

## Applied Behaviour Analysis (ABA) for Adolescent Intellectually Disabled Children

Dr. G. Suganya<sup>1\*</sup>, Miss. M. Jeevitha<sup>2</sup>

### ABSTRACT

**Introduction:** Adaptive Behaviour relates to everyday skills or tasks that the average person is able to complete, similar to life skills. It enables a person to cope with their environment leading to greatest success and less conflict with others. Behavioral patterns of Intellectually Disabled children change throughout a person's development, especially during adolescence, with evolution of personal values. It is important to assess adaptive behavior in order to determine how well an individual functions in daily life. Maladaptive behaviour on the other side leads to Non productive coping. As Intellectually Disabled children reach developmental milestones much later than the general population, low performance on all kinds of intellectual task including learning, use of concepts, and problem solving is noted in all types of ID. Specific abnormalities may lead to particular difficulties. For example, lack of visuo spatial skills may cause practical difficulties, such as inability to dress, or there may be disproportionate difficulties with language or social interaction, both of which are strongly associated with behaviour disorder. Among retarded children, the common behaviour problems of childhood tend to occur when they grow older. Adolescents with mental retardation (ID) face a number of physical and psychological needs which are not often distinguishable & as a consequence undergo the deterioration of their already burdened quality of life. In particular, mental health problems occur 3 to 4 times more often in adolescents with mental retardation. Epidemiological data indicate that behavioral disorders are among the most common types of psychopathology in mentally retarded adolescents with the severity and symptoms vary depending on the personal characteristics of each adolescent., (Psychiatric bulletin, Apr-Jun 2014.) Individual characteristics of adolescents (intellectual level, attention capacity, understandable linguistic expression), along with intensity of problem determines the type of Behaviour Therapy (ABA) to be applied. CHILD BEHAVIOUR THERAPY clarifies the meaning of behaviour modification which refers to the application of behaviour principles, to child rearing. Applied Behaviour Analysis" (ABA) refers to a variety of psychosocial interventions that use behavioral principles to shape an individual's behaviour. This study involves applying ABA for adolescent Intellectually Disabled children, and analysing its effectiveness in relevance to various adaptive behaviours. **Aim of the study:** To identify inappropriate behaviour in adolescent intellectually

<sup>1</sup>Senior Occupational Therapist, Division of PMR, Government Cuddalore Medical College & Hospital (RMMC&H), Chidambaram. (ORCID ID: <https://orcid.org/0000-0002-8852-9878>)

<sup>2</sup>Occupational Therapy Intern, Government Cuddalore Medical College & Hospital (RMMC&H), Chidambaram.

\*Corresponding Author

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disabled, by standardized assessment, apply ABA method of treatment, and find the effectiveness of the selected treatment in dealing with such behaviours. **Objectives of the study:** To screenout for inappropriate behaviour of adolescent Intellectual Disabled children with Nisonger Child Behaviour Rating Form. To apply selected Applied Behaviour Analysis for moulding inappropriate behaviour for duration of two to six months in selected Day care centre at Cuddalore. To study the effectiveness of therapy. To tabulate & statistically analyse the results. **Method:** Mild, Moderate, Severe ID adolescents studying at Sri Sivasakthi special care school at Cuddalore are included, for the study after obtaining their parents consent. Children of both male and female gender, of age 12 to 14 is included. Through HISTORY from parents & teachers and Nisonger Child Behavior Rating Form, inappropriate behaviour was screened. Appropriate children & method of ABA was selected, for providing treatment. Results were analysed. **Result:** It is seen from the analysis that problem behaviours of the patients for mild, moderate and severe Intellectual Disability were reduced using the Applied Behaviour Analysis. Among the techniques, discrete trial training, picture exchange communication system and token economy is significantly effective in dealing with Irritable, Anxious, conduct problem & hyperactivity. **Discussion:** The purpose of this study was to identify problem behaviours in intellectual disability, administer ABA, and find its effectiveness in dealing with the problem behaviours. For this study, Sri Siva Sakthi Special School, at Cuddalore was approached. Informed consent from parents, teachers was obtained for conducting study in the school premises. 30 students of intellectual disability were identified with problems. The children were assessed using standardized NISONGER CHILD BEHAVIOUR RATING FORM. The behaviour problems in individuals were noted. It was informed to parents, teachers to apply same method of ABA, irrespective of whether they are at school campus, at home etc. After such intervention application for 3 months, reassessing them using the same scale revealed conduct problem, anxious, hyperactive, self-injury, self-isolate and irritable problems are reduced to a notable degree. It was observed that, Discrete Trial Training was very much effective for mild intellectual disability. Picture Exchange Communication System and Token Economy was very much effective for Moderate and severe Intellectual disability. **Conclusion:** From the selected sample of the study, it is seen that ABA is an effective method of therapy for any type of Intellectual Disability in dealing with behaviour problems of Adolescence. It could be taught to parents, teachers of such children at an early age to minimize the inappropriate behaviour at any place.

**Keywords:** *Intellectually disabled children, Adaptive Behaviour, Applied Behaviour Analysis, maladaptive behaviour*

**I**n the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), the word "MR" appeared. In addition, a federal statute in the United States (APA, 2013) changed the word "mental retardation (MR)" to "intellectual disability (ID)" since MR has a stigmatizing connotation associated to it, but the phrase "intellectual disability" has a less negative meaning. The term intellectual disability, also known as intellectual developmental disorder, placed all "disabilities on the International Classification of Functioning, Disability, and Health (ICF)". Intellectual disability (ID) manifests before adulthood and is characterized by significantly impaired cognitive performance and deficits in more than two adaptive skills. Individuals with intellectual disability often have difficulty communicating their needs and communicating with others. Although they are used less commonly these days, the names "Mental Retardation" (MR) and "Developmental Disability" (DD) are also acceptable synonyms for intellectual disability. (Ansberry, 2010; Harkin, 2010; [APA])

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In India, the problem of ID varies depending on various demographic factors like age, gender, and residential area (Girimaji and Srinath, 2010; Lakhan and Ekundayo, 2013; Lakhan, Ekundayo and Shahbazi, 2015). According to the DSM-5, the prevalence of Intellectual Disability (ID) is around 1 percent to 3 percent of the overall population. The prevalence of ID in common population was found to be 10.37/1000, by research conducted across the world (Maulik, Mascarenhas, Mathers, Dua and Saxena, 2011). According to Maulik et al. (2011), the incidence rate for **moderate ID** was greatest and ranged from 2 to 30 per 1,000 people, whereas the incidence rate for **severe ID** is approximately 6 per 1,000 people (APA, 2013).

### *Clinical features of intellectual disability*

There are maladaptive behaviours which distinguish a person as atypical. These behaviours may involve stereotyped or repetitive acts which consist of body rocking, head rolling, hand flapping, bruxism, twirling, pillrolling, unusual limb posturing, object spinning, vocal sounds, and the like. A closely related group of self-injurious behaviors may also be observed which includes head-banging, face slapping, self-biting, trichotillomania, and eye poking. Tantrums, aggressive and destructive acts, explosive outbursts(irritable), hyperkinesis, lack of impulse control, unconcealed masturbation, inappropriate channeling of erotic feelings, compulsions, unusual fears, negativism, and withdrawal, all represent behaviors which are considered to be undesirable in most settings, and hence, maladaptive. (American handbook of psychiatry, Mental Retardation –streling D.Garrard et.al.,)

### *Types of intellectual disability*

**Mild** intellectual disability (IQ 50-70): People with mild mental retardation account for about 85% of the mentally retarded. Usually, their appearance is unremarkable and any sensory or motor deficits are slight. Most people in this group develop more or less normal language abilities and social behaviour during the preschool years, and their mental retardation may never be formally identified. In adult life most people with mild retardation can live independently in ordinary surroundings, though they may need help in coping with family responsibilities, housing, and employment, or when under unusual stress.

**Moderate** intellectual disability (IQ 35 – 49): People in this group account for about 10% of the mentally retarded. Most can talk, or at least learn to communicate, and most can learn to care for themselves albeit with some supervision. As adults, they can usually undertake simple routine work and find their way about, but very few can lead an independent life.

**Severe** intellectual disability (IQ 20-34): People with severe retardation account for about 3-4% of the mentally retarded. In the preschool years their development is usually greatly slowed. Eventually many of them can be helped to look after themselves under close supervision and to communicate in a simple way; as adults they can undertake simple tasks and engage in limited social activities, but they need supervision and a clear structure to their lives. Among the severely retarded, a small number of children have specific cognitive abilities (for example a musical or artistic talent)

**Profound** intellectual disability (IQ below 20): People in this group account for 1-2% of the mentally retarded. Few of them learn to care for themselves completely. Some eventually achieve some simple speech and social behaviour.

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Psychiatric disorders among the intellectual disability,

- Schizophrenia
- Affective disorders (depressive disorder, mania)
- Neurosis
- Organic psychiatric disorders
- Autism and over activity syndromes
- Behavior disorders

### ***Behavior Modification Through Applied Behavior Analysis***

(ABA) is a therapy, based on the science of learning and behavior theories. It helps to understand that behaviour is affected by the environment, the goal is to increase behaviours that are helpful and decrease behaviours that are harmful or affect learning to the person. “ABA focuses on antecedents and on consequences based on behavioral psychology. For e.g. ID children can be thought to reduce inattention, aggression, screaming.

- ABA has passed scientific tests of its usefulness, quality, and effectiveness.

ABA treatment goals include improving daily living skills, decreasing harmful behaviours, improving social functioning and play skills, improving communication skills, and developing skills that result in greater independence. Different ABA approaches include Behavior Skills Training (BST), Discrete Trial Teaching (DTT), Incidental Teaching, Verbal Behavior, Early Intensive Behavioral Intervention (EIBI), Pivotal Response Treatment (PRT), and others.

**Reinforcement Systems:** To teach individuals about the consequences of certain behaviours, If individuals don't engage in the appropriate behaviour, they may be prompted to try again, or reinforcement may be withheld until the behaviour is seen. If they do correctly perform the behaviour, they may receive a reward or positive reinforcement in the form of a reward or praise. Children, for example, may receive tokens that can be exchanged for snacks, toys, and special privileges.

Positive Reinforcement (increase behaviour), When a behaviour is followed by something that is valued (a reward), a person is more likely to repeat that behaviour. Based on the age (ABA is effective for people of all ages) and ability level, motor skills, communication and language (Social skills) Self-care, Play and leisure learning and academic skills can be planned for ABA. Example 1: giving extra computer time to a child who completes his or her homework on time. Example 2: mother makes chocolate chip cookies and after her kid admiring them, she cooks it more often.

Negative Reinforcement (Increases a behavior): Taking something that is “negative” to the person away to INCREASE a behavior. Example 1: Child finishes his or her homework to STOP his mother's nagging about doing his homework, increasing the behavior of doing homework (and to avoid nagging) in the future.

Punishment (Decreases a behavior): This is a positive or negative action (or consequence) that causes a DECREASE in behavior and reduces the chance of it happening again or continuing.

Example 1: Child throws toy across the room and his mom takes his toy away. He never throws toys again. Taking the toy away was a punishment that decreased the behavior which

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serves as punishment. Example 2: a child raises his or her hand to answer a question, gets it wrong, and is extremely embarrassed. Her behavior of raising her hand decreases, so rising her hand in class has served as a punishment.

### ***Token economy***

A system that provides positive reinforcement for an individual by giving them tokens for appropriate behavior. A token economy is a method that uses a complex system of consequences and is typically applied with group of individuals for a wide range of target behaviors (Ayllon & Azrin, 1968b). The terms token economy and token system are sometimes used interchangeably. Token economies have been used in a great variety of settings, including classrooms for typically functioning students of all ages, hospitals for psychiatric patients and drug abusers, group homes for teenagers who have committed antisocial acts and are at risk of becoming delinquents, and work settings to enhance job performance (Kazdin, 1985).

**Discrete Trial Training** involves therapist providing a prompt, ask for the desired behaviour, and reward the behaviour with positive reinforcement. This process is then repeated until the desired behaviour is displayed autonomously. Therapists can use DTT to help individuals with autism to develop social and behavioural skills. A common way of teaching a new skill or concept is, with each attempt being called a “trial”. An example of a trial is for the teacher to say: “tell me your name” and the child responds or does not respond, with reinforcement given for correct response.

DTT is used when a learner needs to learn a skill best taught in small repeated steps. Each trial has a definite beginning and end. Within DTT, the use of antecedents and consequences is carefully planned and implemented. Positive praise and/or tangible rewards are used to reinforce desired skills or behaviors. Data collection is an important part of DTT and supports decision making by providing teachers, practitioners with information about beginning skill level, progress and challenges, skill acquisition and maintenance, and generalization of learned skills or behaviors. DTT meets the evidence-based practice criteria within the early childhood and elementary age groups for promoting the development of adaptive behavior, cognitive/academic skills, social and play skills, and for reducing interfering behaviours (Bogin, J. (2008). Overview of discrete trial training - National Professional Development Center on Autism Spectrum Disorders)

**Picture Exchange Communication System:** It uses pictures to teach communication and vocabulary skills, most commonly to children. The child gives the therapist a picture of a desired object or the therapist provides the object portrayed in the picture. They continue to use this system to communicate new words, phrases, and modifiers.

(PECS) is a system that was originally designed in 1985. The use of PECS provides children with poor communication skills with the ability to communicate using pictures. PECS is easy to use in most classrooms as the primary, prerequisite skill of student and the instructor as ability to indicate and assess to identify a list of the student’s preferred items (Bondy & Frost, 2011). Once the student is identified as being a good candidate and the teacher identifies preferred items to use as reinforcement, pictures are created. Pictures can be created digitally using common items in the classroom, from a computer using pre-created templates, or some combination of the two. It is preferable to laminate the pictures for daily use. The PECS pictures can be kept at the school and organized to meet the needs of the class. For example, the picture can become part of a communication book, a board, wallets,

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etc. It can be created in multiple formats so that the pictures can be transferred from one room to the next, making transitions a smoother process. Bondy and Frost (2001; Frost & Bondy, 2002) outlined the steps to follow when implementing PECS. First, the child is taught to initiate communication by handing a picture of the desired item to the teacher, who then immediately provides the item. For example, a child may pick up a picture of a stuffed animal and hand it to the teacher and receive a stuffed animal from the teacher in return. This step can last as long as needed. The next step consists of the child using the pictures to request preferred items with different people and in different places from the initial training. For example, a child may take a picture of a carton of milk to the cafeteria and give it to a cafeteria employee, who could then give the child a carton of milk in return.

This second step provides for generalization across people and places and is an important step to the overall success of this communication training.

The third step is to teach the child to discriminate between pictures of preferred and non-preferred items, then discrimination and choice making for multiple preferred items. For example, a child may be provided with pictures of a carton of milk, a crayon box, and a stuffed animal. The child would then choose one of the pictures to hand to an adult and receive the item that corresponds to the picture. Once discrimination between preferred and non-preferred items is mastered, the student is taught to discriminate between an array of preferred items.

The fourth step is to teach the child how to expand responses from single pictures to phrases and sentences while being “more specific about what they Want” (Bondy & Frost, 2011, p. 70). This fourth step is important as it teaches a student to be able to go beyond just asking for a singular item or a category of items, by adding in adjectives describing the specific item they want.

### **NISONGER CHILD BEHAVIOUR RATING SCALE (CBRF)**

Aman (1991) conducted an extensive review of instruments for assessing psychopathology and behavior problems in persons with Intellectual Disability. In order to deal with all relevant dimensions, Aman (1991) identified a particular need for instruments for children with mental retardation. Aman suggested, it is necessary to consider the separate domains of age (childhood, adolescence, and adulthood), functional level (mild through profound mental retardation), and type of informant (e.g., self, significant other, and clinician).

Kolko studied the CBRF in psychiatric inpatient children also conducted a factor analysis on data from some 200 children and developed a tentative scoring system for the instrument. Nisonger Child Behavior Rating Form (CBRF), developed by Edelbrock and Rancurello at the Western Psychiatric Institute and Clinic in Pittsburgh' (1985) is the tool used in this study. With good face validity for ID population, it covered a wide range of internalizing and externalizing problems. Later collection of data from 369 children rated by their parents and (most of them) by their teachers resulted in parent and teacher versions of the Nisonger CBRF. These versions were quite similar, but they had enough differences to warrant retention of slightly different item pools and slightly different scoring schemes. Author named the modified scale the Nisonger CBRF, after the University Affiliated Program for Mental Retardation and Developmental Disabilities at The Ohio State University where it was developed. Nisonger CBRF is a sound instrument for assessing emotional and behavioral problems in children and adolescents with mental retardation. The NCBRF

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included parent and teacher forms that assess problem behavior among children and adolescents ages 3 to 16 with ID.

### REVIEW OF LITERATURE

1. Rodgers mark, et.al., conducted a study on “Intensive behavioural intervention based on applied behaviour Analysis for young children with autism: An international collaborative individual participants data meta analysis” Sage Journal published on 2021. The aim of the study is to research individual participants data – meta analysis is the most intensive possible evaluation of the effectiveness of early intensive applied Behaviour Analysis based interventions for pre school autistic children compared with treatment as usual eclectic interventions. For this study, 491 participants are selected. Using the Vineland Adaptive Behaviour Scale the selected members are analysed. The results shows that early intensive Applied Behaviour Analysis based interventions might lead to some changes children’s cognitive ability and everyday life skills after 2 years, compared with standard treatment.
2. Govindan Radhakrishnan et.al., studied on “The effectiveness of nurses implemented music add – on therapy in children with behavioural problems”, Indian Journal of Psychological Medicine, published on 25 April 2020. The purpose of the study is to know the effectiveness of music adds on therapy in managing children with behavioural problems. For this study, 40 children aged 6 and 12 years with behavioural disorders as per the International Statistical Classification of Diseases and related Health Problems (ICD)- 10 are selected. Using the Children Global Assessment Scale and Nisonger Children Behaviour Rating Form and Visual analogue Scale for a parent to monitor the behavioural improvement. The results shows that music add – on therapy is effective in improving positive social behaviour and reducing problem behaviour among children.
3. Naznin Nure et.al., studied on “Quality of Life of parents and Behavioural Aspects of children with autism spectrum disorders”, Journal of advances in sports and physical education published on 10 October 2020. The aim of the study to identify the quality of life among the parents of children with Autism Spectrum Disorders and Behavioural aspects of children with Autism Spectrum Disorders. For this study, 153 parents of children with ASD are selected. Using the World Health Organisation Quality of life – Brief Questionnaire Bengali Version assess the Parental Quality of Life While Nisonger Child Behaviour Rating Form (NCBRF) assess the child’s social behaviour/ competence and problem behaviour were obtained. This study resulted for the problem behaviour (conduct Problem, insecure, hyperactive, self-injury, overly sensitive) of the children with ASD showed the positive correlation with four domains of Quality of Life except self-isolation.
4. Kupferstein Henny studied on “Evidence of increased PTSD symptoms in autistics exposed to applied behaviour analysis”, Advance in Autism, Emerald publishing on 2018. The purpose of this paper is to examine the prevalence of Post Traumatic Stress Symptoms (PTSS) in adults and children who were exposed to applied behaviour analysis (ABA) autism early childhood intervention. Using an PCL – 5 Psychopathy checklist and The Clinician administered PTSD Scale (CAPS – 5) to survey autistic and caregivers of autistic children, the author collected data for 460 respondents are involved. The results showed that nearly half of ABA – exposed autistic children will be expected to meet the PTSD criteria four weeks after commencing the intervention.
5. Fennell Brian et.al., conducted a study on “Applied behaviour Analysis: what do teachers of students with autism spectrum disorders know”, International Journal of Educational Research, published on 27 June 2016. The purpose of this study was to teacher’s knowledge in this field to concern the school aged children with autism

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educated in mainstream classrooms and Applied Behaviour Analysis considered. For this study, 165 teachers of students with ASD are selected. Using the Functional Behavioral Assessment the selected members are surveyed. The results showed that teachers self-perceived knowledge exceeded actual knowledge and that actual knowledge of ABA was related to training.

6. Hassiotis Angela, et.al., conducted a study on “Applied behaviour analysis and standard treatment in intellectual disability: 2 year outcome”, The British Journal of psychiatry, published on 2011. The aim of the study is to research Applied Behaviour Analysis in addition to standard treatment for intellectual disability reduction in challenging behaviours in apparent cost savings were sustained the duration of six months. For this study 63 participants are selected. Using the Psychopathology Assessment schedules for adults with developmental disabilities (PAS – ADD) checklist and the Clients Service Receipt Inventory the selected members are measured. The results showed there were no significant differences in cost between the trial arms.
7. Grindle F. Corinna, et.al., conducted a study on “The discrete trials of applied behaviour analysis for children with autism”, Journal of Autism and Developmental disorders, Published on 6 June 2008. The aim of the study is to research the teaching methods of Applied Behaviour Analysis have been demonstrated to have a significant impact on the learning of young children with autism upto 5 – 6 years of age. For this study, 38 young children with autism are selected. The results showed that involve with such techniques as mand training, Natural Environment Training (NET), Fluency and Discrete Trail Training to the kind of longer term outcome studies that have documented the Discrete Trail Training more effective to this study.
8. Lecavalier luc et.al., conducted a study on “Factor analysis of the Nisonger Child Behavior Rating Form in Children with Autism Spectrum Disorders”, Journal of Autism and Developmental Disorders, December 2004. The purpose of the study was to explore the psychometric properties of the NCBRF parent and teacher ratings were independently submitted to exploratory and confirmatory Factor Analysis for ASD. For this study, 330 children and adolescents with ASD. This study conducted that the construct validity of the NCBRF in children and adolescents with ASDs.

## METHODOLOGY

Parenting and teaching a child with an intellectual disability is a very difficult task as a lot of stress, frustration and hopelessness is experienced by them. Moreover inappropriate behavior of adolescent Intellectually Disabled children can trigger a range of emotional responses in parents, teachers and across whole family..Applied Behaviour Analysis” (ABA) refers to a variety of psychosocial interventions that use behavioral principles to shape an individual’s behaviour.

In this study, treatment methods of ABA are used as therapy. Discrete trial training (DTT) as a one-to-one instructional approach with Picture Exchange Communication System, Token economy, with specific purpose of reducing problem behaviours in Intellectual disability as suitable to the study participants are therapy programs.

### *Aim of the study*

To identify inappropriate behaviour in adolescent intellectually disabled, by standardized assessment, apply ABA method of treatment, and find the effectiveness of the selected treatment in dealing with such behaviours.



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### Objectives of the study

- To screen out for inappropriate behaviour of adolescent Intellectual Disabled children with Nisonger Child Behaviour Rating Form.
- To apply selected Applied Behaviour Analysis for moulding inappropriate behaviour for duration of two to six months in selected Day care centre at Cuddalore.
- To study the effectiveness of therapy by statistically analysing the results.

**Study Settings:** Sri Sivasakthi special care school at Cuddalore.

**Study Design:** Experimental study

**Tools:** Nisonger Child Behavior Rating Form

### Selection (Inclusion) Criteria

- Mild, Moderate, Severe Intellectual disability are included.
- Both male and female are included.
- Age 12, 13, 14 are included.

### Exclusion Criteria

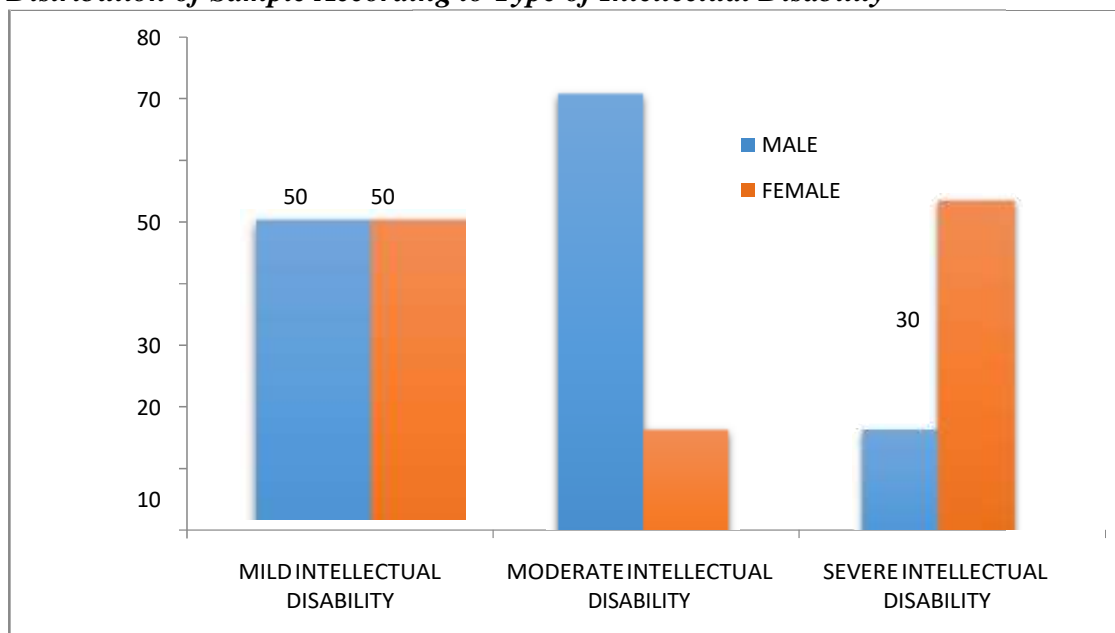
- ID children with other psychiatric problems are excluded.
- ID children presenting with neurologic & Orthopaedic problems are excluded.
- Children above the age of 15 are excluded.

## DATA ANALYSIS

### Distribution Sample According to Age

S.NO	AGE	PARTICIPANTS	PERCENTAGE
1	12	9	30
2	13	15	50
3	14	6	20
TOTAL		30	100

### Distribution of Sample According to Type of Intellectual Disability



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From the data collected, 50% of male and 50% of female were mild intellectual disability, 75% of the male and 25% of female are moderate intellectual disability, 30% of the male and 70% of female are severe intellectual disability.

#### MEAN VALUE T TEST OF NISONGER CHILD BEHAVIOR RATING FORM IN PRE AND POST TEST VALUE FOR MILD INTELLECTUAL DISABILITY

Problems	Group	N	Mean	Standard Deviation	Standard Error Mean	T - Value	P - Value
Conduct Problem	Pre	12	37.92	11.52	0.482	7.6072	0.0001
	POST	12	34.25	11.90			
Anxious	Pre	12	51.67	9.59	0.505	7.5904	0.0001
	POST	12	47.83	9.75			
Hyper Active	Pre	12	37.75	16.02	0.499	9.8458	0.0001
	POST	12	32.83	15.83			
Self Injury	Pre	12	25.92	16.57	0.793	4.3109	0.0001
	POST	12	22.50	14.53			
Self Isolate	Pre	12	34.50	9.95	0.426	9.3808	0.0001
	POST	12	30.50	9.73			
Irritable	Pre	12	64.75	14.04	0.750	12.3333	0.0001
	POST	12	55.50	12.73			

In the problem behaviours, it is seen that, pre test mean value is higher than the all post test values. Problem behaviours analyse by Nisonger Child Behaviour Rating Form in mild intellectual disability shows, Irritable, Anxious, conduct problem are mostly seen before ABA application and **problem behaviours were reduced after DTT** of Applied Behaviour Analysis.

#### MEAN VALUE T TEST OF NISONGER CHILD BEHAVIOR RATING FORM IN PRE AND POST TEST VALUE FOR MODERATE INTELLECTUAL DISABILITY

Problems	Group	N	Mean	Standard Deviation	Standard Error Mean	T - Value	P - Value
Conduct Problem	Pre	8	49.25	12.61	0.625	5.8000	0.0001
	POST	8	45.63	12.73			
Anxious	Pre	8	60.88	14.92	0.324	8.1044	0.0001
	POST	8	58.25	15.06			
Hyper Active	Pre	8	64.75	15.83	0.620	7.6660	0.0001
	POST	8	60.00	15.36			
Self Injury	Pre	8	35.63	18.07	0.598	6.6933	0.0001
	POST	8	31.63	17.83			
Self Isolate	Pre	8	48.38	14.02	0.375	9.0000	0.0001
	POST	8	45.00	13.70			
Irritable	Pre	8	60.00	14.71	0.905	10.6342	0.0001
	POST	8	50.38	13.26			

In the problem behaviours of pre and post test, all pre test mean value is higher than the all post test values in moderate intellectual disability also. Analysing by Nisonger Child

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Behaviour Rating Form shows using **Picture Exchange Communication System** in Applied Behaviour Analysis is effective.

### MEAN VALUE T TEST OF NISONGER CHILD BEHAVIOR RATING FORM IN PRE AND POST TEST VALUE FOR SEVERE INTELLECTUAL DISABILITY

Problems	Group	N	Mean	Standard Deviation	Standard Error Difference	T Value	P Value
Conduct Problem	Pre	10	63.10	19.93	0.490	8.5732	0.0001
	POST	10	58.90	18.73			
Anxious	Pre	10	64.10	13.28	0.167	27.0000	0.0001
	POST	10	59.60	13.17			
Hyper Active	Pre	10	58.80	12.56	0.657	8.9743	0.0001
	POST	10	52.90	12.79			
Self Injury	Pre	10	43.30	19.27	0.428	10.5097	0.0001
	POST	10	38.80	18.96			
Self Isolate	Pre	10	53.10	18.11	0.500	9.0000	0.0001
	POST	10	48.60	17.31			
Irritable	Pre	10	81.90	13.01	0.521	20.3579	0.0001
	POST	10	71.30	13.00			

In the problem behaviours, all pre test mean value is higher than the all post test values. For Problem behaviours in **severe intellectual** disability, analysing by Nisonger Child Behaviour Rating Form it is seen that using **token economy** in Applied Behaviour Analysis is effective.

## RESULT

It is seen from the analysis that problem behaviours of the patients for mild, moderate and severe Intellectual Disability were reduced using the Applied Behaviour Analysis. Among the techniques, discrete trial training, picture exchange communication system and token economy is significantly effective in dealing with Irritable, Anxious, conduct problem & hyperactivity.

## DISCUSSION

The purpose of this study was to identify problem behaviours in intellectual disability, administer ABA, and find its effectiveness in dealing with the problem behaviours. For this study, Sri Siva sakthi Mentally Retarded Special School, at Cuddalore was approached. Informed consent from president, parents, teachers was obtained for conducting study in the school premises. 30 students of intellectual disability were identified as suitable for the study. The children were assessed using standardized NISONGER CHILD BEHAVIOUR RATING FORM. The behaviour problems in individuals were noted. It was informed to parents, teachers to apply same method of ABA, irrespective of whether they are at school campus, at home etc. After such intervention application for 3 months, reassessing them using the same scale revealed conduct problem, anxious, hyperactive, self-injury, self-isolate and irritable problems are reduced to a notable degree. It was observed that, Discrete Trial Training was very much effective for mild intellectual disability. Picture Exchange Communication System and Token Economy was very much effective for Moderate and severe Intellectual disability.

## CONCLUSION

From the selected sample of the study, it is seen that ABA is an effective method of therapy for any type of Intellectual Disability in dealing with behaviour problems of Adolescence. It could be taught to parents, teachers of such children at an early age to minimize the inappropriate behaviour at any place.

### *Limitation of the Study*

- The study was done on small sample size.
- The study was carried out for limited duration.

### *Recommendation*

- Study can be done in other age group with large sample size.
- ABA is a flexible treatment which can be provided in many different locations – at home, at school, and in the community for ID children.

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***Conflict of Interest***

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