The effectiveness of self-instruction technique on improvement of reading performance and reduction of Anxiety in primary school students with Dyslexia

Haddadian, F. a *, Alipour, v. b, Majidi, A. c Maleki,H . d

a Payame Noor University, Iran
b Payame Noor University, Iran
c Payame Noor University, Iran
d Payame Noor University, Iran

Abstract

Objective: The purpose of this study was to examine the effect of self-instruction technique on improvement of reading performance and reduction of anxiety symptoms in primary school students with dyslexia in city of Arak in academic year of 1388-89. Method: The sample consisted of 32 primary school students with dyslexia and anxiety symptoms; they were selected via cluster random sampling and then were placed in two equal size groups of 16 in the experimental and control groups. This was an experimental research with pre-test, post-test, and a five month follow up test along with a control group. The experimental group received 12 sessions (each 45 minutes) of self-instruction technique. The instruments used in the design were Dyslexia Test, Wechsler Intelligence Scale for Children (WISC-R), and Ratter Behavioural Questionnaire. Results: The covariate analysis showed (p<.0001) that self-instruction technique have significant effect on improvement of reading performance and on reduction of anxiety symptoms in students. The effects endured even after five months at the follow up test.

Keywords: Self-instruction; Dyslexia; Anxiety

Introduction

The term "special deficiencies in learning" is used for students of normal IQ, who have some problems in some skills such as speaking, reading, spelling, writing, calculating, visual comprehension, auditory comprehension, visual memory sequencing, and auditory memory sequencing (Seyf Naraghi & NAderi, 1383).

Dyslexia, which is corresponded to delay and deficiency in reading ability, can be distinguished by observable deficiency in word cognition skill as well as in reading comprehension (Yaghoubi, 1383). Deber (1985, cited by Yaghoubi, 1383), in dictionary of psychology, defines dyslexia as any reading disability because of which students fall behind their own class's baseline level of reading in a case that there is no sign of deficiencies such as mental retardation, major brain disorder, excitement problems, and speaking problems. Dyslexia usually refers to reading deficiencies of individual; however, some go beyond this and use the term for all kinds of reading and writing problems. Some others wrongly interpret the term and refer it to problems of reversing

* Corresponding Author. Fatemeh Haddadian.Tel.: 09123322104
E-mail address: haddadian87@yahoo.com
Some scientists believe that dyslexia is a very special deficiency and rather hereditary (Pennington, 1991), which is caused by neurological disorders (Bakker, 1992) and it doesn't cover all children who have language learning problems (Gorman, 2001, cited by Ba-izat & Rahat, 1386).

In comparison with normal students, those with dyslexia experience more public anxiety (Margalit & Zak, 1984; Rodriguez & Routh, 1989). It has been estimated that about 25% of children with dyslexia show signs of anxiety disorder (Cantwell & Baker, 1991); because these children are facing many difficult situations in the school. General level of anxiety caused by anticipation of problems could be very high. Also, this anxiety can be related to the student's feeling that things are out of his/her control (Margalit & Zak, 1989); because students with dyslexia tend to ascribe their success or failure to others (Groling & Ryan, 1990; Tarnowski & Nay, 1989). Worrying about real performance – for example when doing his/her homework – can also lead to anxiety in students with dyslexia. These students are afflicted by anxiety and stress and their recovery period might be so difficult (Meadan & Monda-Amaya, 2008; Browder, Wakeman, Flowers, Rickelman, Pugalee & Karvonen, 2007; Lindsey & Kasprowicz, 1987; Dean & Ratten, 1987).

Many authors have pointed out the existence of excitatory-behavioral disorders in children with dyslexia. According to Debre-Ritern, two out of three of these children experience oppositional defiant disorder, aggression, isolation, autistic, secondary Urinary incontinence, and sleep disorders (Dadsetan, 1379). These students also have low self-esteem, anxiety, and depression because of lack of improvement in learning (Bakker, 1992, Selikowitz, 1998, cited by Fazeli, 1383).

There are several approaches to dyslexia treatment and to decrease its anxiety. The cognitive-behavioral approach, which has had satisfactory results, is one of these approaches to improve reading skill of the children with dyslexia. According to this approach, scientists believe that reading is the balance between comprehension processes, cognitive and meta-cognitive knowledge and skills (Yaghoubi, 1383). One cognitive-behavioral technique, which has been successfully used in treatment of students reading problems, is self-instruction technique (Lynne Lane, Harris, Graham & Weisenbach, 2008; Delcourt, Cornell & Goldberg, 2007; Zafiropoloulou & Karmba-Schina, 2005; Baker, 2004; Baker & Robertson, 2002; Agran, 1986, 1987; Hughes, 1992; Hughes & Agran, 1993; Beeck et al, 1979).

The results of the studies show that although there are some researches about rehabilitation of students with dyslexia based on cognitive-behavioural approach; but in Iran, there is no research about effects of instructions of cognitive-behavioural approaches (self-instruction) along with parents' instructions on improvement of reading performance and decrease of anxiety in students with dyslexia. Therefore, the main goal of this paper is to answer following question:

"What are the effects of cognitive-behavioural approach (self-instruction) along with parents' instructions on improvement of reading performance and decrease of anxiety in students with dyslexia?"

Considering the main subject of the paper and literature review, followings are research hypothesis:

**Research hypothesis**

1. Training of self-instruction approaches results in improvement of reading performance in students with dyslexia.
2. Training of self-instruction approaches results in decrease of anxiety in students with dyslexia.
3. The effects of training of self-instruction approaches on the students with dyslexia would be permanent after 5 months.

**Methodology**

This research is a semi-experimental research with pre-test; post-test and with control group. In this study, choice of testable samples and their replacement in test and witness groups are random and effects of other variables like IQ, class level, calendar age, and language of testable samples are controlled. The analysis of covariance method (ANCOVA) is used for analysis of statistical data of this research.

**Population and Sample**
Statistical community in this research contains all male and female students with dyslexia studying year 3 and 4 of primary school in the city of Arak in the school year of 1385-1386. From these students 32 ones were chosen as final sample and were randomly divided into two groups of experimental and control.

Research tools:

1) Wechsler Intelligence Scale for Children
   Wechsler Intelligence Scale for Children was used for evaluating IQ of students with dyslexia. It is worth mentioning that this test has been standardized by Sima Shahim in University of Shiraz (1373).

2) Reading disorder test
   In order to distinguish students with dyslexia we used reading disorder test created and standardized by Nesfat et al. This test evaluated three main clinical characteristics of students with dyslexia: misreading, reading speed, and reading comprehension.

3) Excitement disorder test
   This test contains features like attention deficiency, hyperactivity-aggressiveness, anxiety-depression, social incompatibility, and antisocial behaviour. Correctness of the test was reported about 80% in a research by Zimerman et al. in Italy (1987) through retesting on 148 school children. Test correctness in Iran has been reported about 85% in a research by Mehryar & Foru Alin Adl using halving method and retest (Khoshabi et al, 1386).

Findings:

Table 1: results of covariance analysis for comparison between reading performances in pre-test and post-test

<table>
<thead>
<tr>
<th>Sources</th>
<th>Total squares</th>
<th>Degrees of Freedom</th>
<th>Average squares</th>
<th>F</th>
<th>Degrees of Significance</th>
<th>Power of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>11.39</td>
<td>1</td>
<td>11.39</td>
<td>12.24</td>
<td>0.002</td>
<td>0.92</td>
</tr>
<tr>
<td>Group</td>
<td>70.97</td>
<td>1</td>
<td>70.97</td>
<td>76.27</td>
<td>0.001</td>
<td>0.89</td>
</tr>
<tr>
<td>Error</td>
<td>26.98</td>
<td>29</td>
<td>0.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>122.87</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results of applying statistical method of covariance analysis to endurance effect of self-instruction technique on improvement of reading performance of the students with dyslexia (table 2) show that although students’ marks in follow up phase were lower than post-test phase, but results are still fixed and there is still significant difference between reading performances of experimental group and those of witness group.

Table 2: results of covariance analysis for comparison between reading performances after 5 months

<table>
<thead>
<tr>
<th>Factor</th>
<th>Total squares</th>
<th>Degrees of Freedom</th>
<th>Average squares</th>
<th>F</th>
<th>Degrees of Significance</th>
<th>Power of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>0.01</td>
<td>1</td>
<td>0.01</td>
<td>0.24</td>
<td>0.03</td>
<td>0.76</td>
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<tr>
<td>Group</td>
<td>15.28</td>
<td>1</td>
<td>15.28</td>
<td>232.99</td>
<td>0.001</td>
<td>0.93</td>
</tr>
<tr>
<td>Error</td>
<td>1.90</td>
<td>29</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17.26</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3: results of covariance analysis for comparison between anxieties mark of the students with dyslexia in pre-test and post-test

<table>
<thead>
<tr>
<th>Factor</th>
<th>Total squares</th>
<th>Degrees of Freedom</th>
<th>Average squares</th>
<th>F</th>
<th>Degrees of Significance</th>
<th>Power of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>11.39</td>
<td>1</td>
<td>11.39</td>
<td>12.24</td>
<td>0.002</td>
<td>0.92</td>
</tr>
<tr>
<td>Group</td>
<td>70.97</td>
<td>1</td>
<td>70.97</td>
<td>76.27</td>
<td>0.001</td>
<td>0.87</td>
</tr>
<tr>
<td>Error</td>
<td>26.98</td>
<td>29</td>
<td>0.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>122.87</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results of applying statistical method of covariance analysis to effect of self-instruction technique on reduction of anxiety of the students with dyslexia, table 3, show that there is significant difference between reading performances of experimental group and those of witness group. As the table shows, the main effect of the group is significant in the level p<0.001. Therefore, statistical analysis results of the second hypothesis of the research show that self-instruction technique has caused a significant reduction in anxiety of the experimental group in comparison with the witness group.

Table 4: results of covariance analysis for comparison between anxiety mark of the students with dyslexia after 5 months

<table>
<thead>
<tr>
<th>Factor</th>
<th>Total squares</th>
<th>Degrees of Freedom</th>
<th>Average squares</th>
<th>F</th>
<th>Degrees of Significance</th>
<th>Power of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>2.73</td>
<td>1</td>
<td>2.73</td>
<td>1.97</td>
<td>0.17</td>
<td>0.89</td>
</tr>
<tr>
<td>Group</td>
<td>25.88</td>
<td>1</td>
<td>25.88</td>
<td>18.67</td>
<td>0.000</td>
<td>0.88</td>
</tr>
<tr>
<td>Error</td>
<td>40.19</td>
<td>29</td>
<td>1.38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>72.96</td>
<td>31</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results of applying statistical method of covariance analysis to endurance effect of self-instruction technique on improvement of reading performance of the students with dyslexia (table 4) show that although students' marks in follow up phase were lower than post-test phase, but results are still fixed and there is still significant difference between reading performances of experimental group and those of witness group. Consider above table, it can be concluded that the results endure after 5 months and there is a significant difference in reduction of anxiety between experimental group and witness group.

Discussion and conclusion:

In this study, the effectiveness of cognitive-behavioural technique (self-instruction) along with parents' instruction in improvement of reading performance and reduction of anxiety in elementary students with dyslexia were reviewed. In this regard, after applying diagnostic tests and cluster random sampling, 32 elementary students with dyslexia and anxiety disorder were chosen from the city of Arak. They were randomly placed in two groups of experiment and control. Experimental samples were taught under self-instruction technique for 12 sessions. Mothers of these samples, at the same time, were received this technique for 7 sessions in order to train with their children at home. But samples of the witness group received no instruction. Resulting data were analyzed using covariance statistical method.

Findings of this research show that self-instruction technique improved reading performance of the students with dyslexia. In other words, self-instruction technique caused a significant improvement in reading performance of experimental group compared with witness group. These findings are consistent with the findings of researchers who reviewed effectiveness of cognitive-behavioural techniques in improvement of reading performance of students with dyslexia. Also, this treatment method caused 5 months endurance of treatment effects on experimental groups compared with witness group. These findings are consistent with those of: Lynne Lane, Harris, Graham, &
Weisenbach, 2008; Delcourt, Cornell & Goldberg, 2007; Zafiropolulou & Karumba-Schina, 2005. These researchers also examined effectiveness of cognitive-behavioral techniques in improvement of reading performance of students with dyslexia. This research also showed that anxiety of students with dyslexia reduces as their reading performances improvement. It can be concluded that their anxiety is because of their reading problems; therefore, if their reading performance are improved, their anxiety will be reduced. There are several related researches, in some other countries, consistent with these findings: Meadan & Monda-Amaya, 2008; Browder, Wakeman, Flowers, Rickelman, Pugalee & Karvonen, 2007; Lindsey & Kasprowicz, 1987.

Results of this and previous researches show that first, self-instruction is a cognitive-behavioral technique and second, this technique has a significant effect on improvement of reading performance of students with dyslexia. On other hand, since most of students with reading problems have other problems like anxiety, depression, low self-esteem, etc., it seems that reducing learning problems of students with dyslexia can improve their excitatory-behavioral disorders and prepare them for successful education.

Based on findings of this research, it can be suggested to specialists of learning disorder, clinical psychologists, psychiatrists, and consultants to use these techniques in order to improve reading performances of students with dyslexia.

We hope that this study be a starting point for researching on the use of modern educational methods, specially cognitive-behavioural methods, in treatment of students with dyslexia in Iran.

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