: 1. That the Draw-A-Man (DAP) experts were capable of ,identifying mental defectives far beyond chance expectations. 2. However the four remaining matched groups (schizophrenics, neurotoics, homosexuals and normals) were found not to be identifiable, even after the experts were permitted a second chance to make a correct diagnosis. 3. The expertness of the judges as predicted from the ranks they were accorded by their peers, was unrelated to their actual performances. He came to these conclusions by using the technique of chi square for statistical significance.

Koppitz, (1968) conducted a series of studies to determine the validity of the 30 developmental items on the DAP. She wanted to find out as to whether they met the outlined criteria i.e. the presence of developmental items on a HFD is primarily related to the child's age and maturation and that it is increased in frequency of occurrence as the child got older and not due to his artistic ability, school learning, or to the instructions given, or the drawing medium used. Koppitz (1965). In a study on 45 boys and 49 girls who were attending four kindergarten classes in an elementary school, the ages ranged from 5 years 6 months to 6 years 9 months. The HFD test was individually administered on each child by Koppitz in the last 3 weeks of the school year. Pencils were used. On the second last day of the school year the class teachers administered a modification of the HFD test to each of the class in groups. This time each child got a box of eight crayons. The instructions were "Now that you are going into the first grade, I would like to have a picture of you to keep. So make me a picture of what you look like. Do not look at anyone else's paper because no two boys and girls look alike."

No time limit was set. The children were asked to write their name and ages on the back of the paper. Koppitz checked all pencil drawings as a group, and all crayon drawings as a group, for the presence of 23 of the 30 developmental items.

1. Thirteen basic items on HFDs were found to be truly developmental indicators for young children and were not much influenced by the drawing medium used or the instructions given. 2. There was some difference on several other items, between the HFDs of boys and girls and between crayon and pencils drawings. Boys of 5 1/2 to 6 1/2 years, did better on the crayon than their pencil drawings. The drawing medium used seemed to have little effect on the HFDs of the girls.

Maloney, (1969) in a study of the validity of the DAP test as a measure of body image was not confirmed.

Maloney & Glasser, (1982) in an evaluation of the DAP Test's validity as a clinical tool, found that all scales, except sexual elaboration, both Handler's ratings and global ratings discriminated the mentally retarded subjects from every other group, except the psychiatric psychotic subjects.

Holzberg and Wexler, (1950) in a study compared 78 student nurses with 38 female schizophrenic patients, found transparencies in the drawings of 1/3 of the schizophrenic patients but only 10% of the normal group, which constitutes a significant difference. They found DAP transparency to he a valid indicator of schizophrenia.

Wagner and Schubert, (1955) developed a pictorial scale of DAP quality. They studied the figure drawings norms, reliability and validity indices for normal late adolescents the scale requires two drawings one of each sex. They are rated on a 7 point scale. These typical drawings were chosen from 1579 specimens collected from normal adolescents and college students. They found that it is useful as a predictor of marks in a teacher's college. The numerical score on the tests is a reasonably usful measure of academic aptitude for college work.

Harriman, (1959) in a review of the Wagner - Schubert scale of DAP, quality scale, finds it a rather important supplement to the DAP techniques. But states that where human welfare is involved the DAP quality scale is contraindicated.

DAP As a Quick Assessment of Intelligence

It has been widely established in the advanced countries that DAP has been helpful in the assessment of intelligence by a number of researches. Many studies and researches give emphasis to the fact that the DAP is a valid, reliable and standardized instrument for the assessment of intelligence and psychological characteristics. It has been used by various people as a quick assessment of intelligence where ever the sample is very large as the examiners cannot use a lengthy and time consuming test due to the physical and financial constraints. In the light of above difficultis even in the advanced countries DAP has been used in order to asess the IQ in researches of vital importance entailing large samples.

Charles; Baade and Paskewiez, (1981). In a study used the emotional and developmental aspects of human figure drawings (HFD) in predicting school readiness, by using the Koppitz developmental and emotional scores. The relationship of socio-economic status (SES) to HFD scores was also investigated. 141 Kindergarten children of three SES levels were tested. The SES factor was significantly correlated with both developmental and emotional scores.

In another study Dunleavy; Hansen; Sean and Baade, (1981). Used the human figure drawing (HFD) developmental score for early kindergarten identification of academically not ready children. 141 kindergarten children were tested. HFD scores of a group of children who later 'passed' the Metropolitan readiness test as a requirement for admission to first grade, were compared with HFD scores of a group of children who later 'failed' the Metropolitan readiness test. 42% of the non ready and 90% of the ready as defined by the Metropolitan readiness test were correctly identified. An overall hit rate of 78% was obtained on the experimental subjects. It was found that the HFD test is useful for early identification of academically non ready kindergarten children.

Goldman, (1981). In a study tried to validate and expand Goldman and Warren's earlier work on the development of a rational scale in the use of the Human Figure Drawing (HFD) as a kindergarten screening measure. The HFD test was administered to 120 kindergarten children from diverse socio-economic backgrounds. The following results were detailed.

1. An interchangeable number of body part omissions together, rather than any one item,

predict high emotional risk.

2. Structural and content characteristics do not contribute significantly to the development of a kindergarten screening measure.

3. Correlational analysis corroborated the earlier findings that body part omissions are the most predictive items of emotional high risk.

Burt, (1921). In a study found that in most instances it was possible to differentiate between the drawings of normal and backward children by lack of coherence alone.

Strahl, (1978). In a review of literature discusses the development of childrens drawings of the human figure and the use of the developmental progression to assess intelligence and personality. Four stages in such drawings are described:

1. Disordered scribbling (2-3 years)
2. Controlled scribbling (3-4 years)
3. Preschematic drawings (4-7 years)
4. Schematic drawings (7 to 9 years)

The HFD is based on these stages, it distinguishes between slow and normal learners, and correlates with the California Test of Mental Maturity and the Metropolitan Readiness Test. Research also indicates the drawings of the HFD can be used to differentiate normal and disturbed children.

Goodenough; (1926). Constructed the first scale for measuring intelligence using the drawings by children of the human figure, depending primarily upon intellectual development. The double criterion of chronological age and school grade was used as a basis of establishing norms. Nearly 4000 drawings from children in kindergarten and first four grades of public schools were obtained. After five revisions the present scale consists children, ages 4 to 10 years. The scale does not measure mental age above 13. Points derived on the drawings are transformed into age norms i.e. the approximate mental age. To obtain the IQ this mental age is divided by chronological age and multiplied by 100. Her findings were:

1. That the scores earned were not influenced by ordinary school instruction in drawing.
2. The test was useful in the testing of foreign and deaf children.

3. Some qualitative differences were found between the drawings made by boys and girls.

4. Combination of primitive and mature elements in a drawing signified psychopathic tendencies. Motor co-ordination in this group was below average also this group had a large proportion of children that drew opposite sex figures.

The Goodenough Draw-A-Man test as a measure of intellectual maturity was revised and extended by Harris, (1963). The following findings were found: 1. Re-administration of the test to groups of kindergarten children on consecutive days revealed no significant difference in performance on different days. 2. Examiner effect was found to be negligible. 3.The effect of art training in school was found to be negligible. 4. For kindergarten children the Draw-A-Man test correlated higher with numerical aptitude and lower with perceptual speed and accuracy than it did for fourth grade children. 5. For the fourth grade children the Draw-A-Man test correlated highest with tests of reasoning, spatial aptitude and perceptual accuracy. Motor coordination played a negligible role in the test for them.

Koppitz, (1963) attempted a comprehensive study of the Human Figure Drawings (HFD) of children. In a systematic investigation of HFDs of children ages 5 to 12 years she studied the developmental and projective aspects of the test. Koppitz evolved a detailed scoring system for 30 developmental items which related primarily to the children's age and level of maturation. Some of the items were derived from the Harris, Goodenough scale and another detailed scoring system which related primarily to children's attitudes and concerns, the 30 emotional indicators, some items were derived from the work of Machover and Hammer. The normative study was conducted on 1856 public school children ages 5 through 12 years representing 86 entire classes, kindergarten through sixth grade in ten different elementary schools, they included children from three socio-economic levels. The results showed beyond doubt that the developmental items are related to age and maturation, and that their frequency of occurance increases steadily at successive age levels until a maximum occurrence is reached. The results of 30 developmental items are presented in terms of percentage of children who revealed each item on their HFDs at each successive age level from 5 through 12 years. The percentages are divided Expected items, Common items, Not Unusual items, and Exceptional items.

1. The frequency percentages of all Expected items which are present 86% to 100% of all HFDs at a given age level. These are present on the HFDs of almost all normal children.

They are the basic minimum items which can be expected on figure drawings of children of a given age. The absence is considered significant. This indicates immaturity, retardation or a presence of regression due to emotional problems.

2. Frequency of Common items is 51% to 85% of the HFDs. They are present on more than half of the drawings at a given age level not often enough to be considered absolutely essential.

3. All scoring items found on 16% to 50% of HFDs are labeled Not Usual.

4. Exceptional items are all those items shown on 15% or less of the HFDs. These are significant because they are unusual and are only found on the HFDs of children with above average mental maturity.

The number of Expected items increases steadily and the number of Exceptional items decreases from year to year until age 10. This finding is in agreement with Goodenough's results.

Koppitz, (1963) further suggested that the combination of the Human Figure Drawing Test and Bender Gestalt Test provides a quick and efficient group screening method. The HFD is able to reveal information about the child's mental ability and emotional adjustment. The Bender Gestalt measures the child's maturity in Visual-Motor perception and reflects their inner control and organization. Koppitz, 1962 (a). Both these aspects effect his functioning in school to a considerable extent. Koppitz, (1970(a), 1972, 1973(a), 1975) showed that it only takes 12 to 15 minutes per child in using the HFD test, Bender Gestalt test and the Visual Aural Digit Span test (VADS) as a screening battery for school beginners. These three tests are easy and quick to administer, the results offer a wide range of information concerning the child's functioning e.g. on the HFD mental ability and emotional problems. In yet another study Koppitz, (1967). Used a simple scoring system on the HFDs of 73 boys and girls ages 5 years 11 months to 12 years 11 months, which was used to assess a child's general level of mental maturity even though no definite IQ score was given. Only the Expected and Exceptional items on a HFD were scored for each age level. The list of items was of the normative population at each age level. Each Expected and Exceptional item was given the value of 1. Omission of an expected item was given the value of - 1, the presence of an Exceptional item was given the value of +1. In order to avoid negative scores +5 was

added to the sum of all positive and negative scoring points a child received on his HFD. The WISC or the Stanford Binet intelligence test had been administered by Koppitz or other qualified psychologists within a year of the HFD test. The subjects were seen by Koppitz for psychological evaluation at the child guidance clinic or school. The subjects showed wide range of behaviour and learning problems. But no medical or brain injury or gross physical disability was diagnosed. The WISC had been administered to 260 and Stanford Binet to 87 children. The scores from the HFDs were correlated with the WISC full scale IQ scores and the Stanford Binet IQ scores. The statistical significance was determined by means of T tests. The findings were that nine correlations were significant at the .01 level. The results showed that the expected and exceptional items on the HFDs can be used with confidence as a quick and easy method of assessing the level of mental maturity of groups of children. This method translates HFD scores into broad categories of intellectual functioning rather than specific IQ scores. It is considered that the broad categories of mental ability are sufficient for differentiating between children who are mentally retarded and those who have average or above average ability. Some exceptions were found between the scores of the HFD and IQ tests. These subjects were examined more closely and it was found:

1. When the IQ scores were average or above average on the IQ tests and below average on the HFD test, the children suffered from serious emotional and personality problems. The HFD revealed the child's actual functioning level and the IQ test scores his intellectual potential.
2. When the HFD score exceeded the IQ suffered from learning difficulties due to cultural or social deprivation, or as a result of problems of hearing, auditory perception or poor memory.

Bakara, (1962) studied the social class differences in the performance of Nigerian children on the Draw-A-Man test and found that mean scores for IQ increased consistently and significantly with the children's socio-economic level.

Ames, (1945) found a sequential order in which the various parts of a person appear in the drawings of children of average or superior intelligence.

DAP as a Predictor of Scholastic Achievement:

DAP has been a very useful instrument in predicting the academic achievement in children. Therefore it can be utilized as a quick screening instrument in Pakistan for higher education and vocational guidance, especially when elementary education has been made compulsory very recently, and there is a plan to give compulsory education upto high school in the near future. Therefore the scientific investigations of the channalizations of talent is absolutely imperative for the growth and development of the country.

The DAP has been used in a number of studies to predict school achievements and progress.

Burt, (1921). Found that it was possible in most instances to differentiate between drawings of normal and backward children by the lack of coherence alone.

Koppitz (1962a) and Koppitz, Sullivan, Blyth and Sheltan, (1959) and Clack, (1962). In studies claim that by supplementing the Bender Gestalt Test with the Human Figure Drawing Test (HFD) which reflects the child's emotional adjustment and his intellectual ability, both of which effect his functioning in school to a considerable extent, greater prediction is possible. Koppitz, (1968). In a study demonstrated that the Bender Gestalt Test and the Human Figure Drawing Test (HFD) together can be used to predict first grade achievement. Both tests were given at the beginning of the school year. At the end of the school year the Metropolitan Achievement Test was administered. The study was conducted on 128 first grade pupils from 5 different schools. (5 years 9 months to 6 years 11 months). The developmental Bender Gestalt Test was divided into 5 categories - Good, High Average, Low Average, Poor and Very Poor. HFDs were scored for 8 Exceptional items that are associated with above average mental ability for 6 year olds.

Koppitz, (1968). And for 6 Emotional indicators - slanting figure, omission of mouth, omission of body, omission of arms, monster or grotesque figure, three or more figures. These tend to be related to poor school achievement. Koppitz, (1968). The children were then grouped according to their placement on the Metropolitan Achievement Test. Most children with both good Bender Test scores and Exceptional items on the HFD were above average students. The presence of an emotional indicator on the HFD tended to be related to average

or below average achievement. Half of those with poor or very poor achievement (in group low average on the Bender Test) had emotional problems. They had more emotional indicators on HFD. Predictive value of Bender Test scores when screening school beginners for potential learning problems and for outstanding achievements, is enhanced when the 8 exceptional items and the 6 emotional indicators on HFD are added. Koppitz (1971, 1973b) added that verbal ability, sequencing and recall are also extremely important for good school achievement and need to be taken into consideration. An effective screening battery for school beginners should also include some form of verbal and Memory Test. Koppitz, 1968 in another study used the HFD test, the Bender Gestalt and the WISC information test. All the three tests were administered to 133 second grade school children at the beginning of the school year. Eight months later the Metropolitan Achievement Test was administered. The additional use of the WISC information test resulted in further marked improvement in the prediction of school achievement.

1. Subjects with good intelligence - Exceptional items on HFD and good memory for facts - high information, seem to be able to compensate for some immaturity or lack of visual motor perception.

2. Most of the subjects with high average or good Bender Test Scores and with average or better than average WISC information scores (Wt: score 10 or more) and or an exceptional item on the HFD were average or above average students.

3. Subjects with low average Bender Test Scores but with good information and or HFD performance were also good achievers.

If subject was below average on 2 of the 3 tests, usually he was an average student. Subject with poor Bender Gestalt Test scores and No Exceptional items on HFD or good scores on WISC Information, while showing signs of emotional problems i.e. Emotional indicators on HFD did poorly in school

Silvern; Brooks; Griffin & Lee. (1981). In a study conducted on 75 fourth graders who were required to draw pictures of themselves in separate reading and math. contexts. It was found that the height of drawings of self were significantly different for high and low achievers. The context and size of self-portrait in children drawings are discussed as potential predictors of academic achievement. Silvern & Brooks. (1981). In another study of 29 low achievers in reading and mathematics were asked to draw pictures. It was suggested that low

achievers self portraits may be related to frustration and symbolic acting out. The subjects below the median scores i.e. below 80, drew pictures that were taller than pictures drawn by subjects above the median scores. The authors suggested that frustration must be considered when using height of drawing to analyse low achievers self portraits.

DAP as a Psychodiagnostic Tool:

The DAP is a vehicle by which a child or person unconsciously "projects" his feelings, attitudes, interpersonal attitudes and concerns. The fact that the DAP is a projective test makes it a useful and dependable tool of personality assessment. Hence this test has all the benefits of a diagnostic test for psychopathology alongwith being a tool for assessing I.Q. and achievement.

Sundberg, (1959) in a survey to determine which tests were mostly used by the psychologists in their clinical work found that DAP ranked number two after Rorschach among all the 62 projective and objective diagnostic tests reported in the survey.

Many studies have been conducted using the DAP in the diagnosis of neuroses, psychoses, symptoms of anxiety and depression. Various indicators on the DAP have been used to diagnose schizophrenia as well by experts in the field of Clinical Psychology.

Arieti, (1974) had observed that schizophrenics show a bizarrnes and disorganization in their drawings. The regressed patients draw fragmented drawings as they cannot draw whole figures due to their ailment. In another study Bender and Helme, (1953) found that heavy outining, abnormal detailing and confusion in spatial orientation characterized the drawings of two thirds of the schizophrenic children whose diagnoses was confirmed on follow-up. These features significantly differentiated them from their matched non-psychotic controls. Deslauriers and Halpern, (1947) report that drawings of the human figure of children with psychoses often are distorted with bizarre elaboration of the peripheral details for example hair, extremities, fingers etc.

Baldwin, (1964) found an overemphasis on head in relation to body size to differentiate the HFD drawings of schizophrenic from normal women.

Dileo, (1973) has used the human figure drawing effectively in many researches he

came to various conclusions: 1. Drawings by well-adjusted children are 'strikingly similar. And those drawings done by the emotionally disturbed are 'strikingly different' from the well adjusted children's drawings and from each other, 'as each child is disturbed in his own special way' 2. He believes that movement has an essential role in the development of the body image. This is evident in those children whose body movements are impaired by cerebral plasy or other disabling affliction. The human figures drawn by these children reveal a 'defective, imature, and often distorted concept'. 3. DiLeo also found it most helpful to supplement DAP with drawing items as uncovering perceptomotor difficulty. He used Bender's Visual Motor Gestalt Test; in the diagnosis of cerebral dysfunction for children above age ten. For younger children DiLeo used the technique of asking the children to copy simple geometic forms, a cross, square, divided rectangle, triangle for perceptomotor assessment. 4. As a projective test DiLeo enumerates a number of signs on the DAP that can be indicators of: Feelings and personality traits. He states that omission of body parts and exaggeration depicts abnormalities in personality traits. This test also is an indicator for security and insecurity for example insequre children can to draw small figures. Maladjusted children tend to omit arms; hidden hands are considered as expression of guilt. This test is also used by him as an indicator of aggressive tendencies, which are shown by the exaggerated size of hands. In case the exaggerated size of hands is portrayed in the self HFD it indicates aggression toward others. But when the same drawing of exaggerated hands is portrayed in the HFD of parents it indicates aggression incurred by the patient from the environment. It is also concluded that an explicit manifestation of genitals in the HFD is an indicator of behaviour disorders, aggression and phobias.

Emotional problems are indicated when on the HFD there is a scatter of the body parts. Emotional problems are also indicated when the individual makes grotesque bizarre figures, there is scribbling over the drawn figure, and he makes rigid robot like figures. Excessive shading, drawings without people, dark clouds and darkened sun drawn by the individual are also indicators of emotional problems.

DiLeo also included the drawings of the family drawn by the patient which he claims can be an aid to assess the emotional life of the child. This is especially true for the children who are going through the latency period i.e. younger children ranging from from age 6 to 10 years who are not willing or able to give verbal expression to their emotional conflict, thus it becomes imperitive to ask them to draw family figures. The indicators of the family relationships for example, omission of a family member, omission of self, relative position,

similarity, relative size, role in the family interaction and isolation, again becomes an aid in the interpretation of the child's psychopathology.

DiLeo makes additional claims that learning disorders can also be diagnosed i.e. Dyslexia. People who suffer from learning disorders display immature body image on their HFDs. DiLeo feels that it is highly imperative to detect the reading and writing difficulties in early stages in order to get timely remedial help for the child. This early detection can prove an asset in his treatment.

The HFD also is helpful in the diagnosis of mental retardation according to DiLeo he claims that disorganized, poorly integrated and drawings depicting immature and mature items in the same HFD can be included as signs of mental retardation perseverence according to him is a sign of minimal brain damage.

Fish and Ritvo, (1961) also came to the conclusion that DAP drawings showing unusual fluctation in the level of performance, a juxta position of advanced and retarded performance indicates the presence of psychotic behaviour in children. DAP drawings with bizarre exaggeration and distortion of the orifices and periphery i.e. fingers, toes, hair, as well as transparencies, or a mechanical robot like appearance are also indicators of psychotic behaviour.

Goldfarb, (1961) concluded in his study that apart from other discriminations of psychopathology human figure drawings of schizophrenic children were significantly poorer than normals.

Goodenough, (1926) stated tha qualitative differences in the drawings (Draw-A-Man) may indicate psychopathology. These difference were roughly classified into the following three types:

1. Verbalist - type drawings containing a large amount of detail but comparitively few ideas.

2. Drawing showing evidence of flight of ideas as when hair is shown only on one side of the head or when one ear but not the other has been drawn.

3. Individual response type drawings containing features which are in explicable to anyone except the child himself.

4. Uneven mental development as indicated by unusual combinations of primitive and mature characteristics in a single drawing. In a study of the Draw-A-Man Test (DAM) of 450 children of one school, only 9 drawings i.e. 2% of the total, were found to have one or more of the above characteristics.

Goodenough made a list of 50 adjectives and phrases describing the personality traits these included 25 adjectives indicating psychopathic tendencies and 25 adjectives indicating normal attributes. The two lists of adjectives were distributed irregularly throughout the entire integrated list. Copies of the list were sent to teachers of each of the 9 children. Each of the 9 children were paired with another child from the same class, of the same sex and if possible of the same age. The drawings of these children were free from the psychopathic characteristics. The teachers were required to underline each word which in their opinion seemed to apply to the child. The teachers did not know the basis of selection of the words. The average of undesirable adjectives underlined for the selected group was 12.3 and for the control group was 11.8. This difference is of no statistical significance, maybe because there were only 9 cases in each group.

Lombardi, (1979) in a study evaluated the eye and ear emphasis on the Draw-A-Person Test (DAP) as an indicator of paranoid schizophrenia, and to what extent the DAP can discriminate paranoid schizophrenics from normals. The DAP can discriminate paranoid schizophrenics from normals. The DAP was administered on the following two groups. 60 female patients diagnosed as paranoid schizophrenics served as the experimental group. 30 females psychiatric aides served as the control group. Three clinical interns and two Ph.D. clinical psychologists were trained to rate the drawings in terms of the presence or absence of 5 eye signs and 5 ear signs. One ear sign approached significance. It was found that the DAP is not a valid indicator of paranoid schizophrenia.

Edicott, Jortner & Abramoof, (1969) found in a study of measures of suspiciousness, eye and ear emphasis, were not discriminatory for degrees of suspiciousness.

Millet, Karkous, Jorde, and Sabathier. (1978). In a study, the drawings of six adult hospitalized psychiatric patients were compared to six normal school children aged 9-11

years. The subjects were asked to draw (a) a person of the same sex. (b) a person of the opposite sex. (c) the interior of the body. The drawings of 'inside the body' made by psychiatric patients was a useful and convenient way to understand better the fantasy productions of disturbed individuals.

Schwartz and Johson, (1985.) discuss the assessment on DAPs of the various significance for exaple that eye detail signifies paranoid symptoms. A number of significances on the DAPs are also enumerated by them.

Weiner, (1966) puts forth that the normal person who has a clear conception of his body as a 'unitary structure' and has a definite conviction of its boundaries and external reality will draw 'figure drawings with closed, continuous contours'. It was also pointed out by Weiner that several studies support Machover's hypothesis that subject's figure drawing will to some extent reflect the image he has of his own body". Therefore it follows that fragmented drawings with broken contours reflect indefinite ego boundaries. This accounts for the disturbed body perception and broken contours on DAP figures and suggest a Schizophrenic impairment.

Weiner emphasized two most reliable DAP indicators of distorted body image that satisfy the criteria of psychopathology they are undifferentiated sexuality and physical omission. Bizarre, composite form of incongruous combination for example a dog's head and man's body in figure drawings suggest disoriented thinking as in Schizophrenia. The most pathological indications of schizophrenia are when DAP drawings have internal organs added. Nudity with 'unusual or excessive emphasis on sexual organs' is especially suggestive of failure of repressive defenses and usually indicates Schizophrenia. Paranoids may be distinguished by figure drawings that stress heavy solid reinforced body contours and also unusual eye emphasis.

Fisher & Cleveland, (1958) devised a scoring scheme for two Rorschach variables, Barrier and Penetration, which assesses the definiteness of the body image boundary. They found that vague, fluid Rorschach percepts, low Barrier and high Penetration scores, and broken DAP contours are the major psychodiagnostic indicators of indefinite ego boundaries. Constricted paranoid seeks to insulate himself against environmental affront by erecting barriers between himself and others. On figure drawings to stress heavy, solid, reinforced body contours. Megalomanic paranoids on the other hand, protect themselves by an inflated

conviction of their potency and infallibility. On DAP they render large grandiose, muscular figures and such powerful authoritarian persons as kings, queens, mythicals gods, soldiers and atheletes.

Hozier, (1959) in a study on the breakdown of the sense of reality noted transparencies in the HFDs of 20 or 25 hospitalized schizophrenics but only in 6 of 25 HFDs of normal controls, which is a significant finding he also found significant differences in the schizophrenic patients from the normal subjects in a failure to indicate major body parts e.g. hair, shoulders, arms, hands, legs, feet. Each of these omissions are significantly different in the schizophrenic patients from the normals. He also found nude figure drawing in 40% of schizophrenics and only 4% of the normal subjects.

Modell, (1951) administered repetitive DAPs to a group of seriously disturbed schizophrenics patients over a one year period, found not only that the drawings of the group were initially characterized by poor differentiation between male and female figures but also that during the course of the year the drawings of those patients who were considered recovering took on increasingly appropriate and differential sexual characteristics. Those of the unimproved patients did not.

Reznikoff and Nicholas, (1958) in a study examined the figure drawings of a sample of hospitilized patients independently rated for degree of paranoid behaviour regardless of diagnosis. They found subjects with prominent paranoid tendencies significantly more often than relatively non paranoid subjects to produce drawings with heavy overall line emphasis and a particular reinforcement of the outer boundaries of the figures.

Zuker, (1958) developed 5 'facets' for scoring the Rorschach, Mosaic and DAP that incorporate a variety of deviant test behaviours into an ego-boundary frame of reference. Particularly relevant to the evaluation of indefinite ego boundaries of Zuker's facet of fluid contours, which is defined by vague fluid Rorschach percepts and broken DAP contours.

Schilder, (1935) documented frequent clinical observation of disturbed body perceptions in schizophrenic persons. Reality sense is based on a person's perception of his body and its disturbance is reflected in indefinite ego boundaries and distorted body imagery.

Sims, Dana. and Bolton, (1983). Assessed the validity of the DAP test as an Anxiety

measure in the past two decades, and found:

1. Experimental studies have provided consistent support for some indices, including omission, distortion and detail loss. While correlated research has yielded mixed findings.

2. The majority of previous validation studies used Measure of Anxiety scale (MAS) as the criterion measure of anxiety. Cattel (1972) suggested that MAS confounds anxiety with neuroticism.

3. Research on DAP anxiety indices should routinely control for intelligence and for drawing quality, except when it is an anxiety indicent.

4. Qualitatively refined measures of shading, erasure and reinforcement may provide indicents of a defensive style.

5. There are no firm conclusions regarding the various DAP anxiety indices when all evidence is considered.

6. The most promising system (Handler) requires further validation especially against independent psychiatric diagnosis and self report criteria.

7. The construct of anxiety has been closely used in interpretive guides and in validation research, suggesting the necessisity for a more careful attention to adequate definition.

8. They suggest that future research should examine alternate hypotheses for anxiety scoring components, use of more clinical judgement in scoring protocols, and they emphasize careful construct validation procedures.

Gordon, Lefkowitz and Tesiny, (1981) in a study assessed the usefulness of employing the DAP for investigating depressive symptoms in 166 boys and 182 girls whose combined mean age was 10.53 years. Structural characteristics of the drawings that were obtained were. (a) Size of figure drawn (b) Vertical placement of figure on a page (c) Intensity of lines drawn

Depression was assessed by three independent methods. (a) peer nomination (b) Self-ratings. (c) Teacher assessments.

The flollowing results were obtained:

1. There was no significant relationship between intensity of line, vertical placement and depression.

2. A significant relationship was obtained between size of figure drawn and teacher rated depression.

These findings are consistent with previous research questioning the validity of utilizing structural characteristics of the HFD for assessment of depression in children.

DAP has been widely used to assess various clinical variables by psychologists.

Minear, (1951) uses the DAP and contrasts the drawings of alcoholics with the drawings of normals and psychoneurotics. Each drawing is scored on a 5 point scale as suggested by Machover (1950).

The DAP has also been used in the diagnosis and in the selection of the type of psychotherapy. In assessing the prognosis and outcome of psychotherapy.

Fox, Ruth, (1952) states that projective tests may be of definite help in diagnosis and prognosis. She also emphasis the importance of a clinical evaluation before deciding what type of psychotherapy is needed. At the Alcoholics Treatment Centre in New York City the tests used routinely for evaluation are Rorschach, Bellevue Wechsler, Word Association and Figure Drawing Test. Fox states that more attention is given to Figure Drawing Test, as they find it simple to administer, since it requires very little time, is difficult to falsify and in its application there is no barrier to education or language.

Warden, (1985) presents a case study of an 11 year old body recovering from viral encephalitis to illustrate the diagnostic and therapeutic value of HFDs. The DAP and the KFD tests were administered to the subject pre and post treatment, and compared later. The utility of conjoint use of the DAP and the KFD as a therapeutic intervention is emphasized. Kissen, (1981) presents a method that uses the more reliable global characteristics of HFD and enhances the psychodynamic potential of the HFD Test. He adopted the structural interview

which involved asking the patient to examine his/her own test productions in a psychologically minded manner and to highlight the significant psysiognomic features of his/her own test productions in a psychologically minded manner and to highlight the significant psysiognomic features of his/her drawing. From the patient's verbal associations the examiner develops inferences about the patients object representations and self representations and the specific defence mechanisms utilized by the patient to cope with these object relations projections. This procedure is relevant and compatible with using psychological tests to explore therapeutic parameters. He devised a specific format for administration of the HFD Test and for conducting a formal inquiry.

The DAP has also been used to assess self concept and self esteem. Fu, (1981) hypothesized that low self concept in 1599 girls aged 9-11 years would be associated with omission of more body parts in figure drawings. Each subject drew a picture of herself and responded to a version of the self concept self report scale. The data did not offer conclusive support for the hypothesis that self-drawings are indicative of self concepts.

Dela He and Hendricksen, (1982.) administered the HFD and the Rosenberg Self-Esteem scale (RSES) to 76 high school seniors, 38 female, ages 16-18 years. Only those students were included who scored at or above grade level on a standardized achievement test of reading skills. They found that:

1. There was a positive relationship between width of HFD and self-esteem for male adolescents. Also a possible tendency among male subjects to associate size with strength.

2. For females as a group there was no relationship between self esteem and many measure of HFD size.

Ottenbacher, (1981) in a study explored the relationship of self drawings (DAP) to scores on a measure of self concept (Piers- Harris Self Concept Scale). The subject were 31 mentally retarded 11-22 year old individuals. Five variables hypothesized to be related to self concept were used. (a) Size of self drawing. (b) Age (c) Sex (d) I.Q. The analysis of data revealed that four of the five variables i.e. sex, size overall DAP scores and age shared significant variance with self concept scores. It is suggested that these variables can give additional information in evaluating the self concept of the mentally retarded.

Bender (1940) noted a descrepancy between Goodenough mental age and Stanford Binet score, in the drawings of a man by the neurologically impaired, and attributed the fact to a defective concept of the body image. The drawings were substantially inferior to what is expected of an unimpaired child of comparable age and intelligence. Bender saw the implication of the findings not only as an aid to the diagnosis of Brain Damage but also as suggesting therapy that could help the child to develop and adequate body image.

Bermen & Laffal, (1953) in a study rated as endomorphic, mesomorphic or ectomorphic the body types of 39 Male subjects and their male figure drawings. They found a significant positive correlation .35 between the body types of the subjects and the body types of their drawings. Proving Machover's hypothesis that subjects HFD to some extent reflects the subjects image of his own body.

Craddick, (1963) in a study asked fifth grade children and college sophomores, first to draw a person and then to draw a potrait of themselves. In both samples the two drawings were significantly related in size, placement on the page, and sex. Craddick interpreted his data as supporting Machover's body image hypothesis.

Feldman and Hunt, (1958) asked art instructors to rate body parts on the HFDs for the ease or difficulty of learning to draw them. The study facilitated the determination of DAP features of sexual undifferentiation least dependent on drawing talent and consequently most likely to indicate disturbed imagery. They rated as relatively easily to draw those body parts relating to the general contour of the body, including breasts, chest, waist, hips, and body build. Therefore the failure to differentiate the general body contours of male and female figures is the major DAP index of undifferentiated sexuality that is relatively independent of drawing ability. Such failure is thus likely to reflect disturbed body imagery. The greater the tendency of drawings to be shapeless, or more male figures take on soft rounded contours, and female figures sharp and angular, the greater the degree of sexual confusion of reality sense.

Schilder, (1950) has noted that the concept of the body image parallels the child's sensori-motor development. Consequently sensori-motor impairment will adversely affect the concept of body image and in turn its graphic representation.

Kotlov and Goodman, (1953) in a study compared obese women with women of ideal weight and noted that most of the DAP differences between them occured on their drawings

of the female and not the male figure. Figure drawing as representive of body image in accordance with Machover's hypothesis that a subject's figure drawing performance will to some extent reflect the image he has of his own body.

Rieden and Koff, (1981) studied the psychological impact of menarche; Integrative versus desruptive changes. Ninety four 7th and 8th grade girls, 49 premenacheal and 45 post menarc heal drew male and female human figure drawings (HFD). The drawings were scored for (a) Sexual differentiation (b) Sexual indentification (c) Anxiety related to agression, hostility; and insecurity lability. The findings indicated that:

1. The postmenarche subject's drawings showed greater sexual differentiation and clearer sexual identification than premenarache subjects of the same age.

2. Post menarche subjects did not differ from premenarche subjects in level or class of anxiety.

3. The results provide evidence for viewing the impact of menarche as primarily integrative rather than disruptive.

Schori and Thames, (1978) studied the precursors of premature disease and death using the Rorschach (ROR) and Figure Drawing factors (FD) 1337 former medical students in the precursors study which began in 1946 who were affected with any of 6 disorders were compared with their matched but healthy control counterparts on 4 ROR and 10 FD factors. Similar comparisons were made for the psychological i.e. suicide, mental illness, emotional disturbance; and somatic i.e. essential hypertension, coronary occlusion and malingnent tumor.

The findings provide evidence of the existence of psychological precursors of premature disease and death. The ROR Human movement factor was the main variable differentating the total disordered group from the matched control group. Suggesting that the affected subjects as a group, had a more active fantasy lives and might be considered to be more sensitive or vulnerable.

Shaffer, Pearson, Mead and Thomas, (1986) studied a possible relationship between figure drawing data collected in medical school and later health status among physicians. The

subjects were 581 white males while they were in medical school. The figure drawings were scored using two different scales:

1. Sophistication of body concept - that measures the overall quality of the drawings.

2. Conventiality - deviancy of the drawings as determined by the relative frequency with which 42 different characteristics occured in the total sample of drawings.

The figure drawings were obtained from 1951 to 1964. The health status of the subjects was followed annually by mail. As of 1984 the subjects were classified into one of eleven health outcome (disease) categories for example suicide, mental illness, hypertension, coronary occulusion plus a healthy category. Significant differences among groups were noted with respect to conventiality deviancy but not with respect to sophistication of body concept. The results suggest that information contained in figure drawings may be related to subsequent health status.

Fleming, et al. (1982). The DAP test and the Animal and Opposite-Animal Drawing Technique (AOADT) were administered on 9 biological males and 10 biological females, (mean age 31.9 year) seeking sex reassignment surgery. The results show that:

1. Those subjects who later underwent surgery drew first pictures opposite their biological sex singificantly more often than subjects who did not enter surgery.

2. The DAP will only sucessfully differentiate between male to female transsexuals.

3. The findings support the use of the AOADT in conjuction with the DAP Test in the prediction of successful candidates for transsexual surgery.

Abel, (1953) examined the drawings of facially disfigured persons seeking plastic surgery, he observed an association between the degree of a subject's disfigurement and the likelihood of its being reflected in his figure drawing.

Levy, (1950) includes in a review article "figure drawings as a projective test" figure drawings by a below - the - knee amputee in which the legs are omitted.

Schimidt and McGowan, (1959) were able to discriminate figure drawings by persons with visible physical disabilities from those by controlled subjects.

Giedt, and Lehner, (1951) in a study assignment of ages on the DAP test by male psychoneurotic patients, observed significant relationship between the subject's ages and the ages they ascribed to their figure drawings.

Lehner and Silver, (1948) observed a significant relationship between the subject's ages and the ages ascribed to their figure drawings.

Gilbert and Hall, (1962) in a study to evaluate changes with age and HFD, used a 71 point qualitative scale to evaluate figure drawings of 210 schisophrenic and 400 normal persons aged 10 to 91 years. They found that with advancing age there is an increasing tendency for drawings to become absurd, incongrous, fragmented and primitive. Schizophrenics were significantly inferior to normals at all ages sampled. But there was a marked similarity between the drawing disturbances found in the young and middle aged schizophrenic and in the normal elderly persons.

DAP has been used in the diagnosis of Mental Retardation and Brain Damaged (BD).

Duda Sova, (1981) in a study analysed HFD drawings of 108 Male and 106 Female mentally retarded subjects. It was found that the 'cephalopod' persisted for a long time, drawings in a side view seldom occurred, depictions of movement were also rare.

Bogucka, (1978) compared the performance of 30 brain damaged (BD) children ages 4-6 years and 30 normal children, on a Test of body knowledge. The BDs had difficulty in: (a) Copying drawings of the human figure. (b) Identifying parts of the human body. (c) Describing functions of body parts. (d) They also took much longer than the normal subjects to complete the test.

In another study Brink and Grundlingh. (1976) compared the Rorschach responses and the Human Figure Drawings (HFD) of 21 Down's syndrome subjects whose mean mental age was 51.54 months and 21 other mentally retarded subjects mean age 54.36 months. The non-Downs syndrome group performed significantly better than the Down's syndrome group.

Raskin and Pitcher Baker, (1978.) in a study compared Kinetic family drawings (KFDs) from fifty KG and first grade children with perceptual motor delays with those done by fifty children of the same age without such delays. Each child was asked to make a drawing of his family, including himself, with everyone doing something. Drawings were scored on criteria developed by RC Burns and S.H. Kaufman (1970, 1972) and by E.M. Koppitz (1968). The criteria were: (a) Isolation rejection (b) Body concerns. (c) Sibling rivalry. It was found that: 1. The KFDs of subjects with delayed development showed more of these indicators than did the control groups KFDs.

2. Isolation, rejection and body concerns differentiated the children who showed delayed development from those who did not.

3. Rivalry was not a significant discriminator and

4. It suggested that KFDs may provide important clinical information for the diagnosis and treatment of the problems of young children.

Bachare, Zaba & Reskin, (1977) studied two groups of 35 children each, matched for age and sex. The children were asked to draw a whole picture of themselves. The drawings were scored for the emotional indicators according to the Koppitz method (1967). The children in the experimental group who were having difficulties in school adjustment presented more emotional indicators than those of the control group. Moreover, excessive attention to eyes in this group apppeared to indicate the children's awareness of their own learning problems.

Wagner, (1980) in another study of Human figure drawings of learning disabled (LD) children, did yield estimates of intelligence and emotional adjustment or personality. A cautious inference about their self image and some speculation as to the causative factors in their learning disability was found. The descriptive categories also depicted developmental immaturity, aggression, withdrawal tendencies, organicity, grotesqueness, bizarrness.

Phillips, and Phillips. (1977) in an investigation of twenty 17-42 year old psychiatric inpatients and twenty 18-44 year old college students; similarity between complexity on Role Construct repertory technique and articulation on Draw-A-Person Test (DAP) was studied.

It was concluded that:

1. On the underlying unity of articulation of DAP and personal construct complexity, moderate correlations were found, but no correlation was found between the psychiatric inpatients and the college students.

2. For inpatients, greater construct complexity was associated with less sophisticated drawings.

3. For nonpatients, greater construct complexity was correlated with more sophisticated human figure.

Mean and range differences in complexity and articulation scores between the two groups suggest that the higher complexity scores of the patient group indicated a loss of construct coordination, rather than greater articulation and organization of self and interpersonal experience.

Bruch, (1957). 1. Found that as a group obese children performed significantly low on the Draw-A-Person (DAP). 2. On reevaluating the early findings he found that poor performance on the DAP are signals of potential maladjustment. Figure drawings appear to be closely relaed to the child's self-concept. And a severe disturbances in body image is predictive of a poor outcome.

Daum, (1983) assessed the Emotional indicators in drawings of 200 aggressive or withdrawn male delinquents who were compared with both undifferentiated delinquents and were compared with 100 non dilinquents. It was found that:

1. Six of the sixteen features differentiated among the 4 groups tested.

2. Two of the twelve proposed indicators of aggression attained significance.

3. Three proposed indicators of withdrawal were significant, either across 4 groups or in 2 group comparisons.

4. It was found that when the features are considered collectively there is more predictive

power.

But they advised caution that the DAP emotional indicators should be used together with other tests for psychodiagnosis.

Lievens, (1977) an attempt was made to study extraversion and intraversion in projective techniques. The Rorschach and Draw-A-Man tests were adminstered to thirty 15 year old and thirty 18 year old Belgian students. The differential diagnosis is crucial in interpreting projective measures. No significant differences between the two groups of subjects were found. It was suggested that because both the Rorscahach and the Draw-A-Man Test are broad-band projective techniques the study of separate components of personality is not really appropriate. Also the characteristics of introversion and extraversion are not idential in content in these two tests.

Witken, (1954) found large and significant correlations between field independence and such aspects of figure drawings as the amount of realistic details. When subjects were clinically assessed largely by means of projective techniques the less differentiated proved to be significantly more passive in coping with their life situation, less insightful, and more afraid of their own impulses.

Svancarova, (1975) obtained drawings from 400 children, those four, six and eight years old drew a human figure, and those ten to twelve years old drew a human figure and a tree.

Partridge, (1902). In a study of the frequency with which children of different ages drew the various parts of the human figure, as arms, neck, feet etc. showed that 67% of five year olds and 93% of ten year olds drew arms.

DAP has been widely used to assess various clinical variables by psychologists.

McCarthy, (1944) in an investigation on 386 third and fourth grade school children found some evidence that IQ on the Draw a Man Test was influenced by the children's preceding classroom activity. One one occasion the children had been writing a composition on 'The Best Thing that Even Happened to me' and on the second occasion they had been writing on 'The Worst Thing that Even Happened to me'. On the second test the IQ averaged

4 to 5 points lower than the first test.

In another study Reichenberg, (1953) investigated the effect of immediately preceding experience on the performance on the Draw-A-Man Test. The children who had had a gratifying experience involving the successful solution of an interesting puzzle, followed by a reward of Toys and candy, showed more improvement in their test scores on the Draw-A-Man Test, than those who had undergone mental or less gratifying experiences.

Hovsepian; Slaymaker; Johson, (1980) studied 49 right handed and 25 left handed undergraduates in order to determine whether handedness was a determinant of left, right placement in the Human Figure Drawing. They were required to complete the Thorndike Dimensions of Temperament (DOT) Scale and to draw pictures of human figures. They found (a) the significant relation between personality variables in the DOT scale and drawing placement. (b) Left, right placement of the Human figure drawing did vary significantly as a function of handedness. (c) All subjects tended to place their drawings left of center. The right handed subjects were significantly were extreme in their placement than were the left handed subjects.

In a study Brown, (1979) investigated the sexual self-identification as reflected in children's drawings when asked to Draw a person. The subjects in the study were 170 girls and 196 boys aged 5 - 11 years. The results were that girls drew female figures 88% of the times and boys drew male figures 94% of the time.

Riordan and Koff, (1981) studied sexual ambiguity in children's Human Figure Drawings. The subjects were 461 5th to 9th grade students who drew a person and indicated the sex number i.e. 8% were unable to classify their drawings as to sex. The frequency of uncertainity did not vary with grade or sex of the subject.

Teglasi, (1980.) in a study administered the DAP and the Wellesley Role-Oreintation Scale to 150 female undergraduates. A follow up study was administered to 40 married females who were members of the National Organnization of Women (NOW) and a random sample of 80 married non members. Taglasi found that no NOW member had drawn a male while 26% of the non-members did. This significantly showed that the acceptance of traditional societal values i.e. female role and sex, a factor in determining the sex of the person drawn on the DAP.

In a study Scribner and Handler, (1987) investigated the relation between the interpreters personality and accuracy in interpretation of the Draw-A-Person. Sixty six undergraduates were administered that MMPI, the Interpersonal Checklist (ICL) and a figure drawing interpretation. The MMPI+ICL were scored using T, Leavy;s (1956, 1957) Interpersonal System. The investigators found that a (a) interpretive skill was found to be associated with affiliative interpersonal styles. (b) The lack of interpretive skill was associated with disaffiative interpersonal styles at 2 of the 3 levels examined.

In a study Ba[illegible]ra and Zaba, (1976.) studied the psychological effects of visual training. 35 children with academic problems and 35 children without academic problems, were asked to draw a picture of a whole person. The drawings of a person were scored according to the Koppitz Developmental Scoring System. The investigators found that the academically retarded children differed from the other group in emotional indicators and showed more visual problems. The academically retarded group received visual training for 4-6 months. In the post treatment drawings of a person the emotional indicators of both groups were similar.

Kinsbourne, Marcel and Lempart, (1980) examined the extent to which visual experience contributed to children's ability to represent the human figure. The 9 congenitally blind children aged 8 - 13 years, and 9 sighted children (controls) of similar ages, modelled the human figure using plasticene. It was found that the normal children performed more accurately than did the blind children with respect to (a) placement of body parts, and (b) the normal children significantly surpassed the blind children with respect to the proportion of body parts even when blind folded. The blind children did internalize a representation of the human body, but compared to that of the sighted children it was improverished and systematically distorted.

In a study Golomb and Barr - Grossman, (1978) investigated the representational development of the human figure in familial retardates. The subjects were 2 groups of students matched for Mental Age, socioeconomic status, public school attendence and intact family structure. There were 343 Normal children aged 5.10 years and 344, 4 - 13.1 year old familially retarded children. The two groups were given 5 tasks, DAP, figure completion, two form puzzles, and drawing on dictation. It was found that the familial retardates performed as well as the normal group and at times surpassed them. Performance on these tests was found

to be predominantly a function of mental age. This finding tends support to the 'developmental' theory of familial retardation and refutes the 'defect' hypothesis.

Arkell, (1977) studied adults representations of children's human figure drawings. Twenty one 19-44 year old college students drew human figures the way they thought a child of a given age i.e. twenty one dissimilar ages from 5 - 10 years, would draw it. Significant correlations were found between the subjects drawing estimates and scores scored on the human figure drawings using the Harris and the Koppitz scoring systems for Mental Age. The results suggest that untrained adults have some ability to make drawn representations of childrens Human Figure Drawings.

Bolton, (1978) investigated the profiles of the HFD drawn by 68, 18-97 year old males in a Qolla Indian community (Peru), and found that the profiles showed a marked tendency to face toward the left. And increasing education was found associated with a strengthening of this left orientation in the drawings, while age had no effect on directionality.

Steward, Furuya, Steward and Ikeda, (1982) studied 41 preschool Japanese and 33 preschool American chilren's drawings of the outside and inside of their bodies. The drawings were scored for cultural, development, and health status features utilizing a scoring system that coded number of components, colors and style. The investigators found that (a) the Japanese subjects were less likely than American subjects to add facial features, clothing detail, or to color arms and legs on the outside figure. (b) All subjects drew 3 components inside the body. (c) Japanese subjects were more likely to draw hearts, and American subjects more likely to draw brains. Females were likely to include stomaches. (d) When compared to data from Hospitalized preschoolers (Levine, 1977) differences were found in content but not quantity of internal components. (e) Maternal perception of subjects vulnerbility to change in health status as adults was significantly related to ratio of inside - outside body scores in both Japanese and American subjects.

Dennis, (1966) annalyzed comparative data obtained with the Draw-A-Man Test in 40 widely different cultural groups, principally from 6 year old children. Dennis found the mean groups scores appeared to be most closely related to the amount of experience with representational art within each culture. In the case of groups with little indigenous art, it was hypothesized that test performance reflected the degree of acculturation to Western civilization.

In a study Gardiner, (1969) investigated a cross-cultural comparison of hostility in children's drawings. Human Figure Drawings were collected from 2382, 11 to 13 year old boys comprising 26 cultural groups and scored for hostility on the basis of criteria established by Dennis and Gardiner. The results indicated notable variations in both the degree of hostility as well as the kind of hostile content portrayed. Hostility was highest in drawings from Thailand 35%, followed by such groups as Germany 26%, Taiwan 25% and 22%, Yugoslavia 17%, Algeria 15%, Mecca 6%, Syria 3%, Brooklyn nonorthodox Jews 1%, and Japanese 1%.

Gonzales, (1982) made a cross-cultural comparison of the Development Items of five Ethnic groups in the Southwest. The concern of the study was to use the HFD as a measure of intellectual development. The population of the study was 3,067 Mexican - American, Pueblo Indian, Navajo Indian, Black and Anglo ages 5 years to 9 years 11 months boys and girls of elementary public schools, three quarters were from the city and one fourth from rural areas. The DAP was administered to these children for norming and comparison against the existing Koppitz scoring procedure. The inter-rater reliability among four raters using Kuder - Richardson formula was .99. Comparison between the groups was achieved by using Chi Square on all individual developmental items for each ethnic group with the Koppitz scoring items. The results were (a) Expected and Exceptional items affecting scoring i.e. a significant number of each of the four minority groups changed categories with consequent final score interpretations affected. (b) Findings reveal that when individual items on the DAP are used in scoring an inconsistency exists between cultures and geographic regions on items included or excluded at certain ages. (c) Significant changes across cultures and regions which are variables not intended to be differentiated by the tests.

Honigmann and Carrera, (1957) investigated the cross-cultural use of Machover's Figure Drawing Test. A group of 9 Eskimo children's HFD drawings were collected by an anthropologist. And a group of 14 Cree Indian children's HFD drawings were collected in a school setting. The Psychologists who analysed the drawings only knew that the drawings came from Cree Indians and Eskimo children, their age and sex of the subjects, but they did not know which drawings came from which group of children. The findings were (a) The two group did not differ significantly on three rating scales of Machover which measure aggression/submission, dependence/independence, intrapersonal conflicts. But it was found that there was a trend in the direction of inferior sexual adjustment of the Cree Indian subjects. Another finding (b) was that there was a significant statistical difference in the IQs of the two

groups. The Indian group IQ was 86 and the IQ of the Eskimos group was 64 using the Goodenough scale of intelligence.

Grams and Rinder, (1965) in an investigation examined the HFDs of 'homosexual' delinquent boys and compared them with HFDs by 'non-homosexual' delinquent boys. They tested signs indicated by Machover as significant. Their study failed to prove validity for any of the signs or for the 15 signs taken collectively for homosexuality in HFDs.

Cutter, (1956) in a study to sexual differentiation in figure drawings and overt deviation, applying the Swenson's scale to groups of sexual offenders and normal, neurotic and psychotic subjects, found lack of sexual differentiation related to "personality disorganization" independent of sexual deviation.

Goldberg, Shiffman and Bender, (1983) state that on the Draw-A-Person test there is an observable maturational lag in the immature child's drawings.

Wilner and Rau, (1978) illustrate the use of family systems drawings, to show the family as a system. Through this method the concepts of scapegoating, symbiosis, schism, homeostasis and double bind are presented.

Zaidi, (1981) in a study analyzed 565 HFDs by 400 eight to eleven year old Nigerian children in terms of depictiction of dress, physical features, work activitics, facial expressions and social roles. The drawings were assumed to project the social values of present day Nigerian society. The findings: were:

1. A dominant preference for modern dress.
2. Attachment to own group physical features.
3. Choice of family relatives as subjects of the drawings.
4. More men than women were drawn as engaged in work.
5. More women than men were shown with smiling faces.
6. The reasons for drawing a particular person were kindness of the person toward the subject. His/her wealth, qualities of character, possession of certain skill, and attractive features.

Roback, (1968) in a review of research literature on the utility of the HFDs in the clinical psychologists armamentarium for personality assessment, concluded that previous

studies did not support Machover's 1949 hypotheses. He specifically pointed out the absence of the reliable scoring procedures. He further stated that "the ultimate fate of the DAP will be one of a rough screening device of determining 'gross level of maladjustment'".

Semeonoff, (1981) states that DAP as a diagnostic possibility, the aim of the genuinely projective approach to children's drawings is understanding rather than 'objective' uniform evaluation of specific definable element.