CHAPTER 3: METHODOLOGY

In the previous chapter, we have established the need for more Indian research on drawing techniques like the HTP and DAP for the understanding of emotional and behavioral disturbances in children. We have also found the need for trying out different methodologies in validating the newer quantitative scoring techniques as they have been found to offer more reliable discrimination between disturbed and non-disturbed groups, in international literature. This study is therefore aimed at establishing concurrent and convergent validity for the quantitative scoring systems of the DAP and HTP.

In this chapter, the investigator explains how the study was conducted. This chapter will explain essential details about the selection of participants included the research design, procedures, tools used and ethical considerations for the study. The information has been grouped as below:

3.1. Methodological considerations guiding the study.

3.2. Participants

3.3. Research design

3.4. Instruments used and their description

3.5. Procedure

3.6. Analysis of data

3.1. Methodological Considerations Guiding the Study.

One of the longstanding debates in the world of psychological assessment has been whether to believe in and continue with the use of projective tests or should they be given up altogether. Much research has been directed towards these questions and there has been experimentation with different methodologies. This study is inspired

by a search for better validity and reliability for the use of projective drawings in identifying emotional and behavioral disturbances in children. As projective techniques, projective drawings in its contemporary use are expected to offer both qualitative and quantitative information on emotional experience and personality. The technique of projective drawings is believed to access covert and overt signs of disturbances. To validate the scoring systems on the drawings therefore, we need to cover a continuum of assessment from unconscious aspects (assessed by projective drawings), subconscious aspects (assessed by self- report questionnaires) and overt expressions of disturbance (rated by significant others). Thus, to fulfill this aim a mixed research design involving both quantitative and qualitative approaches is adopted moving across a continuum of unconscious behavior to expressed behavior in this study by using projective drawings, self- report inventories and external rating.

Further, another possible source of establishing the reliability and validity of measures of emotional disturbance is to use the measures on a well-adjusted group and compare findings from these measures with pre-identified children with emotional or behavioral disturbance such as those referred for disturbances to clinics or school counselors. This too is attempted in this study.

3.2 Participants of the study

3.2.1 Universe

The universe of this study included 7-11 years old, school going students from select cities of Gujarat and Pune belonging to lower middle to upper middle income groups.

3.2 .2 Sample

The sample for the study included school going children called the reference group; a second group of emotionally disturbed and non-disturbed drawn children selected out of the first group who will be referred to as the identified Emotionally and/

Behaviorally disturbed groups (ED) and Non-Emotionally and /Behaviorally Disturbed (Non-ED groups); and a group of clinically referred children who will be here onwards called the 'Clinical group'. The total sample size for the study was 490 students of the ages 7-11 years. The different groups tested are given below.

Group 1-Reference group

Participants in this group included a total of 336 (215 boys and 121 girls) children attending a single mainstream vernacular medium urban school catering to the lower middle to upper middle socioeconomic class students in Surat and Pune cities (296 students from Surat and 40 from Pune). The children were drawn from classes 3 to 5 (Refer table 3.1).

Table 3.1

Sample description for Group 1

Age	Male	Female
7 years	8	3
8 years	51	23
9 years	63	45
10 years	57	33
11 years	36	17
Grand Total N=336	N_1 = 215	N_2 = 121

Group 2-Identified ED and Non- ED groups

The study group comprised of 64 children (38 boys and 26 girls) drawn from the initial sample from Surat that were classified as being emotionally and behaviorally disturbed or non-disturbed based on their scores on the HTP and DAP. The break-up of the sample according to groups, age, gender and class are presented in the table 3.2

Table 3.2

Sample description for Group 2

Age	Non-ED		ED		Total	
	Male	Female	Male	Female	Male	Female
8 years	5	2	9	3	14	5
9 years	5	4	7	5	12	9
10 years	5	5	4	2	9	7
11 years	4	0	3	2	7	2
Total	19	11	23	12	42	23
Total N=65	n1 =30		n2=35		N=65	

Group 3-Clinical group

Children in this group included 89 children (64 boys and 25 girls) aged 7-11 years who had been referred to school counselors or clinics for different problems in the cities of Surat, Vadodara, Ahmedabad and Pune.

Table 3.3

Sample description for Group 3

Age	Male	Female
7 years	1	0
8 years	15	8
9 years	21	3
10 years	16	10
11 years	11	4
Total N=89	n_1=64	n_2=25

The inclusion and exclusion criteria maintained are given below with rationale.

3.2.3 Inclusion Criteria

1. Boys and girls in the age group of 7 to 11 years studying in mainstream schools.

   Rationale: This age group was selected for three main reasons. First, this is the age when a child is expected to have reached enough visual motor maturity to represent imagination with integration. Second, children of this age are rarely able to understand and express their emotional difficulties and therefore a screening device for emotional and behavioural disturbance would be useful to identify such disturbances at an early stage. The third reason was to maintain homogeneity in terms of their developmental stage.

2. Children who have never been referred to clinicians by parents or teachers for any emotional or behavioural problems.

   Rationale: This was done to ensure that the selected group could be considered to solely on the basis of the cut-off scores on the drawings and could be considered to be non-clinically disturbed ED and Non-ED groups).

3. Children who were identified as having disturbance or not having disturbance through their score on HTP and DAP drawings from the reference group. (Group 2 who will be referred to as identified ED and Non-ED groups).

   Rationale: This was done to confirm the presence or absence of disturbance by a retake of drawings and use of other measures.

4. Children who have been referred recently by teachers or parents to counsellors or other clinicians for learning, emotional or behavioural problems (Group 3)

and fulfil the IDEA (2004) criteria for emotional disturbance. This term is defined according to the Individuals with Disabilities Act (IDEA 2004. The IDEA requires that a student must exhibit one or more of the following characteristics over a long duration, and to a marked degree that adversely affects their educational performance, to receive an Emotionally or behaviourally disturbed (ED) classification:

- Difficulty to learn that cannot be explained by intellectual, sensory, or health factors.
- Difficulty to build or maintain satisfactory interpersonal relationships with peers and teachers.
- Inappropriate types of behavior (acting out against self or others) or feelings (expresses the need to harm self or others, low self-worth, etc.) under normal circumstances.
- A general pervasive mood of unhappiness or depression.
- A tendency to develop physical symptoms or fears associated with personal or school problems.

The term "ED" includes students diagnosed with schizophrenia, but does not apply to students who are "socially maladjusted", unless it is determined that they also meet the criteria for an ED classification. Here it is important to clarify that while the term ED in the IDEA classification is broad and includes students with severe mental health conditions like schizophrenia. Problems of this severity, if encountered in the study, would be excluded.

Rationale: As the sample selected is mainly from schools, the IDEA criteria prove to be more suitable being the internationally recommended for deciding eligibility for

special services and educational concessions. Understanding the role of projective drawings as a screening device for this group will have long term implications. Besides, the groups of emotionally and behaviorally disturbed are represented by many diverse categories in the available alternative of DSM-5 or the ICD- 10 which would necessitate too large a sample for it to be representative of each diagnostic category. While the definition of ED in the IDEA extends to include schizophrenia, it was decided that this group would be excluded from the sample as the severity of the problems would lead to clinical referral and reduce homogeneity.

3.2.4 Exclusion criteria

1. Children with a history suggestive of congenital or other developmental anomalies (visual, hearing or speech impairment, academic failure or significant sub-average intelligence), neurological conditions or degenerative diseases such as epilepsy, muscular dystrophy or physical disability).

   Rationale**:** This criterion was because the child who has a history of neurological insult or disability may have poor visual-motor ability.

2. Children with severe emotional disturbance e.g. psychoses or autism. (For Group 3- clinical sample)

   Rationale: This was necessary to ensure homogeneity in the clinical sample.

3.2.5 Method of Sampling

The method used for sampling was a convenience sample based on children who fulfilled the inclusion and exclusion criteria, access and permission granted by schools or clinics and clinicians who indicated readiness to participate in the study.

3.3 Research Design and Procedure

This section will outline the design, variables used and procedure of collecting data. The present study adopts a mixed method. The investigator follows mainly a quantitative approach as the study uses quantitative measures and scores while integrating qualitative information as the data used is mainly projective drawings as an assessment tool. The study moved through 4 phases as outlined below (See Appendix-iv)

Phase1. In this phase, the researcher acquired the tools for the study, and conducted a pilot test- out. Schools were contacted and a school that agreed to participate was selected. HTP and DAP drawings were collected from 7-11 years old children studying in 3-5 classes.

Phase2. The second phase focused on scoring of the data and identifying an emotionally disturbed and non-disturbed group using the criteria for emotional disturbance on the HTP and DAP. Group 2.1 comprised of children with Emotional Indicators below cut off scores on projective drawings taken from the normal group of school-going children. Group 2.2 consisted of children with below cut off scores on Emotional indicators from the earlier sample. This selection of the identified ED and Non-ED children were then reassessed using the projective drawing techniques, self - report inventories and parent or teacher ratings for emotional and behavioural disturbance. These tools were then scored for comparison.

Phase 3. During this phase a sample of children referred for academic, emotional and behavioural difficulties to psychiatric/psychological / paediatric clinics or school counsellors was selected and DAP, HTP and other measures were administered.

Phase 4: This phase was directed towards analysing all the data from earlier phases to consolidate and determine the relative efficiency of quantitative scoring systems on projective drawings versus other quantitative measures. Refer figure 3.2 for a schematic representation of data collection.

3.3.1Variables

Categorical Variables

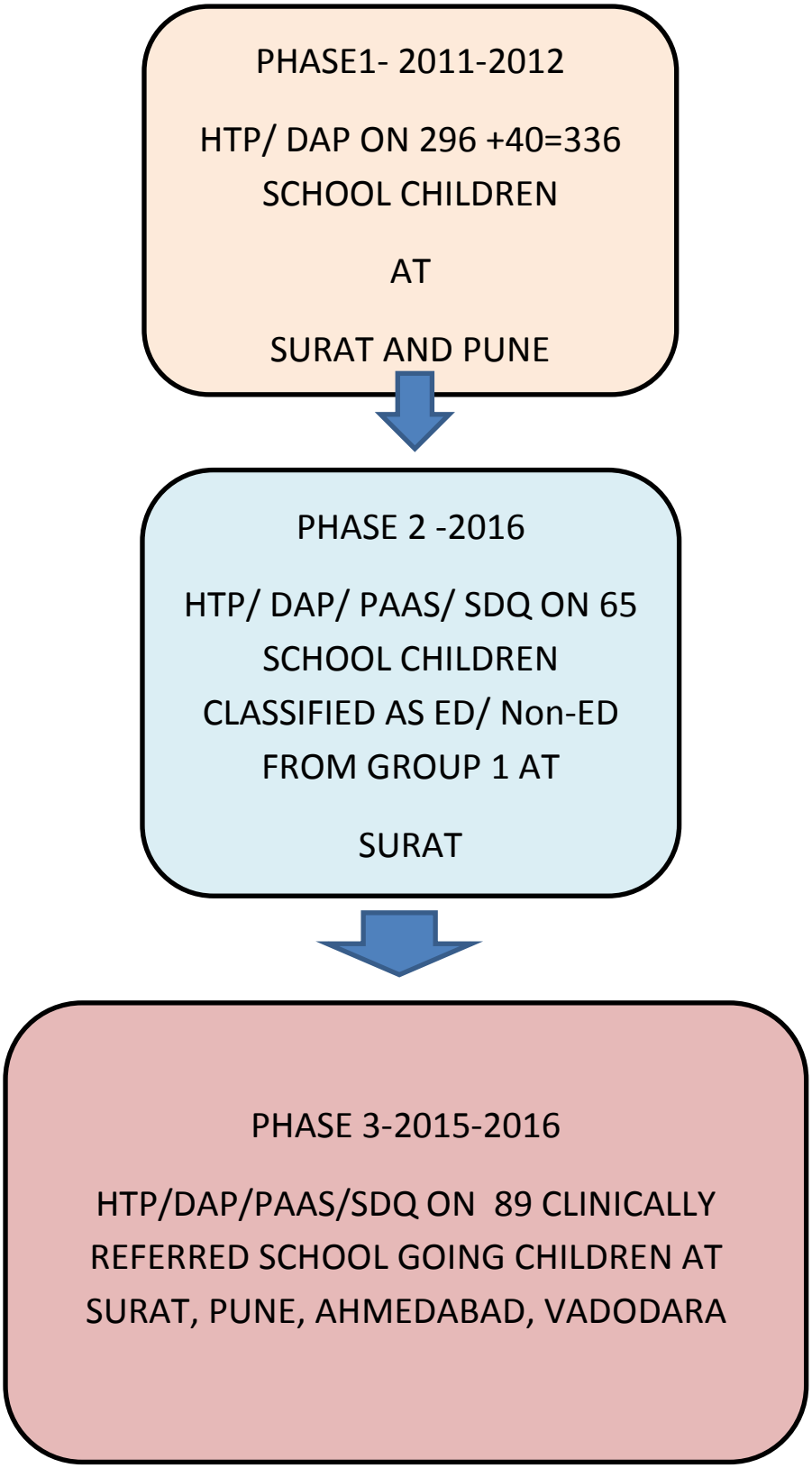
The effect of the following categorical variables on children's drawing will be studied.

- Age
- Gender

Other Variables

- Emotional disturbance
- Self esteem
- Adjustment

Figure 3.1: A schematic representation of Data collection phases, sources and time frames



.3.2 Operational Definitions of Variables

Age: Children between 7 to 11 years (operationalized as 6yrs 8mths to 11yrs 7mths from date of birth)

Gender: Both boys and girls will be included in the study.

Emotional Disturbances: This term refers to children receiving above cut-off scores on the DAP: Screening for emotional disturbance (Naglieri, McNeish and Bandos (1991) and HTP criteria according to Van Hutton (1992).

Self Esteem: Self-esteem is the subjective appraisal of oneself as intrinsically positive or negative, according CFSEI, Battle (1981). Different types of self-esteem will include General, Parental, Total, Academic and Social types of Self Esteem. As it plays a key role in emotional disturbance and past literature on projective drawings have attempted to understand self- esteem on them, it has been included in this study

Adjustment: Adjustment has been defined as adaptation to physical and social demands, according to Pareek, Rao, Ramalingaswamy and Sharma (1975). Different types of Adjustment include adjustment to home, school, peers and general matters. Emotional and behavioral disturbance are likely as a measure of overt adjustment

3.4 Instruments Used and their Description (see Appendix iii)

The study was conducted using the following instruments-

1. Draw A person: Screening Procedure for Emotional Disturbance (Naglieri et al.,1991)
2. House Tree Person test (Buck, 1992 and Van Hutton,1992)
3. Strength and Difficulties Questionnaire (Goodman,1997)

4. Culture Free Self-esteem inventory (Battle,1981)

5. Pre- Adolescent Adjustment Scale (Pareek, Rao, Ramalingaswamy and Sharma,1975)

6. Case history format for school counselors (developed by the investigator)

3.4.1: Draw-A-Person test: Screening Procedure for Emotional Disturbance (DAP: SPED- Naglieri, Mc Neish and Bardos, 1991): This study uses Naglieri, Mc Neish and Bardos (1991) objective scoring method that was objective and easy to use with extensive norms for 3 age ranges, (i.e. 6-8 years, 9-12 years and 13-17 years) to discriminate between disturbed and non-disturbed populace. This version of the test is used, as it is suitable for group administration, includes the required age range, provides quantitative scoring method and has been used across different cultures with similar results. This tool requires children to draw three drawings, namely a picture of Man, Woman and Self on separate sheets of paper, provided in booklet. In this research, the A4 sized blank sheets were provided for drawings and the investigator adapted the scoring sheet.

Each drawing is scored for the same 55 scoring indices. Stencils are provided for the scoring of 9 of the indicators. Some scoring indices are: *Item no.5- Top placement, Item22- Nose omitted, 37- Gazing left or right, 47- Fists, 54- Nude figure (See appendix for scoring sheet).* The same scoring items are present across the drawings for Man, Woman and Self.

A raw score is obtained by totaling the number of indicators for each of the three drawings and converted to a standard T score, which is then converted to a percentile rank. The recommended cutoff scores and their interpretation are presented in the table below (Chapter 6, page 63 in the manual).

Table 3.4 *Interpretative significance of T scores on the DAP: SPED*

Range of Scores	Interpretation
Less than 55	Further evaluation is not indicated
55 to 64	Further evaluation is indicated
65 and above	Further evaluation is strongly recommended

Information on reliability and validity shows that the tool has high internal reliability (Cronbach alpha scores ranges from.67 to .78 in the different age groups). High inter-rater and intra-rater reliability are reported (Pearson's product moment correlations are above .83). A fair test-retest reliability is also reported (Pearson's correlation of 67 significant at .001).No information about validity is provided in the manual. The authors urge investigators to pursue this angle of research (Naglieri, Mc Neish and Bardos, 1991).

3.4.2 House-Tree- Person Test (HTP- Buck, 1992 and Van Hutton, 1992): This test was originally published by John Buck in the year 1948.The test is used in two main variations. First, the HTP itself as developed by Buck, where the testee is required to make drawings of a house, a tree and a person on separate sheets of paper. While the second is called "The kinetic-house-tree-person drawing technique", developed and promoted by Burns (1987) which needs the child to draw all three on a single page including some kind of action. Both techniques are usually followed by a post drawing inquiry and a qualitative analysis for the test is usually done analysing aspects of the drawing and responses from the inquiry. For the purpose of this study it was considered important to use a method comparable to the DAP- SPED and suitable to a large school-going sample size i.e using the three- drawings approach, without much post-drawing inquiry and quantitative scoring. To fulfil this and adaptation was

made to the original Buck format. The administration was taken from Niolon (2003) with few selected post drawing questions and the scoring system as proposed by Van Hutton (1992) was used. Though the original system was largely developed to detect sexual abuse the system addresses both internalizing and externalizing disturbances, includes children in the age range of 7-12 years with emotional disturbances in their standardization sample and provides norms for emotional disturbances therefore, it was considered appropriate for use in this study.

To score the drawings, Van Hutton divides the scoring items under four scales: (i). Sexually Relevant Concepts-SRC (ii) Aggression and Hostility-AH (iii). Alertness to danger, suspiciousness and mistrust-ADST and (iv). Withdrawn and guarded accessibility-WGA. Each scale is scored across different items based on the presence or absence of certain features in the different aspects of the i. Behavioural ii. General iii. House iv. Tree and v. Person. Some examples are given below:

Example 1: SRC Person includes scoring items like 'body below the waist not drawn', 'unusually small head', 'nose emphasized', 'figure not child's own sex' etc.

Example 2: Items included under WGA House are 'windows absent', Long walkway or steps leading to house.

Each item present is given a tick mark if present (√) and raw scores are obtained by summing up the number of tick marks in each scale. The rater also has to indicate the degree of certainty against each rating made. This procedure was modified for this research, as the sample size was large, so a group administration method was needed and the scoring needed to be simplified. To ensure reliable ratings only those items were considered present that were found to be more than 80% certain across two scorers.

The test provides cut off scores to identify disturbance in each scale as below. Other details for norms are available in the manual (pp 105-114, Van Hutton 1992).

Table3. 5. *Cut off scores to identify emotional disturbance on the test (Van Hutton, 1992)*

Test Scales	SRC	AH	WGA	ADST
Cut off scores	≥ 4	≥6 (girls) ≥8 (boys)	≥ 6	≥6

The inter-rater reliability reported on this test is high, between .70 (ADST) to .97 (AH). Clinical validity was attempted for the test by studying scores across three groups namely: Normal children, emotionally disturbed children and sexually abused children. Significant differences at .05 levels were found in the scales of SRC and WGA between normal and clinical groups but not between the emotionally disturbed and sexually abused groups.

3.4.3 Strength and Difficulties Questionnaire (SDQ- Goodman, 1997): **The Strengths and Difficulties Questionnaire** (SDQ) is a self-report inventory behavioral screening questionnaire for children and adolescents ages 3 through 17 years old, developed by a child psychiatrist from United Kingdom, Robert N. Goodman. The SDQ is freely available online for research and clinical use, and has been translated into more than 80 languages, including Spanish, Chinese, Russian, Hindi, and Gujarati among other Indian languages. There are currently three versions of the SDQ: a *short form,* a *longer form* with impact supplement, and a *follow-up form* designed for use after a behavioral intervention. There are parallel versions of the test that can be completed by students, parents and teachers. For the purpose of

this research, the parent and teacher versions in English and Gujarati meant for children aged 4-17 were used since an external screening for emotional and behavioral problems was required.

The questionnaire has 25 items and takes 5–10 minutes to complete. There are 5 scales in the test with 5 items each. The scales are: (i) *Emotional problems scale* which has items like-"often complains of headache", "has many worries" (ii) *Conduct problems scale* has both positively and negatively phrased items such as item 12 asks if the child "often fights with other children" while item 7 asks if the child is" generally obedient.(iii*) Hyperactivity scale*: which asks about the activity level, concentration, persistence on tasks and impulsivity of the child (iv) *Peer problems*: This scale seeks information about ability to peer relations and bullying (v) *Pro-social scale:* This is a scale which seeks to identify interpersonal strengths of the child. For e.g item 9 asks if the child is" helpful if someone is hurt.

The items require to be rated descriptively. For each item the teacher or parent will indicate whether the behavior enquired for is "not true", "somewhat true" or "certainly true" for the child in consideration. Scores of 0, or 2 are assigned to the responses depending on the direction of the statement (i.e. whether indicative of positive or negative behaviors). A score of 1 is generally assigned to all items responded to as" somewhat true". Thus high scores show more disturbances. The scores are totaled for each scale. A total score is obtained by adding the scores across all scales except the pro-social scale. Internalizing and externalizing scores for the child are also got. The internalizing score is a sum of scores in the Emotional problems and peer problems sub scales (Internalizing score =E+PP), while externalizing score is got by adding the Hyperactivity and Conduct problems (Externalizing score=H+C) subscales scores. The main section is followed by an

impact supplement which was not included in the study. An inference about the level of disturbance is made from total and subscale scores. The table for interpretation is presented in the appendix no.—

The test has a specificity of 94.6% and a sensitivity of 63% on a child psychiatric population in a British survey (Goodman, Ford, Simmons, Ford, Meltzer, 2000). Better reliability is reported when multiple informant formats of the questionnaire are used. Internalizing and externalizing scales were relatively "uncontaminated" by one another. Reliability was generally satisfactory, whether judged by internal consistency (mean Cronbach α: .73), cross-informant correlation (mean: 0.34), or retest stability after 4 to 6 months (mean: 0.62). SDQ scores above the 90th percentile predicted a substantially raised probability of independently diagnosed psychiatric disorders with mean odds ratio being: 15.7 for parent scales, 15.2 for teacher scales and 6.2 for youth scales (Goodman,2001).

3.4.4. Culture- Free SEI Self- Esteem inventories for Children and Adults (CFSEI-Battle, 1981): The CFSEI scales are intended to measure perception of self. It is asset of 3 inventories measuring self-esteem in children and adults. The 3 forms are Form A, which has 60 items and is meant for children, Form B is a shortened version of the same, with only 30 items. The form AD has 40 items and is meant for Adults. The Form B was selected for use in this study as it is short and can be completed in 10 minutes. The test items are classifiable into 5 subscales

a. General self- esteem items
b. Social/ Peer related self-esteem items
c. Academic/school related self-esteem items
d. Parents/home-related items

e. Lie items (which indicate defensiveness)

Each scale has 5 items except for the general self-esteem scale which has 10 items. The items are divided into two groups: those which indicate high self-esteem and those which indicate low self-esteem. The child can answer each item as "yes" or "no". For e.g. Item 2. States" Boys and girls like to play with me".

The scores of the test are derived by totalling the number of items checked which indicate high self-esteem, excluding the lie scale items. Lie scores of above 3 were considered. The scores are then interpreted to be indicative of low, average, high or very high self-esteem according to a classification provided (see appendix). This item belongs to the Social Self- esteem and an answer of "yes" shows high self-esteem. The test is amenable for individual and group administration. In this study both patterns of administration had to be used.

The test-retest reliability reported for Form B ranged from .79 to .92 for the total scores and ranged from .49 to .80 on subscale scores. Concurrent validity with the Stanley Coopersmith's (1967) Self-Esteem Inventory showed high correlations ranging from .71 to .80. This tool has been used meaningfully in the Indian context with children and adolescents and has not been found to require adaptation (Vinutha, Rajini and Nagalakshmi, 1989 and Mukerjee, Hirisave, Kapur and Subbakrishna, 1995). For this research the CFSEI had to be translated into Gujarati which was validated for content by 3 experts who were teaching at University Departments of Psychology and were fluent with both English and Gujarati.

3.4.5 Pre- Adolescent Adjustment Scale (PAAS by Pareek, Ramalingaswamy, Rao and Sharma, 1975): The PAAS is one of a battery of tests designed for pre-adolescent use initially, and later extended to adolescent ages too. The battery consists

of adjustment, dependency, trust, initiative, activity level and level of aspiration scales. Other details about the battery can be read in the manual. Here we shall concern ourselves with the PAAS. The PAAS consists of 40 items and can be administered individually and in group in 15-25 minutes. The items are divided into 5 areas of adjustment with each scale having an uneven number of items (i) Home -9 items (ii) School-8 items (iii) Teachers- 8 items (iv) Peers-8 items and (v) General-7items.The questions are phrased as statements and the child is expected to go through the statements and put a tick mark on the statements that were applicable. Details about scoring and interpretation can be found in the manual. Range of total scores may be from -46 to +34.

3.4.6 Case History Format for School Counselors (Self- constructed- for data collection form group 2 and 3): This tool was a very brief history to be taken from school counselors or parents to fulfill the inclusion/ exclusion criteria that was constructed by the investigator. The format included the following details: Name, Age, Gender, Class, School, Date of birth, contact details, Birth details, Socio economic status, impression about academic performance, impression about drawing ability of the child, problems faced with the child, duration, intensity, school failure if any. These details were taken in a semi-structured interview format and were drawn out of the 22 years- long clinical experience of the investigator. This tool was mainly for the purpose of screening children to select the sample for group 2 and 3. (The format is presented in the appendix no.iii)

Table 3.6 *Tabular presentation for comparison of standardized tools used with essential details*

Measure and Time taken	**Classification of measure/ nature of data**	**Sub scales**	**No. of items**	**Range of scores**	**Reliability /Validity**
DAP-SPED Naglieri, Mc Neish and Bardos,1991 Time taken=15 minutes	Projective technique-Quantitative and qualitative	Man Woman Self Total	55 55 55 165	Possible scores: 0-165 For norms: 1-30	Internal reliability, (Cronbach Alpha ranges from.6728 to .7841) Inter-rater reliability:>.90 Intra-rater reliability:>.83 Test retest:.67 Validity: discriminates between, special education, conduct disturbance, serious emotionally disturbed sample
HTP Van Hutton,1994 Time taken=15 minutes	Projective technique-Quantitative and qualitative	Sexually relevant concepts (SRC) Aggression and Hostility(AH) Alertness to danger, Suspiciousness and mistrust (ADST) Withdrawn and Guarded Accessibility (WGA) Total	31 28 10 21 90	0-31 0-28 0-10 0-21 0-90	Clinical validity in discriminating between clinical and sexually abused groups. Reliability not reported.

Measure and Time taken	**Classification of measure/ nature of data**	**Sub scales**	**No. of items**	**Range of scores**	**Reliability /Validity**
Strength and Difficulties Questionnaire(SDQ) Goodman,1997 Time taken=10-15 minutes	Parent/ Teacher rating scale- Quantitative	Emotional (E) Conduct (C) Hyperactivity(H) Peer problems (PP) Prosocial behaviour (Pro) Internalizing Scale(E+PP) Externalizing scale(C+H) Total	5 5 5 5 5 10 10 25	0-10 0-10 0-10 0-10 0-10 0-10 0-10 0-50	Internal consistency (Cronbach Alpha>.70) Inter-rater correlation (0.33 to 0.45) Test-retest reliability >0.60 Criterion validity with Kidscreen found significant
Culture-Free Self Esteem Inventory (CFSEI-Form B), Battle,1981 Time taken=15-20 minutes	Self-report- Quantitative	General (G) Social (S) Academic(A) Parental (P) Lie score (L) Total (T)	10 5 5 5 5 25 (Lie score excluded)	0-10 0-5 0-5 0-5 0-5 0-25	Test-retest reliability ranges .79 to .92 For sub scale correlations, .49 to .90 Concurrent validity ranges from .66 to.91
Pre-Adolescent Adjustment Inventory(PAAS), Pareek, Rao, Ramalingaswamy and Sharma,1975 Time taken=15-25 minutes	Self-report- Quantitative	Home (H) School (S) Peer (P) Teacher (T) General (G) Total (T)	9 8 8 8 7 40	-10 to +10 -7 to +9 -10 to +6 -10 to +6 -6 to +6	Significant validity against teacher rating Test-retest Reliability found significant in all areas except Home adjustment

3.5 Data Analysis

Keeping in mind the nature of projective drawings and the broad objectives a plan of analysis comprising of descriptive statistics, parametric and non-parametric statistics was made. A road-map to the analysis is presented in the table 3.7.

Table 3.7 *Tabular representation of plan of analysis by objectives*

Objectives	Data analysis procedure
To identify a group of emotional disturbed and non-disturbed from a sample of school-going children and to determine if the groups are statistically different form each other.	• Frequency and percentage of ED and Non-ED in the school sample of children aged 8-11years • t-test to determine statistical independence
To examine age and gender trends in emotional indicators on HTP and DAP drawings in a sample of 7-11 years old school going children.	• Means and Standard deviation for each sub group (ED, Non-ED) across gender and the four age groups were calculated • Two -way ANOVA to see the effect of age and gender on the DAP and HTP scores • Chi- square was done to examine the difference in pattern of case distribution on the sub-scale scores on HTP and DAP according to age and gender
To find out the gender and age- wise prevalence of emotional disturbance using quantitative scoring criteria of DAP and HTP to identify a group of emotional and behaviorally disturbed and non-disturbed from a sample of school-going children	• Frequencies and percentages of subscale scores and total scores on HTP (namely SRC, AH, ADST and WGA) as well as for total scores on the DAP according to 4 age groups and gender.
To find out whether there is similarity in identified disturbance on the emotional indicators of DAP and HTP for convergent validity.	• Frequencies and percentage to see the similarity and difference in group identification using cut-off scores of HTP and DAP • Pearson's product moment correlation between HTP and DAP scores (sub-scales and total scores HTP 5×4 DAP in reference group, identified group and clinical groups) • One way ANOVA to examine difference (if any) between the scores of HTP and DAP (subscales and totals for 3 groups as above)

Objectives	Data analysis procedure
To find out criterion validity for the assessment scores on DAP and HTP against parent and teachers ratings of emotional disturbance on the Strength and Difficulties Questionnaire (SDQ, Goodman 1997)	• Pearson's product moment correlation between HTP (SRC, AH, ADST, WGA and total), and DAP scores (Man, woman, self and total) of identified ED and non-ED, clinical groups on the subscales and total scores on the SDQ (namely, Emotional Problems Scale (E), Peer problems scale (PP), Conduct problems scale (C) Hyperactivity scale (H).
To examine concurrent validity for scores on the HTP and DAP in the group of children identified as emotionally and behaviorally disturbed and non- disturbed through drawings when compared with scores on a self-report quantitative measure of self-esteem.	• Pearson's product moment correlation between HTP (SRC, AH, ADST, WGA and total), and DAP scores (Man, woman, self and total) of identified ED and non-ED, clinical groups on the subscales and total scores of Self-esteem on the CFSEI (General, social, academic, parents, total)
To find out concurrent validity of indicators of emotional disturbance on DAP and HTP with scores of adjustment on a self-report measure.	• Pearson's product moment correlation between HTP (SRC, AH, ADST, WGA and total), and DAP scores (Man, woman, self and total) of identified ED and non-ED, clinical groups on the subscales and total scores of PAAS (namely Home-H, School-S, Teachers-T, Peers-P, and General Adjustment-G)
To compare the quantitative scoring indicators of DAP and HTP across the three identified groups to identify discriminating scoring indices (namely: identified emotionally disturbed and non- disturbed children and clinically referred children).	• ANOVA analysis for DAP and HTP total scores across the 3 groups (ED, Non-ED and clinical) to examine if the 3 groups are significantly different from each other • Chi square to see if there are significant differences in the pattern of drawings of the above 3 groups on the sub-scales scores of HTP and DAP. • Frequencies and percentages to identify important scoring indices
To critically analyze the DAP, HTP, Strength and difficulties questionnaire, Culture- Free self-esteem inventory and Pre-Adolescent Adjustment Scale as tools to identify emotional disturbance in a school going sample of 7- 11 years-old children.	• Qualitative and descriptive critical analysis based on selected indicators of the efficiency, power of identification of ED and cultural suitability of all the measures used in the study, will be presented.

3.6: Challenges Faced

Surat being the business capital of Gujarat, has a general environment which prioritizes money and business acumen. Hence there is very little awareness about developmental and educational needs of children, making research endeavours or the need for timely interventions for children neither understood well nor given importance. The researcher had to approach at least seven to eight schools on a continuous basis to obtain permission for data collection. After continuous follow up, and with some input from professional friends who played the role of referral, one school gave permission for data collection. In addition, one had to use skills of persuasion and negotiation effectively with all concerned persons, to complete the processes of first round of data collection.

Being a clinical practitioner, was an advantage as the well-established professional social net works, helped in the process of selecting other sample groups.

Another major hurdle was faced when the same school where data was collected refused permission for the needed follow up with the same subjects. The researcher solved the problem by approaching senior district officials to intervene and obtained permission. Utmost effort was made to maintain cordial relations and an attitude of friendship at all stages to ensure a smooth process in the entire of data collection, which spanned over a period of time.