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# Training and Assessment of Social Cultural Awareness in Autistic Kids in India

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***Abstract*—** The paper focuses on training and assessment of the social cultural awareness in Autism spectrum disorders (ASD) children. The ASD children studied were those who had gone through (a) model based on clinical treatment with all staffs are adequately trained, and (b) a concentrated treatment model involving special educator and parents with intensive supervision only. The research study is primarily based on analysis and examination of behavioral symptoms of children with ASD in India. The one to one ABA interventions to create social cultural awareness were given over a period of 3 years to ASD children. During the sessions with ABA interventions the major aim was to measure the child's behavior towards social cultural awareness, using multimedia tools related to study of behavioral symptoms. Major difficulties faced during the 3 years of study was the absenteeism and irregularity of children due to factors like; children discontinuing the centers, family issues, change of educators etc. Remarkable growth in adaptive behavior was observed in ASD kids and the results showed substantial positive variances across age. Behavioral interventions given to ASD children can help in creating the social cultural awareness among them.

***Keywords***- Autism Spectrum Disorders, ASD, Multimedia Tools, Applied Behavior Analysis,ABA, Intervention, Discrete Trials

## I. INTRODUCTION

The devlopmental disorder effecting the general understaning of human being, senses like hearing and seeing for a life long time is refered as Autism spectrum disorders (ASD). The person with ASD generally faces lot of difficulties with social relationships, communication and behavior. The symptoms are not in any specific form and may be found in many combinations.The disorder may have effects on normal functioning of brain. The level of intelligence have been different among children, often ranging from sever to mild referred generally as high-functioning autism spectrum disorders to low-functioning autism spectrum disorders.

Technology driven methods are increasingly used by researchers to apply along with the traditional intervention methods to help ASD[1] children improve thier learning skills. The trials are being conducted to improve the social skills among children with autism and results have been very promising and positive with worldwide acceptance for them [2]. The only roadblock with using technology-based intervention is the age of ASD children. The concept can't be applied to preschool children with ASD. Also children of school age need to have knowledge of computer in order to operate it [3].

The use of touch screen based computer applications are very helpful in teaching ASD children of very young age .The children can take social clues from computer system to aid his/her learning process with educators [4].

## II. LITERATURE REVIEW

Cohen, H., et al., has done the comparative study of ABA treatments, given to the ASD children at the local schools. The assessment of ASD children group with and without ABA treatment was conducted over a period of 3 years, showed that ABA treatment group had performed higher than the comparative group on IQ and adaptive functioning parameter. 11 outof 21 children were given ABA support while 6 ABA treated children were then inducted into regular and non assisted education while only a single child was put through the regular education system [5].

Eikeseth, S., has done comprehensive study of major 3-core deficit among children identified as social behaviors, communication and stereotyped behaviors. The study of 25 children conducted studies done in total where 20 addressing to behavioral treatment, 3 to TEACCH and 2 evaluated the Colorado Health Sciences Project. ABA were considered positive while TEACCH and Colorado Health Sciences Project are not positive for the ASD children [6].

Hayward, D., et al., evaluated that children had averagely improved IQ by at least 16 points in one year time with increased frequencies of workshop consultation. Some of major factors ruling intervention consultation were noted as the environment of the children, ABA principle based treatments, parental involvement, training and management of staff, other provision based on research along with continuous evaluation of progress [7].

 

Eldevik,S., et al., explained the effects of Early Intensive Behavioral Intervention. The study showed that means of intervention should be based on Childs choice in EIBI. However, various there is need of comparing other controlled EIBI to different intervention tools. This study showed there is a significant improvement in IQ and the respective adaptive behaviour of ASD children. Their indepth study of meta-analysis which was published in 2009 (Spreckley & Boyd) has professed that the EIBI produced no better effects than what was described as standard care. They also noted out many serious errors in the Spreckley & Boyd meta-analysis [8].

Howard, J. S., et al., studied the effects of three treatment approaches namely (1)Early Intensive Behavioural Interventions,(2) 1:1 or 2:1 the electrical intervention to children in setup of public special education classrooms and (3) EIBI in small groups on children with autism or PDD-NOS in public classroom setup. the study was conducted on the following parameters like; IQ, language and adaptive functioning. The systematic follow up evaluation was done after 14 months of inducing interventions which reported that group with ABA scored higher on all parameters in comparison with other groups along with higher learning for ABA treated group of children with autism or PDD-NOS [9].

Tawseef A. S., et al., used weka filters for classicifation to know the insights of Parkinson's and Arrhythmia diseases with the goal of increasing performance accuracy of the classifier [10].

## III. METHODOLOGY

### *A. Data Collection*

The primary data was collected through observation, questionnaires, and multimedia tools especially developed to create social cultural awareness. The data collection for the ASD children started with visiting NGO and clinics in Gujarat and Maharashtra. A total of 91 patients of age between 3 and 30 were contacted and screened for ASD and other disabilities. Out of those, the seven participants belonging to other disability were eliminated. Few tasks were given to the participants on a computer or laptops. The collected data was verified via 3 tier judgments of researcher, educator and therapist.

### *B. Categorization*

The categorization of ASD children was done as (a) The child who reacts without prompt, (b) The child who reacts with prompt, (c) The child who does not react at all. The levels of intervention to be given were decided based on the category of ASD child. They were served interventions individually with difference in duration and techniques for each type of cases of ASD children. The data was collected for on the parameters - concentration (LC), motivation (LM), memory (DM) and distraction (ED).

### *C. Intervention*

The multimedia were compiled and collected from different online resources featuring social cultural awareness. Twenty short scenes of (1- 30 minutes in length) were sampled. While few mini series of feature films were picked for creating social awareness. The selected scenes involved social interaction between 1-4 characters; the series were selected to match some of the emotional information but not all of it. Three independent judges reviewed the activities and an instructional slide while the practice sheets preceded the tasks. During the study the designed materials was given to the ASD children in advance and the sessions were conducted without any time line. These activities were presented in a random order to the participants. Tutorials and gaming activities were given to ASD children to enhance their social skills in the forms of flash card, quiz, and history questionnaire. Every activity had four possible answers, which were on the screen and they had to choose the answer from the available options based on the simulated situation about the social culture around them. The multimedia device played all activities with break of 1 minute after an answere was selected. This helped them to prepare for the next activity

The final version of CAI (computer aided interventions) was presented to ASD participants on Multimedia device for better results regarding social interaction and behaviour. The participants were given headphones to improve hearing and to improve perception. Participants were tested in sessions of an intervention study in which they all served as controls. The definition hand out were given in advance and was available throughout the sessions, Completion of every session including a short break, took twenty-five minutes.

Fig.1. shows the flow of discrete trials conducted for the study. The flow indicates the different tasks assigned to the child through different mediums. Task score of discrete trials ranged from 0 to 30.

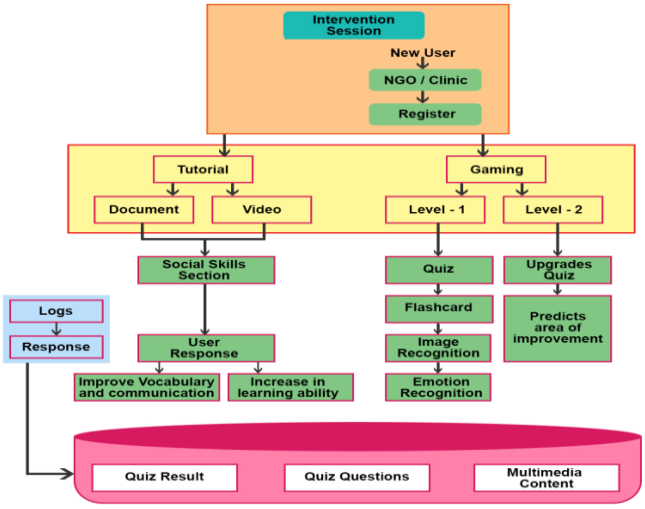


Fig. 1. Discrete Trials of Intervention

 

In discrete trials the criteria was for mastering in the task was 90 percent. The four cases to observed changes were categorized as - improvement=IP, Negative change=NC, No improvement=NI, No change required=NCR. The details of participant's for discrete trials are shown in table 1.

TABLE .1. The details of participants for discrete trials

| Age Group | Total | Male | Female |
|---|---|---|---|
| (0-3) | 13 | 9 | 4 |
| (4-11) | 39 | 27 | 12 |
| (12-19) | 25 | 18 | 7 |
| (20 +) | 6 | 6 | 0 |

Fig. 2. represent the steps of intervention conducted for over a period of three years. The figure depicts that there were dropouts at different levels of study due to loss of contact, loss of interest or parent's health issues.

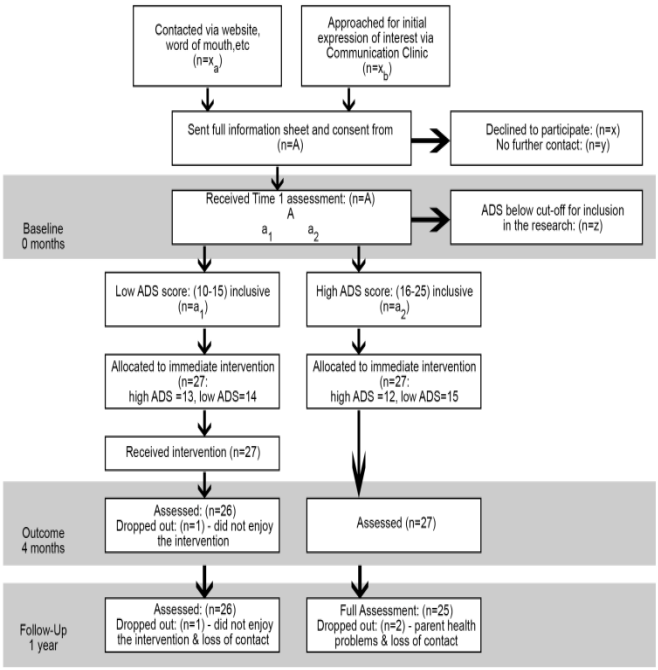


Fig. 2. Process of Intervention

*D. Data Analysis*

The data was collected for the study from January 2014 till March 2017 mostly from two sources; (a) model based on clinical treatment with all staffs are adequately trained, and (b) concentrated treatment model involving special educator and parents with intensive supervision only. The study was focused on particularly assigned interventions that were given to ASD children with respect to social cultural awareness.The social cultural awareness among the ASD children was computed and calculated for 3 years based on their categorization like concentration (LC), motivation (LM), memory (DM) and distraction (ED). The data was analysed for each case of the ASD children being judged over 4 predefined parameters for baseline month and follow up period of 36 months after successful implementation of behavioral interventions to derive the results.

**Results**

The results of the study undertaken over a period of 3 years on ASD children with regular intervention through multimedia tools and questionnaires was measured over the 4 major parameters, namely; concentration, motivation, memory and distraction.

The table 2 represents the parameter wise development among the ASD children who were given the intervention for over the period of 3 years at the baseline month along with results after follow up intervention based on multimedia tools and questionnaires regarding social cultural awareness. A positive and significant growth is evident in behavior of the ASD children on the following decisive parameters like concentration, motivation, memory and distraction.

TABLE .2.The details of parameters scores at baseline and follow-up's

| Parameters | No. of participants Baseline (0 Months ) | | Parameters | No. of participants Follow-up (3 Years ) | |
|---|---|---|---|---|---|
| | ***High score*** | ***Low score*** | | ***High score*** | ***Low score*** |
| LC (Lack of concentration) | 52 | 32 | LC' | 13 | 71 |
| LC (Lack of motivation) | 70 | 14 | LM' | 26 | 58 |
| DM (Difficulty in memory) | 74 | 10 | DM' | 10 | 74 |
| ED (Easily distracted) | 56 | 28 | ED' | 15 | 69 |

Fig. 3 explains the numbers of participants (ASD Children) who were chosen for giving behavioral intervention of 6 hours per week for 3 years as scheduled for research study and the study of parameters at the baseline month – concentration (LC), motivation (LM), memory (DM) and distraction (ED).

 

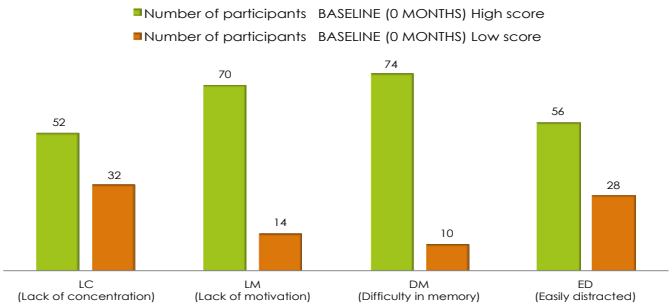


Fig. 3. Pre intervention measurement of behavioral attribute in baseline months

Fig. 4. shows explains the numbers of participants (ASD Children) who were given behavioral intervention of 6 hours per week for 3 years had shown significant improvement on the 4 parameters of study – concentration (LC), motivation (LM), memory (DM) and distraction (ED).

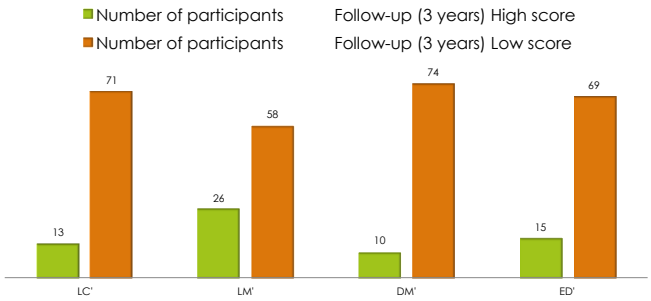


Fig. 4. Post intervention measurement of behavioral attributes in follow-up months

The study, which started with 91 ASD children, had only 84 children till the end of 3 years due to various dropouts. However, all the ASD children who had undergone research study had shown positive results in their social cultural awareness. The children had shown greater improvement in concentration by 84.52%, motivation by 69.04% and memory by 88.09% and distraction by 82.14%.

## IV. CONCLUSION

The result indicated improvement in the levels of concentration, motivation, memory and distraction regarding the socio cultural issues among the group of ASD children. Out of total number of students, who were given intervention about social cultural awareness, 77 children showed improvement in concentration, 63 children showed improvement in motivation, 80 children showed improvement in memory while 75 children showed fall in distraction. The study concluded that there is positive impact of intervention on behavior of ASD children in terms of social cultural awareness.

They had also shown remarkable growth in adaptive behavior for social cultural awareness and substantial positive variances across ages. These outcomes have helped us in establishing the benefits of behavioral interventions among ASD children. The major shortcoming during the entire study was loss of interest of special educators or parent's health and other families' issues. The cost incurred for multimedia tools and devices was also a big concern.

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