

## Case Report of the Unique Effects of ABA on A Child with Autism in Iran

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### Abstract

The purpose of this research is to introduce a child aged 3 years and 8 months who was referred to the Centre for the treatment of autistic disorders and started ABA therapy. This case has great significance in that many cases involving children undergoing ABA usually receive other treatments such as speech and occupational therapy alongside or prior to receiving ABA. This trend adds to the psychological stress that families go through and can introduce additional financial strain on families. Due to this on-going trend of multiple therapies for treatment of autism, the occurrence of a child exclusively received ABA is very rare. Part of this issue is because of the increasing number of disciplines and the competition that exists between them. In this study the effectiveness of one to one ABA on a child with autism has been studied for a period of 10 months.

On the bases of GARS questionnaire, autism treatment checklist (ATEC), clinical observations and parental reports the child showed significant improvement in speech, sensory, relationship and cognitive items. During the treatment period, increase parent involvement was both encouraged and increased. Thus, it can be concluded that ABA alongside parental engagement seems to be an effective therapeutic intervention on its own.

**Keywords:** Autism; Applied behavior analysis; Parental engagement; Neurodevelopment disorder; ASD

### Introduction

Autism is a neurodevelopment disorder that its traits are seen throughout an individual's lifespan. It is considered as the most prevalent childhood disorder in this era. The areas most affected by the disorder include difficulty in forming appropriate relationships with others, lack of social skills as well as repeated and stereotyped behaviour.

Intervention programs for children with ASD included a wide range of techniques that target an array of behaviors or symptoms. The main approaches used in autism training include speech/language therapy, applied behavior analysis (ABA), occupational therapy, sensory integration, medication treatments and special diets [1-3].

Among the different approaches used for the autism rehabilitation and treatment, ABA (Applied Behavioral Analysis) has been proved to be the most effective and comprehensive approach [4-7]. Moreover, there is a significant relationship between ABA-based interventions and optimal outcomes [8,9] and it can be considered an effective treatment option for individuals with ASD across the lifespan [10].

Many factors such as the autism severity, age of starting the therapy and level of social and language developmental ability all play a role in the success of the approach. [5,11]. Similarly, not only significant improvement is seen in children whom undergo home based therapy but also the more the involvement of the family in the process of therapy, correlates with the better results [12-15].

On the other hand, although normally children can learn naturally from their everyday environment, children with an autistic disorder lack this ability. Therefore, there is a need to undergo a tailored

educational and rehabilitation therapy program throughout their waking hours [16]. ABA involves approximately 20-40 h of therapy per week and extends to daily life activities by mother for a period of 2 or more years [17-19].

The core aim of ABA treatment is to overcome the basic symptoms of autism (communication and interaction problems, repeated behavior) by changing the behavior of the child [20]. The therapeutic plans usually include a list of tasks focusing on increasing language and communication skills, social skills, recognition skills, play, preschool learning skills, emotional skills, self-help skills, self-management skills and decreasing behaviors that are inappropriate and unnecessary [21]. Although, ABA as a complete therapeutic approach covers a large domain of children's need, it has often been used alongside other therapies such as occupational or speech therapy. The occurrence of using several therapies at a time is so common that the use of ABA on its own has rarely been observed in the past few years. These often short-term, simultaneous and non-integrated therapies can lead to deviation from the main way of treatment and can confuse families which approach to support.

This report provides an opportunity to outline the exclusive effects of ABA on a child after a period of 10 months of therapy. It provides an opportunity to assess the significant progress that the child made in different areas of development.

### Introduction of the Case

The study focuses on a male child who is 3 years and 8 months old who was referred to the Centre for the treatment of autistic disorders with complaints of showing no response when his name is called, not understanding simple instructions and having no speech. He is the only child of parents. The mother, a housewife aged 36 years with a clinical psychology and family therapy degree. The father a business

man aged 40 years holds a diploma degree. The family of origin of the parents is Pakistani. The father has lived in Iran from birth whereas the mother migrated to this country after marriage around 8 years ago.

The mother was 31 years of age at the time of her pregnancy and which was without any complications and the child was born at the end of 9 months via a C section.

The child developmental milestones including psychomotor and language (such as babbling and some sort of targeted sounds or words) were all normal till age 1. The life style of the child was such that he only engaged 1 to 2 h in two-way personal interaction out of 12 h he was awake. The rest of the time was spent in individual and aimless activities such as watching television, playing with the mobile, repeated play and wandering in the house. At the age 1.5 parents worried about the child's verbal skills, as they did not progress properly over time. Since, the child was exposed to three languages (English, Urdu and Persian) and there was a slight language delay in his family background, parents didn't seek professional help at that time. At the age 2 words gradually declined to few and meaningless voices. Flapping hands revealed and he did not response to his name. Over time, symptoms increased until the age of 2 years and 4 month when the mother began to seek professional assessment.

On the bases of the clinical assessment conducted by a clinical neuropsychologist and a child psychiatrist, the child was diagnosed as having autism under the criteria of DSM-5. After 5 months of receiving the diagnosis, the child started undergoing ABA therapy. It is worth to mention that the child had no additional medical issues and was neither under any medication.

## **The Symptoms at the Time of Initial Assessment were as Follows**

### **Stereotype and repetitive behavior and interests**

Flapping hands, preoccupation with objects, eating limited food items, licking inedible objects, walking on tiptoes, articulating loud sounds, frequently showing self-harm behavior, arranging and lining up objects, engaging in inappropriate play, and having repeated and specific routines along with aggression when his needs were not met.

### **Social interaction and communication**

At the time of initial assessment of the child he was just able to deliver 1 and 2 syllable sounds without any particular meaning, limited speech in the form of producing meaningless sounds, avoiding eye contact, unable to follow simple instructions, avoiding social gatherings and social interaction, inappropriate response to emotions, low expression of emotions, low tolerance of crowds, inability to form a relationship with his own age group, low tolerance of touch and embrace specially towards people from outside the immediate family, social responses, low frequency of social smiles, absence of curiosity and low physical activity.

## **Measurement**

The evaluation scales allow measuring the autism symptoms during the treatment course. Autism Treatment Evaluation Checklist (4 sections, 77 items) was applied in order to evaluate the treatment process by 4 subtests including Speech, Language and Communication, Sociability, Sensory or Cognitive Awareness and Physical and Behavior Health. Total score is done by summing the scores of each subscale and the higher scores indicate the lower problems. This scale used at 5 intervals: before the treatment (E1) and every two months of intervention (E2, E3, E4 and E5).

With the aim of comparing the severity of autism before and after the treatment GARS (34 items, 4-point Likert scale) was utilised. Total standard score and three main subscale raw scores were outcome measures. Lower score reflects the improvement in symptoms.

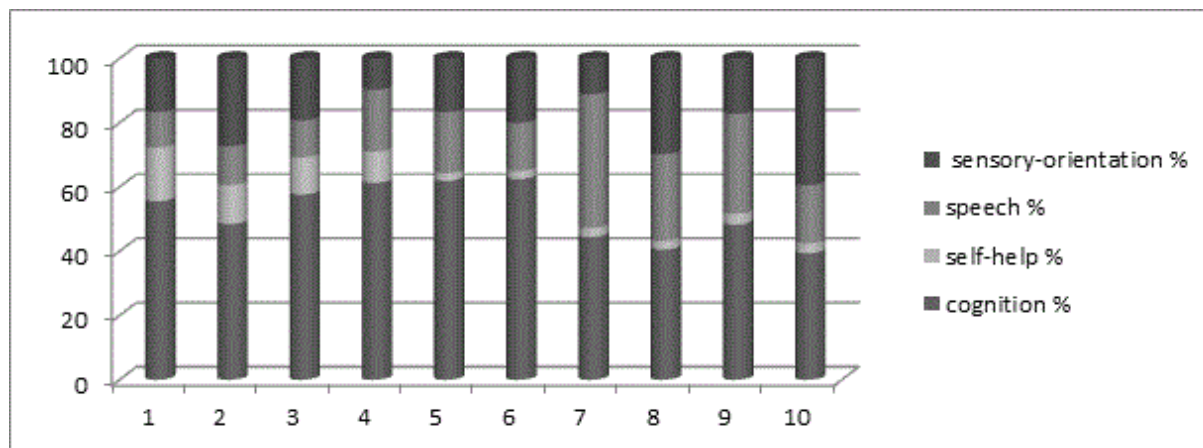
## **Treatment Process**

After the initial assessment the therapy was started at the age of 2 years and 10 months. Applied Behavior Analysis was started for 3 h, six days a week.

The initial plan included skills that the child had no competence in such as maintaining eye contact, pointing, producing sounds and overall development of recognition, social and self-help skills. The sessions took place at home under the mother's supervision (via a one-way camera) and once in two weeks a review session took place in the center. Once in every four weeks, the family met at the center for a follow-up assessment and a new revised plan was outlined for the next upcoming month. During these meetings feedback was received from the mother and his instructor about the progress of the child. The discussions revolved around strategies to increase meaningful interaction with the child, the strengths and weaknesses of the child and ways to overcome the hurdles and difficulties during the process of therapy.

Table 1 specifies the percentage allocated to each segment of the ABA program for each of the ten programs. As shown, more than half of the items in the first plan (52%) were recognition items. Similarly taking into account the child's developmental age, he had severe limitations as far as self-help skills were concerned, therefore the number of self-help items was more in the initial plans and as his abilities got closer to his chronological age, the number of items was decreased.

As far as items related to speech are concerned, they comprised an average of 20% of the whole plan. As the child progressed, the items were gradually increased. For e.g., after seventh treatment plan due to the remarkable progress in recognition and language and reached to the point that 40% of the overall plan contributed to speech items. As the issues related to sense-orientation were coming to surface, a part of the plan was allocated to these items (average=20%) (Figure 1).



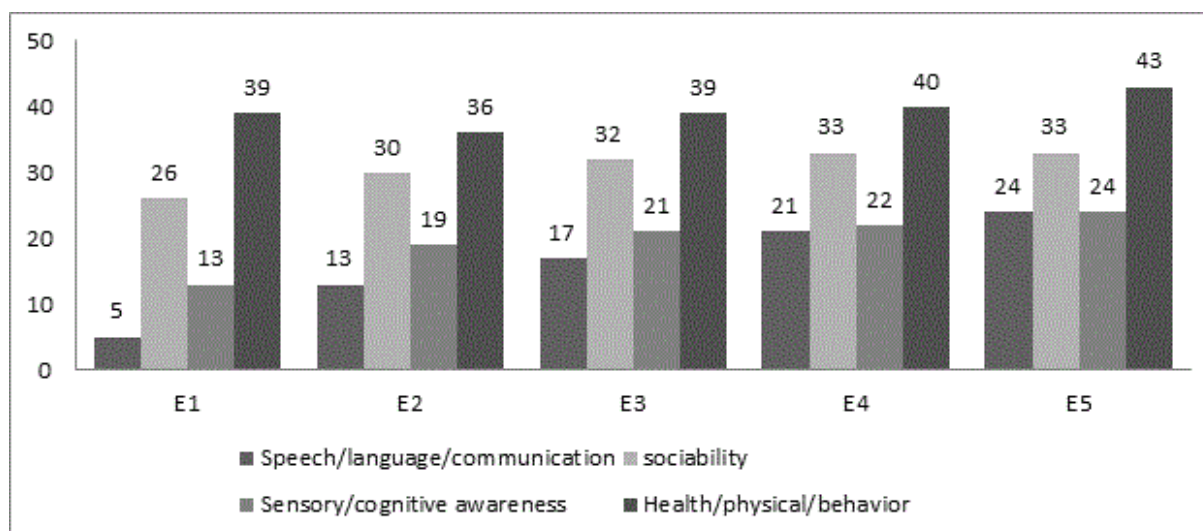
**Figure 1:** The percentage of four sections (sensory-orientation, cognition, speech and self-help skills) in the 10 child ABA program plans.

An important point to be noted is that the child showed such progress by solely undergoing ABA therapy and no other therapies such as speech and occupational therapies complimented the program.

evaluation were 98, 109, 116 and 124, respectively. Figure 2 shows data as obtained by ATEC subscales which were obviously increased during the treatment process.

## Results

In the first evaluation, the child was found to have 83 ATEC total score. After a 10 month intervention, the total score of each two month



**Figure 2:** Changes in four subscale of ATEC after ABA therapy.

The child showed significant progress in all the rehabilitation and learning goals. This progress was noticed more in the case of stereotype and repetitive behavior (absence of hand flapping) and speech. Meaningless sounds gradually changed to 3 word meaningful sentences and loud sounds were replaced with speech. His play became goal oriented and diverse. Although the presence of repeated patterns still existed, there was significant increase in eye contact, social look, emotional awareness and responses, interest in interaction with peers

and movement and self-help skills (toilet training, eating and dressing up skills).

Acceptance of physical contact (hugging) and simple social responses such as greeting others and saying goodbye were also observed. The active parental involvement especially the mother (as the main caregiver) was greatly observed.

To conclude changes in the two main variables (autism symptoms and life style) were investigated after a course of treatment (Table 1).

Before the treatment was started the child's score was 103 points, but after the ten months of intervention, 78 points, causing him to fall into the low level of autism classification. Moreover there was a considerable declaration in gars subscales corresponded to the following values: stereotype behavior: 13, communication: 38 and social interaction: 25. At the end of the 10 month intervention another evaluation was conducted, in which stereotype behavior reached 4 points, communication, 17 and social interaction 14.

In the evaluation regarding the lifestyle which was measured by mother and child interaction time, before the therapy was started it was only 2 h which caused the child engaged in repetitive or individual activities such as working with gadgets about 5 h a day. During the treatment mother engagement gradually increased to 8 h a day which reduced isolated activities.

	At the beginning of training	After 10 month ABA therapy
<b>Total GARS score</b>	103	78
<b>Stereotype behavior</b>	13	4
<b>Communication</b>	38	17
<b>Social interaction</b>	25	14
<b>Average time of mother and child interaction during the day</b>	2 h (max)	8 h (min)
<b>Using gadgets (Television, mobile phone and I pad)</b>	Approximately 5 h	Approximately 1 hours

**Table 1:** Gars score and lifestyle changes 10 month after ABA therapy.

## Discussion

Nowadays a lot of literature has been written on the different approaches of treatment, therapy and rehabilitation for children diagnosed with autism. Although ABA has been accepted as the most useful approach as compared to other approaches, the use of this mode of therapy on its own is rarely seen.

In the past few years the use of multiple therapies at a time for the treatment of autism has been widely used. Therapies such as speech and occupational therapy have been complimenting ABA therapy with the aim of producing better results in the progress of the child. Due to this reason, it is extremely difficult to gauge the effect of each mode of therapy on the progress of the child. This case is an effort to report the influence of ABA exclusively on a child who had moderate symptoms of autism.

The child being discussed in this research is an example of someone who showed increase of speech, interaction, social acceptance and decrease in stereotype behavior, sensory issues which form the main important symptoms of autism. In line with other researches, ABA is a comprehensive approach and its exclusive effects could be seen in all the aspects of the child's development [4].

One of the factors in the success of the intervention in this study is the child comprised risk factors of effective treatment. The results corroborate the previous research which was indicated that the intensity of autism being from mild to moderate, the age of starting the therapy being between 2 to 3 years, the minimal co-occurring conditions as well as parent engagement play significant role in obtaining the best treatment result [4,5].

An important point in this case is the parental involvement in the road of therapy. After the completion of therapy (3 h per day) the mother would involve the child in communication and interaction in order to refrain from repeated and aimless activities. This theme which seems to have been less reported in research is a very important factor determining the extent of which any therapy may contribute in the success of the child and an may be an area of study in the future.

The conclusions drawn from this report can provide a direction for parents who may find them being concerned or pressurized to try out various therapies which may be unnecessary, illusive or even negative effects on the child. The use of a single mode of therapy, especially in big cities has been rarely seen in the past few years. Parents often find themselves using trial and error between different therapies and often do not know what exactly is helping the child recover from autism. The tremendous improvement that the child in this case had by undergoing ABA exclusively can be a ray of hope for many parents who due to several reasons cannot seek help from multiple therapies.

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