A study on effectiveness of music therapy on verbal intelligence of the students with dyslexia

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Abstract

The present research intends to examine effectiveness of music therapy Dalkoroz and Orff method on verbal intelligence of the students with dyslexia. Quasi-experimental method has been method as the research method with control and experimental group. The statistical population consists of all the first and second grade students with dyslexia in Mashhad during 2014-2015. The sample group (24) has been selected via convenient sampling method, categorized in two control and experimental groups. In this research, the music therapy exercises were used during 22 sessions in 30-45 minutes. Stanford–Binet Intelligence Scale and Reading Test were used to collect data. As the result, findings of this research specified the increase in verbal intelligence of students using approach to Music Therapy Dalkoroz and Orff method, which it can consider suitable implications using music therapy to design and formulate dyslexia treatment programs.

Keywords: music therapy, dyslexia, verbal intelligence.
Introduction
Reading Disorder relates to delay and imperfection in the reading ability, specified with the terms such as dyslexia action, Alex, reading retardation, reading disorder, disorder related to growth in reading, or significant impairment in cognitive skills genesis of words and understanding of reading comprehension (Seif Naraghi & Naderi, 2010). Dyslexia refers to inability to read in person despite having vision, hearing, cognitive, sensory health, etc. Reading disorder means serious deficiency in reading skills (cognition and expression of letter, word, combination of letters, partitioning of the word, read and understand the contents), so that the person will face problem in his daily life and education which require reading skills.

The children might face problem in one or several skills related to reading such as delete words, add words, replace words, modified retelling, repeating the words, read words with dragging sound, word analysis and recombination of letters, and low speed at reading (Beh Pajouh, 2003). An emphasis has been put on sensory channels as one of the most common and most powerful traditional approaches to treat learning disabilities. Due to emphasis on sensor channels, most of learning inability methods have been called with Sensory modalities and VAKT: visual-Auditory-kinesthetic-and tactile methods (Dadsetan, 2012).

Today, it is discussed on the impact and benefits of music in different growth stages of human life (the embryonic period to seniors), plants and animals, and it is also discussed on the changes that music puts on the sensor motor, emotional - affective system, glands discretion and person’s cognition. In the process of music therapy, an attempt is made to improve life status of the person with disorder and improve his communication level with environment by combination of music professional qualifications of the experienced therapist and various musical instruments and music world (Benson, 2003). Music reflects a wide range of human emotions and intertwines all the cultural and language barriers due to globalization and lack of belonging to a particular group or nation and provides a common experience. Distinguishing features of music can reduce anxiety, relieve mental stress, relieve pain and remove insomnia and relaxation. Strengthening the ears through the hearing increases the accuracy of children to the auditory stimulus. The more ears become stronger in detection of auditory stimuli, the ears are stronger in the detection of auditory stimuli, attention and concentration will also increase. In music therapy for deafness, blindness, mental retardation and other exceptional children, fostering hearing precision is of great importance. For this, music therapists have designed various programs to strengthen hearing and various games to accustom children to pay attention to listening (Mohammadi,1380). In the course of learning how to read, good results have been brought about for students. The pilot project which was conducted in New York, music and other arts were used during the training. This position of person has had a huge effect on students’ reading during training and a good progress has occurred in the reading of the students who had poor reading by attending in these courses. In this study conducted on more than thirteen thousand students in 42 schools, the progress of reading, mathematics, speaking and writing skills with the help of music was evaluated and interesting results were obtained (Moghadam & Mahnaz Estaki, 2011). Mohanty &
Hmjdy (1992) perceived that training dance with music causes increasing score in Torrance Creativity test. Fransh Roche states that neural firing patterns are the same in understanding music and abstract reasoning. Darling (1993) in his research indicated that music has a major role in strengthening most of social skills and education. Without doubt, music improves memory whereby sustainable learning comes to realize.

Schneider & Klutz (2000) conducted a research entitled “effect of training music and attendance in sports activities on academic achievement” and the results indicated that the training music group enjoyed better performance in mathematics and language (Alizadehsani, 2013). According to what said, the positive impact of music therapy on improvement of performance of two hemispheres is striking; on the other hand poor performance of two hemispheres has been proven in reading disorder (Alizadeh, 1392). Therefore, the present research intends to examine effectiveness of music therapy Dalkoroz and Orff method on verbal intelligence of students with dyslexia.

The research method: the present research is a quasi-experimental study with control and experimental group. The statistical population consists of all the first and second grade students with dyslexia in Clinics in Mashhad during 2014-2015. The sample group (24) has been selected via convenient sampling method, categorized in two control and experimental groups. 2 persons in experimental group had not the required collaboration in performing the project, under which two persons were removed from the control group in random, thus the sample group consists of two groups (12). In this research, diagnostic interview based on DSM- IV was used to diagnose the of student dyslexia, which this interview includes demographic characteristics, complaint, present illness, past illnesses, certain medical and family history. The second section includes studying status of appearance, recognition of thought, judgment and belief. This interview is well suited to the comprehensive psychiatric interview pattern (Kaplan & Sadok, 2009, Pour Afkari & Entezari, 2009). In this research, behavioral assessment interview has been used, which includes behavioral assessment criteria based on behavioral analysis approach. Behavioral deficits, behavioral mental sets and conditions causing continuity and pathological behavior were investigated from the perspective of behavior. The goal of behavioral assessment is to make behavioral analysis about the symptoms, severity, and frequency and formulate treatment program (Tabrizi,2011).

**Stanford-Binet Intelligence Scales**

This version was presented in 2003. The most important achievement of this version is total proportion between non-verbal and verbal content on each factor. In this version, the mean and standard deviation were obtained equal to 10 and 3 for each subscale. Further, the mean and standard deviation were obtained equal to 100 and 15 for the combined scores. In this version, an emphasis is put on five factors of knowledge, fluid reasoning, quantitative reasoning, active memory and visual processing. The age group ranges from 2 to 90 years old (Kamkari, 2011). At Stanford-Binet Intelligence Scale, the validity ranges from 0.95 to 0.98 at the area of Intelligence Quotient and ranges from 0.90 to 0.92 at the area of five indices and
ranges from 0.84 to 0.89 for ten subscales. In addition, the validity studies between the testers and test-retest indicates stability of this test, because all the values are greater than 0.75. In other words, the validity coefficient for the scores of general scale, non-verbal, verbal and sum of tests equaled to 0.98, 0.95, 0.96 and 0.91 using half-split method, indicating favorable stability. The factors above 0.90 indicate favorable psychiatric feature at the area of internal congruence (Kamkar, 2013). Reading test has been the next instrument which this test has been normalized for the first to fifth girl and boy primary school students by Karami Nouri & Moradi (2006), included of 10 subscales. Nouri & Moradi (2009) have confirmed the validity and reliability of this test. The reliability of this test has been calculated via Cronbach’s Coefficient Alpha equal to 0.8 which is significant. Analysis of research data has been made based on scores of pre-test and post-test in both groups concerning the variables.

**Findings**

Table 1. descriptive statistics of pre-test and post-test for the verbal Intelligence Quotient in Stanford-Binet Intelligence Scales in experimental and control groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Verbal intelligence</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>experimental</td>
<td>36/83</td>
<td>48/33</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>11/16</td>
<td>9/62</td>
</tr>
<tr>
<td>Minimum</td>
<td>23</td>
<td>35</td>
</tr>
<tr>
<td>Maximum</td>
<td>65</td>
<td>69</td>
</tr>
<tr>
<td>control</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35/67</td>
<td>35/57</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>8/5</td>
<td>8/28</td>
</tr>
<tr>
<td>Minimum</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>Maximum</td>
<td>48</td>
<td>48</td>
</tr>
</tbody>
</table>

As shown in table 1, there is 11.5 score of difference in verbal intelligence quotient in post-test(48.33) than pre-test(36.83).
Discussion and conclusion

To sum up, music therapy can be influential to anyone regardless of his talent in music. The person’s music knowledge has no special role in its effect on treatment. There are music methods, instruments and types that anyone can use them. In this research, active music therapy via Dalkoroze and Orff method approach was used. Fostering sense of movement, expanding children’s ability in language and cognitive development and children’s perception have been the aims considered by Dalkoroze and Orff, that is, they believed that the more children can engage in various physical activities, they will have better music understanding. These activities require strengthening children's senses which this is a means for their communication with their surrounding world. Thus, it can give priority to stimulating tactile, sight and hearing senses. In this regards, Orff raised an issue believed that music instructors can teach the children to transform the verbal terms in their poem to motor terms. Conversion of verbal terms to motor terms has a huge effect on children’s motor sense. This implies that the children design physical movement by their creativity for key terms of poem (Dostdar, 2009). The studies indicate that 80% of the individuals who are diagnosed as the individuals with learning inabilities face reading problem (Alizadeh, 2013). In this research, it has been indicated that verbal intelligence of the students with dyslexia has increased due to use of music therapy based on Dalkoroze and Orff approach.

Suggestions

- to strengthen these findings, it is suggested to conduct further research at different academic courses.

- the research must be conducted regarding gender of students at learning disorder centers.
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