Effect of training impulse control on increase attention of children with attention – deficit/ hyperactivity disorder

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Abstract

The effect of impulse control training on attention of children with ADHD was studied. Using stage sampling method, 20 girls and 20 boys were chosen from first grade elementary schools in Tehran. Then the sample was assigned into experimental and control groups randomly. The groups were tested by Jordan questionnaire, before and after treatment. The treatment was assigned for experimental group in fifteen sessions. Data was analyzed by ANCOVA method. The results indicated that impulse control training was significantly effective on increase attention of children with ADHD. Meanwhile, there is no significant difference between two sexes after treatment. Results showed that impulse control training can enhance the attention of children with ADHD.

Keywords: Impulse control, attention deficit/hyperactive disorder.

1. Introduction

Attention – deficit/ hyperactivity disorder (ADHD) is the most prevalent psychiatric disorder among children. The children with ADHD suffer from some problems in various social, educational, behavioral, cognitive and provocative areas as well as inattentiveness, impulsivity and hyperactivity (Boles, Adair & Jouber + (2009). Although some experts view inattentiveness as the most serious problem of these children, some others disagree and regard the impulsivity as the very nucleus of this disorder (Goldstein & Goldstein, 1998).

Children with ADHD act thoughtlessly, are not able to make plans, have tendency for responding immediately to stimulants instead of response inhibition and are not able to avoid a kind of the behavior which results in punishment (Kazdin, 2000). They have difficulty in thinking before taking action so that they lack the ability to evaluate the logical consequences of their behaviors. In the other words, they are unable to distinguish between experience and response, thoughts and emotions and action and reaction and it leads to problems with disciplinary actions (Barkley, 1981; quoted by Alizade, 2004). The impulsivity problem often starts when the child enters the...
school and encounters social and educational demands (Posavac, Sheridan & Posavac, 1999). Because of impulsive behaviors, they demonstrate more incorrect responses and require more concentration on details and more organization (Alizade, 2004). The poor impulsivity control reveals itself by disturbed verbal behavior during primary school period (Posavac, Sheridan & Posavac, 1999).

The studies, carried out so far, have resulted in different definitions of the relationship between attention deficit disorder and Impulse control. For instance, Barabaz & Barabaz (1996) believes that the relation between the range of ADHD and impulse control is not a strong relation. Goldstein and Goldstein (1998) believe that the Attention frequent instability leads to a king of behavior originated from poor impulse control. Barkley (1994, 1998 and 1999 quoted by Rapson, 2003) states the children with ADHD suffer from major disability. For response inhibition ultimately resulting in various executive functions inefficiency and it leads to the emergence of behavioral symptom of ADHD.

Bronosky (Quoted by Goldstein & Goldstein 1998), proposes a theoretical model of ADHD. He supposes that the first part of the problem is either the disability or insufficiency for response inhibition. Barkley (1997) proposes a 3-stage model for inhibition description. The stages include the related processes “initial, potential response inhibition”, “stoppage of the response while it is being performed” and “interference control”. Kovay, (quoted by Goldstein & Goldstein, 1998) states that the poor performance of response inhibition in children with ADHD is due to a kind of behavioral-inhibition system-inactivity. The problems that these children have in the field of “response inhibition” affect their ability to organize their behaviors and fulfill their present and future needs.

There have been different and various methods such as pharmacotherapy, cognitive therapy, behavioral therapy and cognitive-behavioral therapy so for proposed to treat students with ADHD (Biederman & Faraone, , 2005). Pearson & at.al (2004) have found that In comparison with other medicines, methylphenidate is the most effective one to reduce children’s impulsivity. In addition to pharmacotherapy, behavioral intervention seems to generally improve attentions and control of behavior during classroom sessions. What the evidence indicates is that the operant conditioning strategic and their combination with social skills and behavioral management training can improve attention deficit and impulse control in this children (Barkely, 1997, Posavac, Sheridan & Posavac 1999).

Impulse control training is a kind of cognitive-behavioral intervention. Flick's study (1998) has shown relaxation and impulse control training improve the problems of children with ADHD. Jones (1998) has reported the impulse control training increases attention and self-control in children with ADHD. Applying cognitive-behavioral methods- self-control training of hyperactive pre-school children, Moury (2002 quoted by Behpajooh & at.al, 2007) proved that self-control increase happens along with impulsivity decrease. Posavac, Sheridan & Posavac (1998) examined the effects of this method on Attention and impulse control improvement. The results of the study showed its effectiveness. Oragan (2005) has also reported that behavioral intervention with class students along with impulse control training decreases impulsivity and increases Attention.

The present research aimed at answering the following questions:

Can impulse control training increase attention of students with ADHD?

Do the effects of impulse control training on attention differ between boy and girl students or are the effects of training gender-based?

2. Methodology

Population, samples and sampling methods:

The quasi-experimental method (pre test –post test with control grope design) was used in the study. The sample contained 40 first grade-primary school students in Tehran city (20 boys and 20 girls) studying in 2005-2006 academic year. The sample was chosen based on multi-stage random sampling methods. At the first stage with the use of a symptom mythical questioner (biased on DSM IV-R indicates for ADHD) 60 students with ADHD were recognized and finally from 40 students were chosen as the sample in the study. The age of samples all ranged between 7 and 7 and 8 months years old. Their educational records indicated that their IQ ranged normal limits and they showed no evidence of sensory-motor problems. Then the samples were divided into 2 equal control and experimental groups (10 boys and 10 girls in each of test and control groups).

Research Instruments:

Jordan questionnaire of ADHD measurement: Jordan questionnaire was applied for initial recognition and it was used before and after the experiment. The questionnaire was designed by Deal Jordan in 1992, including two teachers and parents’ forms. A. Teachers special form: This form contains 33 questions about ADHD with Likert Scale options ( always, often, sometimes and never). B. Parents special form: The form includes 39 questions and
based on Likert scale as well. Sohrabi (2000) has investigated the reliability of the test by using cronbach Alpha coefficient, split-half method and the correlation between rater's (teachers and parents). Sohrabi investigation showed that the reliability of both forms teachers and parents was more than 90% and the correlation between rater’s (parents and teacher) was 0.25 and at the 0.001 significant level. As it was mentioned earlier, Jordan’s questionnaires (both teachers and parents’ forms) were performed before and after treatment for two groups.

The experimental group received the impulse control training over 15 sessions. Impulse control training method was used based on Jones model (1998). The program was performed in groups during 15 sessions, each session for 30 minutes and every other day. All students received the training separately in the mornings and afternoons. The sessions include:

Step 1: Deep breathing and paying attention to inhalation and exhalation. The instruction continued until the testes learned what deep and peaceful breathing means.

Step 2: Drawing the long lines in a competitive form. The subjects were asked to draw lines as long as possible. Finally, the subjects whose drawing had taken more time were announced as winners and received encouragement.

Step 3: Drawing lines on the ground and walking slowly on them. The subjects who reached the end of the line later were winner and encouraged.

Step 4: Competitive sitting and standing instruction. The subjects asked to tie down on their back and who could stand slower was the winner of the competition and received encouragement.

Step 5: Subjects were asked to gradually settle in a relaxed position for 1 to 10 minutes.

Step 6: Intermittent moving and stopping with the whistle.

Step 7: Competitive drawing on blackboard. In this stage, the blackboard was divided into two equal parts with a line and the subjects were asked to draw a line between two parallel lines. The student who reached the indicating line later was the winner.

To analyze the data obtained in the study, in addition to descriptive statistics techniques and statistics indices such as mean and standard deviation, covariance analysis was applied to determine the effects of impulse control training in the experimental group.

3. Findings

Table 1 includes frequency, mean and standard deviation for experimental and control groups in post-test and it is related to teacher's special form. The mean and standard deviation of boy student in experimental group are 47.70 and 7.63 and in control group are 41.00 and 6.79.

Also, the mean and standard deviation of female students in post-test of teacher's special form in experimental group were about 44.35 and 4.87 and in control group were 41.70 and 5.61. Therefore, to analyze the data, two covariance tests-one to compare the equivalent group in pre-test and post-test in teacher’s form and one to compare the equivalent groups in pre-test and post-test in parents form were used.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group</th>
<th>Frequency</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy</td>
<td>experimental</td>
<td>10</td>
<td>47.70</td>
<td>7.63</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>10</td>
<td>41.00</td>
<td>6.79</td>
</tr>
<tr>
<td>Girl</td>
<td>experimental</td>
<td>10</td>
<td>44.35</td>
<td>4.87</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>10</td>
<td>41.70</td>
<td>5.61</td>
</tr>
<tr>
<td>Total</td>
<td>experimental</td>
<td>10</td>
<td>48.75</td>
<td>6.32</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>10</td>
<td>41.35</td>
<td>6.08</td>
</tr>
</tbody>
</table>

Table 2: Analysis of covariance to study the impact impulse control training on attention and hyperactivity disorders of student in pre & posttest (Teachers’ form)

<table>
<thead>
<tr>
<th>Variable</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>P</th>
<th>2η</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>1305.28</td>
<td>1</td>
<td>1305.28</td>
<td>344.75</td>
<td>0.000</td>
<td>0.908</td>
</tr>
<tr>
<td>Gender</td>
<td>0.974</td>
<td>1</td>
<td>0.974</td>
<td>0.25</td>
<td>0.615</td>
<td>0.007</td>
</tr>
<tr>
<td>Group</td>
<td>383.60</td>
<td>1</td>
<td>383.60</td>
<td>101.31</td>
<td>0.000</td>
<td>0.743</td>
</tr>
<tr>
<td>Interaction</td>
<td>3.14</td>
<td>1</td>
<td>3.14</td>
<td>0.830</td>
<td>0.368</td>
<td>0.023</td>
</tr>
</tbody>
</table>

The results in Table 2 showed that the effects of the scores of teachers form, pre-test on dependent variable had been about 90% and also the obtained result showed no statistically significant difference between boy and girl
students in this regard. However, the experimental and the control group were significantly different and there is no significant interaction between gender variable and the experimental and control groups.

Table 3 is concerned with parents form and the obtained data showed that the mean and standard deviation of male students in experimental group were 4.76 and in control group equaled 4.67. Also, the mean and standard deviation of female students in experimental group equaled 5.05 and 4.67 and in control group were 4.68 and 4.88.

Table 3. Mean and standard deviation of boy and girl students in pre & posttest (parents form)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group</th>
<th>Frequency</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy</td>
<td>experimental</td>
<td>10</td>
<td>47.60</td>
<td>5.10</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>10</td>
<td>41.90</td>
<td>4.67</td>
</tr>
<tr>
<td>Girl</td>
<td>experimental</td>
<td>10</td>
<td>53.30</td>
<td>4.83</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>10</td>
<td>42.40</td>
<td>4.88</td>
</tr>
<tr>
<td>Total</td>
<td>experimental</td>
<td>10</td>
<td>50.45</td>
<td>5.65</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>10</td>
<td>42.15</td>
<td>4.65</td>
</tr>
</tbody>
</table>

Table 4. Analysis of covariance to study the impact impulse control training on attention and hyperactivity disorders of student in pre & posttest (in parents form)

<table>
<thead>
<tr>
<th>Variable</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>P</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>758.04</td>
<td>1</td>
<td>758.04</td>
<td>271.40</td>
<td>0.000</td>
<td>0.886</td>
</tr>
<tr>
<td>Gender</td>
<td>0.13</td>
<td>1</td>
<td>0.13</td>
<td>0.04</td>
<td>0.828</td>
<td>0.001</td>
</tr>
<tr>
<td>Group</td>
<td>288.50</td>
<td>1</td>
<td>288.50</td>
<td>103.29</td>
<td>0.000</td>
<td>0.747</td>
</tr>
<tr>
<td>Interaction of gender-group</td>
<td>0.003</td>
<td>1</td>
<td>0.003</td>
<td>0.927</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Considering table 4, it was found that the effect of the scores of parents form, pre-test on dependent variable had been 88% and also there was no significant difference between male and female students in this regard. The difference between two equivalent groups the experimental and control groups was statistically significant. So that, with regard to the obtained "mean", the experimental group demonstrated higher and improved "Attention" range.

The results also showed that there was no significant interaction gender variable and the experimental and control group.

4. Discussion and Conclusion

The results showed the Impulse control training increases the attention range in children with "Attention Deficit Disorder". The impact was the same on both genders. The findings of the study is in accordance with the results of: Flick (1998) and Jones (1998) research on "The Improving effects of Impulse control tactics training on children with Attention Deficit Disorder with Hyperactivity. Posavac, Sheridan and Posavac (1999) on: "... Method is on attention and impulsivity improvement in children with ADHD”. Oragan (2005): The effects of Impulse control training on Impulsive behaviors decrease in class.

To explain the findings, it can be pointed out that inability to control the response is one of the problems the children with "Attention Deficit Disorder" encounter. Naturally, a person encounters a stimulus and before responding, the child with ADHD, examining all the related and available information assesses the potential consequences of their response. So, s/he responds appropriately this ability comes gradually and during child's developing process. In young children the responses are relatively more impulsive. They don't need to attend to their responses. The children gradually get the ability to control their responses and they learn to delay them and demonstrate them with more care, attention and reflection. This ability helps a person to adjust their reactions in order to organize their reactions in order to organize their responses and exhibit them at appropriate time. So, having passed a complicated cognitive process-including response selection, planning, time adjustment, response delaying, response inhibition and control – a person can act respond appropriately.

In children with "ADHD", the impulsive behavior is seemingly caused by their weakness in response controlling. So that they fail to assess the consequences of their response and promptly react against stimulus. All the symptoms, observed in the children with "ADHD" results in a substantial disability – delaying response against a stimulus or an event. The disability to delay responding, also, leads to lack of concentration and attention in a continuous mental activity. Impulse control training reduces the range of disruptive behavior occurrence and
improves educational performance as well. In addition, impulse control training helps to improve programming skills and social and cognitive interactions. As the findings of the study shows the training increases the Attention in children with “ADHD”. The effects of training are not affected by gender and both male and females equally benefit from training programs.

Since the study sampling population consisted of 7-year old-children with “Attention Deficit Disorder”, the generalization of the findings to other age-groups should carefully be carried out. To examine the consistency of the experimental effect, the prospective researchers are recommended to apply repeated measurement methods. Considering the probable increasing effects of it is suggested to study its efficiency when accompanied with other educational and clinical methods, particularly pharmacotherapy and parent’s management training,… and the effects will be studied separately as well as in combination with other methods. At the end, based on the findings of the study, teachers and parents are recommended to apply Impulse control training to improve the range of attention in children with "Attention Deficit Disorder" in life and educational circumstances.

References


