THE EFFECTIVENESS OF ABA INTERVENTION ON CHILDREN WITH AUTISM

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ABSTRACT
Autism disorder is a pervasive developmental disorder. The ongoing destruction of in social interaction, language and behavior reserves is the specific impairments of autism. This study aimed to evaluate the effectiveness of ABA therapy for children with autism disorder .The study sample included all children with autism in the Autism Center of Shahrekord city in 2011. The sample group consisted of ten experimental and control groups (including 3 females and 7 males) who were selected peer to peer from among 49 children with Autism. ABA therapy was done for 12 months one by one on these children. This method is the method of Ivar Louvas, the application of which is the functional conditioning based on the theories of behaviorism. Childhood Autism Rating Scale (CARS) test is used to collect data from test and after collecting data, t-test Independent samples was used for data analysis .The test for significant differences between pre-test and post-test is at a significance level (p < / 004) has shown . Overall, we can conclude that ABA therapy is effective in reducing symptoms and increasing capabilities of these children .

Keywords: Autism Disorders, Applied Behavior Analysis (ABA), Childhood Autism Rating Scale (CARS).

INTRODUCTION
Pervasive developmental disorder was first applied in 1980 to describe a group of disorders which were characterized by impairment of normal relations between the individual and society, impairment of vision, difficulty in obtaining skills, verbal and non-verbal, sentiment limited to a series of activities and interests, and wanting to duplicate them. The segmentation defined five categories; this category is in the DSM IV-TR as follows:
1. Autistic Disorder
2. Rett’s Disorder
3. Disintegrative disorder of children
4. Aspersers’ Disorder
5. NOS (Autism, American Psychiatric Association, 2000)
Most of the doctors and those who deal with children with such disabilities use the general term PDD for these children. Autistic disorder, sometimes called children autism or early children autism. It is a pervasive developmental disorder divided by the social interaction and communication and repetitive special behavior. Children with autism disorders have moderate to severe impairment in relation to others or social relationships and behavior problems. Many children with autism also have mental retardation (Amaral et al., 2008). Although the characteristics and symptoms of autism may be associated with problems such as fragile x syndrome, tuberous sclerosis but these children often have no problem physically and no deformities in their limbs. In the first eighteen months to three years, a maximum of autism symptoms should appear so that diagnostic criteria can be applied to them. Some autistic disorder revealed after three years with delayed beginning (Hagerman and Hagerman, 2004; Rogers et al., 2001).
Autism is generally characterized by a triad of features:
1. Impairment in social interactions
2. Impairment in communication
3. Restricted interests and stereotyped behaviors
Autistic disorder is often related to developmental level and chronological age of the individual from birth to age three (Diagnostic and Statistical Manual of Mental Disorders, 1980; Volkmar and Klin, 2005). The incidence of autistic disorder in children is 5 to 10 thousand and also the incidence of pervasive developmental disorder except for autism is 15 in 10 thousand. Some research has shown that the incidence rate in 8-year-old children is 1 in 150, or 6.6 per 10,000 (Fombonne, 2003, Rice et al., 2007; Chakrabarti and Fombonne, 2005). Autistic disorder is 4 to 5 times more in boys than girls. The possibility of mental retardation in autistic girls is more than boys. 75 to 80 percent of children with pervasive developmental disorders are boys with the exception of Rett syndrome which only occurs in girls (Lotter, 1966; Yeargin-Allsopp et al., 2003). There are different hypotheses about the etiology of this disorder. The main hypothesis refers to the role of genetic factors. Many studies have been done on monozygotic and dizygotic twins. The results show an increase of autism in monozygotic twins. Other findings in the genetic etiology considered autism as the product of gene-environment interactions. The new findings suggest that a pathological and environmental factors in the early stages of embryo development (20th to 24th week) creates neurobiological effects of genes and is causing autism disease. This suggests the interaction of gene - environment in autistic disorder. Many relatives of the children have shown defects in behavior and social interaction. Several studies diagnosed 2 to 4 percent of autism in siblings. This rate is 50 times higher than the incidence in the general population (Muhle et al., 2004; Veenstra-Vanderweele et al., 2004). MRI studies of people with autism shows their brain volume. Maximum increase occurs in the size of the occipital lobe, parietal and temporal. Damage to the limbic system, particularly the amygdala and hippocampus has been seen in children with autism. The density of neurons is high in the amygdala and hippocampus and these neurons are smaller than the normal one (Rodier and Arnd, 2005; Bauman and Kemper, 2005). The patient's immune system is weakened and a significant decrease of lymphocytes and antibodies has been reported (Connolly et al., 2006; Orvatska et al., 2002). Increased serotonin levels have also been seen in many cases with autism (Autism, American Psychiatric Association, 2000). Maternal bleeding during pregnancy in the second trimester and presence of meconium in the amniotic fluid has been reported in autistic children compared to the general population (Kolevzon et al., 2007). While the etiology is unknown, different theories include genetic abnormalities, pregnancy complications, exposure to toxins and infections during fetal or around birth or after birth rubella in pregnancy have been reported in this disease (Filipek et al., 1999). No special treat is known to treat this disorder and the different methods are used but according to research in the treatment of ABA, occupational therapy, speech therapy, or a combination of them could bring more improvement in the children.

ABA, or Applied Behavior Analysis intervention methods which is done based on a careful assessment of the child's special education programs and intensive individual work by trained coaches by using reactive conditioning (Skinner) with more hours per week (30 to 40 hours) was initially known as Louvas method that was able to achieve positive results during a two-year research project (Handleman and Harris, 2000; Harris et al., 2007; Paul et al., 2005). Louvas plan which was done on a 19-member group of children (experimental) and comparing them with a control group of 20 or 21 children (all three groups under school age) for 2 years with intensive work 40 hours a week individually by the trained coaches showed that about 47 percent of the experimental group with the average IQ of 107 percent had successful entry into the normal schools. 42% of them, while obtaining self-help and general skills were successfully enrolled in special classes for Aphasic children and the remaining 11 percent are ported to the classes for Autism while in the control group, only 2 percent have entered the normal School and 45 percent to the class of aphasia and the remaining 53% of were transferred to special autism classes. Following this study, several studies have shown the efficacy of this treatment including the studies of McCain et al., 1993; Anderson et al., 1987; Louvas 1987, Perry et al., 1995; Shane et al., 1996, Golabi 2001 and 2005 (Myers and Johnson, 2007; Golabi, 2005).

Recognizing the importance of autism disorder and given that there is no special treatment for the disorder, evaluation of the efficacy of proposed treatments in this area can find the appropriate treatment
method and benefits of these therapies and be effective in addressing the problems of children and by selecting more efficient and valuable services, help to the children's treatment.

MATERIALS AND METHODS
In present research the pilot case-study is done in two groups as (control and test) a test. The number of subjects in this study was 20 autism children who were selected from among 49 children with Autism in autism rehabilitation center in Shahrekord city. From among these children, 10 were treated with ABA as experimental group and were selected peer to peer from the community waiting list with pre-test scores similar to an experimental group. Pre-test scores for both groups were approximately the same and equal numbers of boys and girls respectively.

The Childhood Autism Rating Scale (CARS) by Eric Schopler, Robert Reichier and Barbara Rochen Renner is provided in 1988, over two years to evaluate children with suspected autism and assessment of autism symptoms. One of the main characteristics of this test is that children are compared to the peers and also gain information from parents. Child's behavior on a scale of regressed behavior is compared with the age grading. This test consists of 15 items and each item is scored from normal to severe. The total score for each item is 1 to 4. Cronbach's alpha reliability of the scale is reported 0.94 and the validity is 0.71 (25). The pre-test was performed on both and then ABA therapy was used for 12 months on the experimental group children. Then the post-test was performed on both groups. Pre-test and post-test scores were statistically analyzed (descriptive statistics and independent t test).

RESULTS AND DISCUSSION

Table 1: Description of study

<table>
<thead>
<tr>
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<th>Mean</th>
<th>SD</th>
<th>Distribution Coefficient</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>39/80</td>
<td>4/826</td>
<td>12/12</td>
<td>10</td>
</tr>
<tr>
<td>Experimental</td>
<td>38/80</td>
<td>5/278</td>
<td>13/62</td>
<td>10</td>
</tr>
</tbody>
</table>

As it can be seen in the table above, the mean of the experimental group in pre-test is 38/80 and mean of control group is 39/80. In addition, the distribution coefficient of the control group is equal to 12.12 and as can be seen the distribution coefficient of experimental group is more and the number of people in each group is 10.

Table 2: Descriptive Statistics of Groups

<table>
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<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Distribution Coefficient</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>36/90</td>
<td>5/301</td>
<td>14/36</td>
<td>10</td>
</tr>
<tr>
<td>Experimental</td>
<td>29/20</td>
<td>5/029</td>
<td>17/22</td>
<td>10</td>
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</tbody>
</table>

As it can be seen in the table above, the mean of difference in control group is 29/20 and in the experimental group is 36/90. In addition, the distribution coefficient of the control group is equal to 14.36 and the distribution coefficient of difference score of the experimental group is 17.22 and the number of people in each group is 10.

Table 3: Independent t-test

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<tr>
<th></th>
<th>Mean</th>
<th>Difference Mean</th>
<th>t</th>
<th>Degree Freedom</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>36/90</td>
<td>7/7</td>
<td>3/33</td>
<td>18</td>
<td>0.004</td>
</tr>
<tr>
<td>Experimental</td>
<td>29/20</td>
<td>7/7</td>
<td>3/33</td>
<td>18</td>
<td>0.004</td>
</tr>
</tbody>
</table>
According to the table above the reported level between control and experimental groups is statistically significance and this difference reflects the fact that the implemented method has been effective on children with autism disorder.

**Discussion**

Research conducted by Anderson and colleagues with ABA also showed that if ABA therapy is done in long-term, it will have more lasting effect on the symptoms associated with this disorder and there will be a more durable recovery. In a study by Bern Bryarvylych (1993) using ABA, increased skills, IQ, language and explorative behavior, as well as self-help and significant decrease in screaming was shown by standard tests while there was no significant change in stereotypical behaviors. The research of Shane Kopov and Siegel (1995), Shane Kopov Siegel from University of Oklahoma (1995); Anderson, Averi, Di Pietro, Edward, Christian, Bern (1993), Penske Salneski, Founits 1991; Louvas 1987, Morris 1993, Mac Akin, Smith, Louvas 1993, Perry; Cohen, Di Carlo, 1995; Shane Kopov and Siegel 1996 has shown the independent positive effect of this method confirming the findings of this study (Golabi, 2005).

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Research Article


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