Chapter-IV

Materials and Methods
THE SAMPLE, THE MEASURES AND THE METHOD

To realize the objective of the present study, a sample of MR children having Autistic Spectrum Disorder were drawn from the identified study locations and were tested with suitable tools and methods. In this chapter the details of sample selection, the measures used and the procedure of testing are discussed. Since the primary focus of the study is to test the effectiveness of psychoeducational interventions towards improvement of different domains of ISAA and personal and academic domains of FACP. Accordingly, the intervention package was developed and details are reported in the following pages of this chapter.

4.1. Participants of the study :

This study is an attempt to examine the efficacy of psychoeducational interventions in different domains of ISAA and FACP on a select sample of children with MR having ASD. For purposes of the present study subjects were selected from the surrounding locations of Manovikasnagar and Trimualagiri of Secunderabad. Door to door survey was carried out and a total sample of 500 cases were identified by using purposive of sampling techniques. These 500 children were screened to identify cases with mental retardation by administering Developmental screening test (DST), Vineland Social Maturity Scale (VSMS) and Binet Kamat Test of Intelligence (BKT). Compiling the scores of DST, VSMS and BKT, the IQ was obtained. IQ above 70 were ruled out and below IQ 70 were administered Indian Scale for Assessment of Autism. Total 35 MR children having ASD were identified consisting 30 males and 5 females. This sample was termed as main phase sample (MPS). From this total sample of 35, 13 children with mild and moderate MR having ASD were included for the intervention study i.e second phase of the study. This sample was termed as intervention sample (IS). MR children having Autism who are with severe and profound MR having autism were excluded from the study.
The intervention sample (N=13) consist of 11 males and 2 females of which 8 were in the age group of 6-9yrs and 5 were in the age range of 9yrs-12yrs. For purposes of convenience these two age groups are considered throughout the report i.e. children between 6 years (6+) and 9 years (below 9 years) and the other group between 9 years i.e. (9+) upto 12 years. All the 13 subjects were identified from urban area. In the intervention sample of 13 subjects: 3 were with mild MR having mild autism, 1 with mild MR having moderate Autism, 8 with moderate MR having mild Autism, 1 with moderate MR having moderate Autism. Details of sample selection are also reported in this chapter.

4.2. The inclusion and exclusion criteria used in the selection of sample are as follows:

The Inclusion Criteria:

- Subjects with mild and moderate mental retardation
- Subjects with MR having autism
- Both gender groups (male and female)
- Subjects in 6-12yrs age range (6+ years to upto 12 years)
4.3. The Exclusion Criteria:

- Subjects with severe and profound mental retardation
- Children with other disabilities like learning disability, cerebral palsy, ADHD, other illness.
- Previous exposure to any intervention program.

4.4. Operational Definitions:

Mental Retardation:

The American Association of Mental Retardation (2002) definition has been adopted for the present study. Accordingly: “Mental retardation is defined as a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social and practical adaptive skills” and this has been adopted for the present study.

Autism Spectrum disorder:

ASD is a disability category characterized by an uneven development profile and a pattern of qualitative impairments in several areas of development including social interaction, communication, or presence of restricted repetitive and stereotyped patterns of behavior, interests, and activities. Autism is a classic form of ASD.

Psychoeducation:

Psychoeducation is a specialized form of education aimed at helping to learn and creating awareness about the range of emotional and behavioral difficulties, their effects and strategies to deal with them (Kaufman & Kaufman 1979; Steinglass, 1987).

4.5. Research Plan:

In the present study pre-post test design was used to study the efficacy of Psychoeducational intervention. Research design details are illustrated in Figure 3.
Figure 3: Research Plan of the Study

IQ Assessment

Below 70 IQ - Included, Identified as MR

Screening for Autism by ISAA

Autistic children

Recruitment for the intervention

Pre interventional assessment

Psychoeducational interventions

Post interventional assessment

Above 70 IQ - Excluded

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4.6. Description of Tools Used:

The objectives of the present study necessitated to use the following tools such as: Personal data sheet (PDS), Developmental Screening Test (DST), Vineland Social Maturity Scale (VSMS), Binet Kamat Test Of Intelligence (BKT), Indian Scale For Assessment Of Autism (ISAA), Functional Assessment Check List for Programming (FACP), Interventional package.

1. Personal Data Sheet (PDS):

This PDS was prepared for purposes of collecting information about parental details, the family, risk assessment, other details of the child with mental retardation having ASD. It consists of (1).Details about participants (2). Familial characteristics and (3). Child characteristics. The English version of (PDS) is appended (Appendix-I).

2. Description of Developmental Screening Test (DST):

Developmental Screening Test (DST) which was designed by Dr.Bharath Raj (1983) is a reliable and valid test to screen the mental development of children in the Indian context. The Developmental Screening Test measures mental development of children from birth to 15yrs of age. Larger number of items at the early age levels permits assessment of very young children. Other (Italicized) items on the schedule included Speech and Language development. The test provides a brief and fairly dependable assessment without requiring the use of performance tests. Appraisal was done in a semi structured interview with the child and parent or any significant person well acquainted with the child. In its present form the DST can be repeatedly used for assessment. The I.Q  was calculated by the concepts of M.A. and C.A. Final version of DST consist of 88 items.

Developmental schedule consists of a simple chart with items on it. These items are descriptions of behavior that may be observed in an infant or elicited in a child. The items are arranged age wise from 3months to 15yrs. 1st group of items describe the type of behavior that a baby from birth to 3months may show for example, birth cry present, rolling over. Items are arranged at 3, 6, 9, months; 1, 1½,
And then onwards at every one year level till 15yrs. The items progressively depict greater level of physical and social maturity and independence.

The tester starts with the item closest to chronological age of the child to establish a ‘Basal Age’. This is the age at which all items are likely to be passed or the behavior described is likely to be present. Gradually tester moves through upper age levels. Each item could be evaluated either by observing the child (eg. Steadiness of head) or by asking the parent (eg., combing hair by self) or by asking the child (eg. repeat 3 digits). It correlates to the extent of +85 with Seguin form board. It has a correlation of +.75 with Columbia Mental Maturity Scale. Verma, Pershad and Menon cross validated this test in 1979 on 170 children, 108 male and 62 female children in the range of 1 to 15yrs showed very high positive correlation with other scales. DST showed very high positive correlations +.72 to +.99 with other intelligence or developmental test, which shows that it is a valid test for all the age groups (6-12years). Inter scorer reliability (+.928) and test retest reliability (.98) were also found to be high and satisfactory. The English version of (DST) scale used is appended (Appendix -II)

3. Description of Vineland Social maturity Scale (VSMS):

The Vineland Social Maturity Scale (VSMS) was designed and standardized for Indian children by A.J. Malin (1965), which measures the differential social capacities of an individual. It provides an estimate of Social Age (SA) and Social Quotient (SQ), and shows high correlation (0.80) with intelligence. It is designed to measure social maturation in eight social areas: Self-help general (SHG), Self-help eating (SHE), Self-help dressing (SHD), Self direction (SD), Occupation (OCC), Communication (COM), Locomotion (LOM) and Socialization(SOC). The scale consists of 89 test items grouped into year levels i.e from birth to 15yrs. The information on VSMS test items regarding child’s abilities through direct observation and supplement was collected by interviewing the mother of the child. The item will be recorded as pass if the child is able to perform correctly and fail if otherwise. Half credits may be given if it can be presumed that the child could have passed the item if the opportunity was present. These half credits receive full credit if they lie between two passed items. By adding up passed scores (full and half) the Social Age (SA) of
the child will be known. The Social Quotient (SQ) was obtained by dividing SA by CA and multiplying by 100. The maturity levels were assessed both in terms of SA and SQ for each of the eight social areas by referring VSMS norms and social maturity constellation was recorded. The tool formed to be reliable and valid to use the same in the present study. The English version of the tool is appended (Appendix-III).

4. Description of Binet Kamat Test Of Intelligence (BKT):

Binet-Kamat (B-K) test is a modified version of Stanford Binet Scale measuring intelligence of Indian children. It is an age scale where in the tests are grouped into age levels extending from 3 years to superior adult level. Each age level consists of six tests. There is no test for ages 11, 13, 15, 17, 18, 20, 21 years, due to declaration of mental development at these ages. Alternative tests are also provided at each age level which can be substituted for regular test. B-K test include both verbal and performance tests. It is both power and speed test since some of the test items are timed. The test provides an estimate of MA& IQ. (Indian adaptation by Dr.V.V.Kamat, 1958 ) from 3-22yrs. Pattern analysis of the test items provide estimate of specific cognitive functions as, comprehension, memory, reasoning and other abilities.

Administration of BKT

The standard procedure is to begin testing at a level slightly below the subject’s age. If the individual fails in any test with that year level first administered, then next lower level is given. This procedure is continued until a level is reached at which all tests are passed. This level is known as Basal age. Testing should then be continued upward to a level at which all tests are failed, designated as ceiling age. After which the test is discontinued. Although in the standardized procedure, alternative tests are to be substituted if regular test omitted. Although in the standardized procedure, alternative tests are to be substituted if regular test omitted. The items are considered as pass or fail i.e. for each test under the year level column passed if the child performs correctly as per the scoring criteria and failed if otherwise. If a particular test is not administered, record as ND i.e. not done in the corresponding column.
Binet–Kamat test items are scored on an all-or-none basis. The basal age, i.e. the highest age level below which all test items are passed and ‘ceiling age’ at which all items are failed. Mental Age (MA) has been calculated by adding partial credits to the basal age for every test passed beyond basal level. Credit of 2 months is given for each item passed between 3-10 years; 4 months for 12,14 and 16 years; and 6 months for 19 and 22 year levels. The Intelligence Quotient (IQ) will be computed by the ratio of MA over CA multiplied by 100.

For each of the eleven cognitive factors MA and IQ were assessed by referring norms and the record of values in the respective columns of pattern analysis. There are six main cognitive factors (Language, Memory, Conceptual Thinking, Reasoning, Visuo Motor and Social Intelligence) and five sub cognitive factors (Meaningful Memory, Non Meaningful Memory, Non-Verbal reasoning, Verbal Reasoning, Numerical Reasoning). The reliability of the Binet – Kamat test of intelligence is reportedly above 0.7 and the validity of this test for normal children against estimation of intelligence quotient by teachers is 0.5 (Kamat, 1967). The English version of BKT is appended (Appendix - IV)

5. Description of Indian Scale For Assessment Of Autism (ISAA):

Indian Scale For Assessment Of Autism (ISAA) which was designed at National Institute for the Mentally Handicapped (NIMH, 2008) is an objective assessment tool for persons with autism which uses observation, clinical evaluation of behavior, testing by interaction with the subject and also information supplemented by parents or caretakers in order to diagnose autism. ISAA consists of 40 items rated on a 5-point scale ranging from 1 (never) to 5 (always). The 40 items of ISAA are divided under six domains as follows.

Domain-I : Social Relationship and Reciprocity

Individual with autism do not interact with other people. They remain socially unresponsive, aloof and may have difficulty in understanding another person's feelings, such as pain or sorrow. They have significant problems in the use of body language and nonverbal communication, such as eye contact, facial expressions, and gestures and establishing friendships with children of the same age.
Domain-II: Emotional Responsiveness

Individuals with autism do not show the expected feelings in a social situation. Emotional reactions are unrelated to the situation and may show anxiety or fear which is excessive in nature without apparent reason. They may engage in self-talk that is inappropriate for their age and may lack fear of danger.

Domain-III: Speech - Language and Communication

Individuals with Autism will have problems in speech development. They find it difficult to express their needs verbally and nonverbally and may also have difficulty in understanding the non verbal language of others. People with autism often, have echolalia and may repeat a word, phrase or sentence out of context.

Domain-IV: Behaviour Patterns

Individuals with autism may engage in self –stimulatory behaviour in the form of flapping of hands or using an object for this purpose. They insist on following routines, sameness and may resist change. Some autistic children may be restless and exhibit aggressive behaviour.

Domain-V: Sensory Aspects

A majority of autistic people are either hyper or hypo sensitive to light, sound, smell and other external stimulation. They may ignore objects or become obsessed by them or they may watch those objects very intently or act as if they are not even there. Some autistic children explore their environment by smelling, touching or tasting objects.

Domain-VI: Cognitive Component

Individuals with autism may lack attention and concentration. They do not respond to instructions promptly or respond after a considerable delay. On the other hand individuals with autism may also have special or unusual ability known as, savant ability in some areas like reading, music, memory and artistic abilities.
a) Guidelines for Test Administration

As the investigator herself is trained in the administration of ISAA has thorough familiarity with the test items, test materials, recording and scoring. Guidelines for rating ISAA were adhered to. Practice test administration using CD to understand subtle cues was also considered by the investigator.

Each item of ISAA is to be assessed and a rating is to be given based on the intensity, duration and frequency of the characteristics.

ISAA was administered under standard testing conditions and testing methods such as Person’s physiological condition (fatigue, sleep and state changes); comfort level of the person being tested; Periods of fear or oppositionality in the person being tested; Quality of informant’s verbalizations; Consideration of environmental and cultural influences; Congenial environment and rapport while interviewing informants; Understanding individual differences; thorough familiarity with the test content and procedures and flexibility of the examiner.

b) Assessment was done by Observation; Informant interview and Testing.

Observation:

The tester focused on the individual being tested for the following aspects: Interaction with the caregiver and others; Quality of social responsiveness in terms of duration, reciprocity; Interest in people and objects; Communication; Use of sensory modalities; Comfort level or distress in relation to others and any Inappropriate behaviours.

For example, testing for “Poor eye contact” was assessed by observing the individual to see how frequently she/he makes eye contact, how long eye contact is maintained and its appropriateness to the age of the person as well as cultural norms. This information was supplemented by seeking information from the informants through interview.

Reliable information from the informant, across different settings is crucial for proper evaluation. For example, while testing for delayed response time, Picture Books/Blocks will be used and ask the child to show some object/thing/fruit in a
picture book or natural surrounding. Interviewer need to observe if the child is responding after a delay or repeated instructions or prompts are required to elicit a response. The names or uses of objects or differences between objects depending on the age of the child was also ascertained. Assessment of persons with autism took 20-30 minutes.

Responses on ISAA was scored as per the scoring system given below. Each of the 40 test items is to be rated on 5 categories, out of which one is to be checked. These were further quantified by providing percentages to indicate the frequency, degree and intensity of behavioral characteristics that were observed. The categories of scoring are Viz; Rarely (Up to 20%); Sometimes (21 – 40 %); Frequently (41 – 60%); Mostly (61– 80 %) and Always (81% - 100 %). The minimum score obtained on this is 40. The maximum score that can be obtained is 200.

**Standardization Details of ISAA :**

Validity of ISAA test items was determined by correlating the individual item scores with the total scores, all the items of the scale were significantly correlated with total scores at 0.001 level, except one item (A40), namely ‘savant ability’ which was significant at 0.5 level.

Reliability of ISAA was established by various procedures of reliability such as: Internal consistency reliability (0.93) for autism group indicating high degree of internal consistency (0.62 to 0.81), test retest reliability of ISAA, (0.60 to 0.85) in various domains and for the total score it was 0.83 (p<0.001).

Since original scale of ISAA was standardized for Indian children the same norms were used to classify mild level to severe levels of autism for the present study. The English version of ISAA is appended (See Appendix - V)

**6. Description of Functional Assessment Check List for Programming (FACP):**

Department of Special Education at NIMH (1995) has developed educational assessment checklist for children from preprimary to prevocational levels. Grouping is done based on the ability and chronological age into different levels such as Preprimary, Primary-I, Primary-II, Secondary, Pre-vocational-I, Pre-vocational-II, and
Care group. The areas to be trained are grouped under the following areas or domains: Personal, Social, Academic, Occupational and Recreational. All the items listed are activity based so that setting teaching goals and evaluation are easy. The format is so designed that the programmer can enter assessment information (entry level) and the progress can be monitored periodically (at every quarter) for about three academic years. In the present study only two domains were considered viz., personal and academic in FACP.

Reading each item in the check list carefully, and from the performance scale, select the item which best describes the students present level of performance. Yes (+) means the child can perform the item with no help. Occasional Cuing(C) means, the child needs to be given clues which require ‘thinking’ by the child to perform the task. Verbal prompting (VP) means verbally telling to perform the task, Physical prompting (PP) means physically helping the child to perform the task, No(-) means, one has to completely do the task for the child. Not Applicable (NA) refers to the non suitability of the item to the child. No Exposure (NE) means, lack of opportunity to learn. Recreational items are to be graded as given in the checklist.

**Scoring:** Items marked ‘Yes’ (or +) are counted as a point, while the others such as PP, VP, NE are noted but not counted for points. As the ultimate aim is achieving independence in a given activity area by the child, those activities the child performs independently or with occasional cueing only will be considered for quantifying into scores. The scoring procedure of the original form was followed in the present study. The investigator may use her judgment to delete the item while calculating 80% pan criteria or in grading the recreational activities.

**Progress report:** Trainers can report the progress of student both qualitatively and quantitatively using this assessment tool. The codes they use in noting the progress of students on the assessment checklist guides teachers in writing a qualitative report and the table provided at the end of the checklist in writing quantitative report.

The FACP was used in the present study on the basis of trial testing and its suitability. English version of FACP is appended at the end (See Appendix - VI)
7. Details of Interventional Package:

An Interventional Package was prepared for interventional phase. Interventional Package chiefly consist of behavioral techniques and special educational programming using special educational strategies. The entire study has been conducted in three stages viz., screening, testing and intervention. The intervention details are illustrated in Appendix-VII.

4.7 The Procedure:

The entire study has been conducted in three stages viz., Screening stage, Testing stage and Intervention stage. For purposes of clarity, some details are repeated in two or more places of this chapter.

(a) Screening Stage: It took about 6 to 7 months to screen sample for the study. The consent of each parent and their convenience to participate in the testing was obtained to include them in the sample. The data was collected in the surrounding locations of Manovikasnagar and Trimulagary, Secunderabad through door to door survey.

Purposive sampling method was used for data collection and a semi structured interview was conducted. In the first phase total 500 cases were screened to identify cases with mental retardation by administering Developmental screening test (DST) and Vineland Social Maturity Scale (VSMS), Binet Kamat Test Of Intelligence (BKT). Compiling the scores of DST, VSMS, and BKT the IQ is obtained. Each interview with an individual lasted for 45mts (small breaks in between) and children above IQ 70 were ruled out.

(b) Testing Stage: In the testing stage, children below IQ 70 were administered Indian Scale For Assessment Of Autism (ISAA) (pre- interventional test), the interview with individual lasted for 30mts and 35 MR children with ASD were identified consisting of 30 males and 5 females. Children with mild and moderate MR with ASD were included. MR children with ASD who are having severe and profound MR with ASD were excluded from the study. As a next step in the stage, Functional Assessment Check list for Programming (FACP) was administered.
individually on selected 13 MR children having ASD. The time taken for each child was approximately 45 mts.

(c) Intervention Stage: After identifying MR children having ASD, individualized behavioral and special educational intervention package was planned and implemented with the help of parents, siblings, and significant family members. The target behavioral skills in the intervention stage were the behavioral skills reported in ISAA and target goals were selected from FACP domains viz., personal and academic domains suitable for preprimary and primary–II groups. Skills in ISAA with high scores were considered as severe problems in these behavioral skills. Accordingly, three skills with high scores are taken as target behavioral skills during interventions. For the selected target behavioral skills, objectives and procedure are written followed by using behavioral techniques like restructuring of environment, extinction, scheduling of activities, modeling, response cost, differential reinforcement techniques like differential reinforcement for incompatible behavior, differential reinforcement for other behaviors and differential reinforcement for alternate behaviors. The diagrammatic illustration of Interventional targets (behavioral skills) are in Figure 4.

**Figure-4: Interventional targets (Behavioral Skills)**

![Diagram of Interventional targets (Behavioral Skills)](image-url)
Special education assessment and programming was done using FACP checklist followed by Individualized Educational Program (IEP). IEP includes programming in two domains, viz., Personal and Academic. For each domain, two goals were identified i.e for each goal, objectives and procedure were written along with task analysis. Special educational strategies like prompting (physical prompting, verbal prompting), modeling, cuing, fading, etc, and differential reinforcement techniques were used combination of multiple techniques were used. The intervention was implemented individually along with home based training. The intervention was implemented for a period of 3 months over 35 sessions, each session lasted for 35-45mts.

Parents were explained about the present study; signed informed consent forms and confidentiality was ensured throughout the study. Parents were given the freedom to drop out of the intervention program at any time if they feel inconvenient. The time of training sessions was fixed mostly according to the convenience of parents. The parents were requested to act as therapeutic agents during the execution of the intervention program. The investigator with the help of parents executed and supervised the procedure throughout the intervention phase.

4.8. The details of psychoeducational intervention Procedure:

The behavioral skills identified in the study and the interventional techniques used are given in the table (1). Combination of multiple interventional techniques were used to teach each behavioral skill targeted. The interventional details are provided in Table 1.
Table 1: Details of Target Behavioral skills, Activity Planned and Interventional Techniques used.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Behavioral skill (Targeted)</th>
<th>Activity followed</th>
<th>Interventional technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lacks eye contact</td>
<td>Blowing bubbles using a wand</td>
<td>Combination of behavioral techniques like restructuring of the environment, token economy, response cost,</td>
</tr>
<tr>
<td>2</td>
<td>Shows hyperactivity/ restlessness</td>
<td>On Seat task like Threading beads</td>
<td>Combination of behavioral techniques like restructuring of the environment, token economy, differential reinforcement for incompatible behavior (DRI), differential reinforcement for alternate behavior (DRA).</td>
</tr>
<tr>
<td>3</td>
<td>Inconsistent attention and concentration</td>
<td>picture completion board</td>
<td>Combination of behavioral techniques like restructuring of the environment, reinforcing</td>
</tr>
<tr>
<td>4</td>
<td>Produces infantile squeals/ unusual noises</td>
<td>Blowing bubbles using a wand</td>
<td>Combination of behavioral techniques like restructuring of the environment, token economy, DRI, DRA</td>
</tr>
<tr>
<td>5</td>
<td>Remains aloof</td>
<td>Social play behavior playing with ball</td>
<td>Combination of behavioral techniques like Scheduling of activities, differential reinforcement for other behavior (DRO),</td>
</tr>
<tr>
<td>6</td>
<td>Unable to take turns in social interaction</td>
<td>Interactive play</td>
<td>Combination of behavioral techniques like reinforcing, Modeling</td>
</tr>
<tr>
<td>7</td>
<td>Engages in solitary and repetitive play activities</td>
<td>Social play behavior Playing with ball</td>
<td>Combination of behavioral techniques like Scheduling of activities, DRO</td>
</tr>
<tr>
<td>8</td>
<td>Does not maintain peer relationship</td>
<td>Social play behavior (Playing with ball along with other children)</td>
<td>Combination of behavioral techniques like Scheduling of activities, reinforcing</td>
</tr>
</tbody>
</table>

As the focus of the present thesis is on efficacy of psychoeducational interventions towards behavior modification of MR children having Autism, the execution of intervention program for different skills are explained in detail in the following pages.
(i) Intervention for a behavioral skill (1). Viz., Lack eye contact:

A quiet place was selected to start the intervention and the instructions were given to the mother. Initially investigator demonstrates the procedure to mother. The activity adopted was showing the bubbles with eyes, both horizontally and vertically and the child is encouraged to catch one. The investigator will blow bubbles using a wand and child is encouraged to follow the same. The investigator encouraged the child to look at the eyes of her while blowing bubbles. This should be repeated several times along with other activities like blowing the thermocal balls, the trainer gives verbal instructions to catch the balls and encourages by reinforcing the child. Every successive step towards was encouraged and rewarded. In a teaching situation a child responses are ignored (extinction), and attending responses are positively reinforced. The investigator identifies the rewards. If the child fails to attend activity, the child is expected to return the rewards either in a tangible quantity (e.g food, money, or some other desirable object) or involves an activity like watching television. Sometimes desirable responses are encouraged in conjunction with token economies and on the other hand loss of tokens for faulty behavior could have been exchanged for desirable activities important to the individuals behavioral skills. Once the child starts learning the eye contact another activity like sand play and water play was introduced to motivate the child (not giving same activity). While pouring water from one container to other is encouraged to sustain eye gaze.

(ii) Intervention for a behavioral skill (2)viz., Shows Hyperactivity/ Restlessness

Once the child’s attention is aroused, the investigator introduces on seat task like using different stencils of different shapes, where child is taught to color by placing the stencil on a white paper or a chart so that the color does not come out, as the child is restless he may over do it. The physical environment is restructured, the distractors in the room are removed which interfere in the learning process therefore restructuring of environment is essential. Initially on seat task was planned for 5mts and slowly increased the timings from 5-10minutes and 10-15mts. Child was reinforced for paying attention. Activities like threading beads where the child has to sit and thread the beads and while threading no other activity can be performed where differential reinforcement for incompatible behavior (DRI) technique was used. Every
successive step was rewarded. Mother was asked to repeat the procedure several times with similar activities like beg board where the child is made to sit and perform the activity.

(iii) Intervention for a behavioral skill (3) viz., Inconsistent Attention and Concentration

Investigator introduce the task to be learned by the child i.e. the child is presented a picture completion board which consist of 5 pieces, and he/she has to join at least 2 pieces initially to complete a picture. Initially the child is given physical prompting and allowed to master for few sessions and was rewarded for paying attention. When child gets distracted physical environment was restructured, the distracters in the room were removed which interfere in the learning process. Therefore restructuring of environment was essential. As the child concentrates on the given activity he is asked to join two more correct pieces initially he/she was allowed to do by trial and error, if he/she fails he/she was prompted and was given enough time and motivated to join all pieces correctly to form a complete picture and as a next step a picture completion board containing more than 5 pieces where he/she was to pay more attention and concentration for longer duration was given to the child. Introducing similar activity after few sessions was given as the child gets bored and mother was asked to repeat the same.

(iv) Intervention for a behavioral skill viz., (4). Produces Infantile Squeals/ Unusual Noises

The activity adopted was showing the bubbles with eyes, both horizontally and vertically and the child is encouraged to catch one. The investigator will blow bubbles using a wand and child is encouraged to follow the same. After short period the investigator encourages the child to blow bubbles using a wand. At this stage DRI technique is used where while blowing bubbles using a wand he/she cannot produce infantile squeals/ unusual noises at the same time. This technique is used several times whenever child produces infantile squeals/ unusual noises the investigator encouraged the child to look at the eyes of her while blowing bubbles. This should be repeated several times along with other activities like blowing the thermocal balls, the investigator gives verbal instructions to catch the balls and encourages by reinforcing
the child. Every successive step towards this should be encouraged and rewarded. In a teaching situation the child responses are ignored (extinction), and attending responses are positively reinforced. The investigator identifies the rewards. If the child fails to attend to activity, the child is expected to return the rewards either in a tangible quantity (e.g. food, money, or some other desirable object) or involves an activity like watching television. Sometimes desirable responses are encouraged in conjunction with token economies and on the other hand loss of tokens for faulty behavior could have been exchanged for desirable activities important to the individuals behavioral skills. Mother was asked to repeat the activity several times once the child stops producing infantile squeals/ unusual noises slowly reinforcement is faded.

(v) Intervention for a behavioral skill (5). viz., Remains Aloof

Once child’s attention is aroused the investigator plans daily activity schedule. A time table is prepared which includes activities like play, recreational activities, on seat task, games, music etc. The technique used is “scheduling of activities”, a sitting activity is next followed by a recreational activity and vice versa. The investigator completely engages child by involving in different activities. Activities like threading beads, coloring, vegetable printing etc. The child is praised for his/her cooperation and rewarded if he/she attends the activity. After few sessions as child learns to engage himself/herself the investigator plans game which include more than one child like train-train etc. A busy schedule is continued till the child learns to engage himself/herself in the absence of the investigator and mother was asked to follow the time table schedule.

(vi) Intervention for a behavioral skill (6) viz., Unable to Take Turns in Social Interaction

Investigator shows flash cards of social interaction pictures like saying hello, bye-bye etc. Then slowly shows the story pictures and narrates the story by pointing to the pictures, after few sessions the investigator gathers two to three children and introduces herself first and later makes every one to introduce one by one and praises the one who introduces well. The investigator then shows very familiar story pictures and explains story verbally along with actions and encourage the child to imitate and
she asks each child one question by showing the story picture and says each one will get a chance to answer and will be rewarded who waits for the turn. First the investigator demonstrates who has to take turn in social interaction by modeling and later it is repeated with the child. As the child learns to take turn in social interaction the same skill is generalized in other situation and the child is encouraged and reinforced for his success.

(vii) Intervention for a behavioral skill (7) viz., Engages in Solitary and Repetitive Play Activities

Once child’s attention is aroused the investigator plans daily activity schedule. A time table is prepared which includes activities like play, recreational activities, on seat task, games, music etc. The technique used is “scheduling of activities”, a sitting activity is next followed by a recreational activity and vice versa. The investigator completely engages child by involving him/her in different activities where change of activities like threading beads, coloring, vegetable printing etc. where child is not allowed to play same game and is rewarded for other positive behaviors (DRO technique is used). The child is praised for his/her cooperation. Mother was asked to follow the same.

(viii) Intervention for a behavioral skill (8) viz., Does Not Maintain Peer Relationship

The investigator plans daily activity schedule. A time table is prepared which includes activities like play, recreational activities, on seat task, games, music etc. The technique used is “scheduling of activities”. The investigator completely engages child by involving the child in different activities along with peer group. Activities like threading beads, coloring, vegetable printing etc. The child is praised for his/her cooperation and rewarded if he/she attends the activity along with the peer group. After few sessions as child learns to engage him/herself the investigator plans a game which include more than two to three children like train-train etc, a busy schedule is continued till the child learns to engage himself along with his/her peers.
SPECIAL EDUCATIONAL INTERVENTIONAL TECHNIQUES USED

Apart from the above interventional techniques, an attempt was made in the interventional phase to execute Special Educational strategies towards FACP Domains. The Special Educational strategies like prompting [physical prompting (PP), verbal prompting (VP)], modeling, cuing, fading etc; and differential reinforcement techniques were used. Combination of multiple techniques were used in the intervention while teaching a single task. As it was a special sample, improvement with one technique may not be effective, hence multiple techniques were used (Table 2).

Table 2: Details of Target Goals as per FACP, Activity Planned and Techniques used as part of Psychoeducational Interventions

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Task Activity</th>
<th>Special educational strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Indicating toilet need</td>
<td>Time table chart Combination of strategies /techniques like Physical prompting (PP), verbal prompting (VP), fading, token economy, response cost, positive reinforcement</td>
</tr>
<tr>
<td>2.</td>
<td>Washing after defecation</td>
<td>Flash cards Combination of strategies /techniques like PP, VP, fading, positive reinforcement</td>
</tr>
<tr>
<td>3.</td>
<td>Mixing and eating rice</td>
<td>Flash cards and activity demonstration Combination of strategies /techniques like PP, VP, modeling, fading, positive reinforcement</td>
</tr>
<tr>
<td>4.</td>
<td>Brushing teeth independently</td>
<td>Flash cards and activity demonstration Combination of strategies /techniques like PP, VP, modeling, fading, positive reinforcement</td>
</tr>
<tr>
<td>5.</td>
<td>Washing hands before eating</td>
<td>Flash cards and activity demonstration Combination of strategies /techniques like PP, VP, modeling, fading, positive reinforcement</td>
</tr>
<tr>
<td>6.</td>
<td>Identify big and small objects</td>
<td>Teaching learning Material (TLM) Combination of strategies /techniques like PP, VP, cueing, fading, positive reinforcement</td>
</tr>
<tr>
<td>7.</td>
<td>Identifying 5 animals in pictures</td>
<td>Teaching learning Material (TLM) Combination of strategies /techniques like PP, VP, cueing fading, positive reinforcement</td>
</tr>
<tr>
<td>8.</td>
<td>Identifying 5 vehicles in pictures</td>
<td>Teaching learning Material (TLM) Combination of strategies /techniques like PP, VP, cueing fading, positive reinforcement</td>
</tr>
<tr>
<td>9.</td>
<td>Matching red/green colors</td>
<td>Teaching learning Material (TLM) Combination of strategies /techniques like PP, VP, cueing fading, positive reinforcement</td>
</tr>
<tr>
<td></td>
<td>Task</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>10.</td>
<td>Coloring a given shape.</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>11.</td>
<td>Naming means of transport-5</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>12.</td>
<td>Identifying/naming 5 animals in pictures</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>13.</td>
<td>Identifying/naming 5 fruits in pictures</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>14.</td>
<td>Identifying body parts-5</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>15.</td>
<td>Naming numbers up to 5 when not asked sequentially</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>16.</td>
<td>Identifying red and green colors</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>17.</td>
<td>Meaningful counting-10</td>
<td>Teaching learning Material (TLM)</td>
</tr>
<tr>
<td>18.</td>
<td>Writing name</td>
<td>Teaching learning Material (TLM)</td>
</tr>
</tbody>
</table>

The investigator demonstrates the above mentioned tasks to the mother and explains the procedure with the help of flash cards and teaching-learning materials (TLM). Initially physical prompting (PP) is given as the child learns to master the task fading and instructions were given verbally (VP). Initially the investigator holds the child’s hand physically, sitting behind and make him/her to perform the activity and after few sessions slowly reduces physical prompting (PP) day by day as the child learns verbal instructions (VP). If the child does not understand activity, he/she has to be explained by modeling wherever is essential. Cueing is also given when child needs minimal assistance .Child is rewarded when he/she learns to complete the task .Similarly the other tasks mentioned in the above table (2) are taught to the subjects in the interventional phase. An example of protocol of time scheduled (Senior, task, etc) for special educational behavioural interventions are provided in Table 3.
### Table 3: Protocol of Time Schedule for Behavioral/Educational Intervention Sessions

<table>
<thead>
<tr>
<th>SESSIONS</th>
<th>TOPIC</th>
<th>DATE /TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session-1</td>
<td>Self help</td>
<td>Date:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time:</td>
</tr>
<tr>
<td>Session-2</td>
<td>Academic</td>
<td>Date:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time:</td>
</tr>
<tr>
<td>Session-3</td>
<td>Social skills</td>
<td>Date:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time:</td>
</tr>
<tr>
<td>Session-4</td>
<td>On seat tasks</td>
<td>Date:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time:</td>
</tr>
</tbody>
</table>

Detailed report of administration of interventional package for a simple case is given in chapter V (Section-VI).

#### 4.9. Statistical Analysis

After implementation of the intervention package for three months the post intervention assessment through testing was conducted to check the effectiveness of psychoeducational interventions. The raw scores that were obtained across sociodemographic subgroups are tabulated and analyzed by using simple ‘t’ tests (for small sample) to find out the significance of interventions paired ‘t’ test was used.