

The Effectiveness of Music Therapy on Attention and Concentration, Social Adjustment and Aggression of Students with Intellectual Disability

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Abstract:

Introduction: The present article was done with the aim to investigate the effectiveness of music therapy on attention and concentration, social adjustment and aggression of students with intellectual disability.

Methods: The research method was quasi-experimental with a pretest and posttest design plus control group. The statistical society of the study consisted of male students with intellectual disability in second grade of elementary exceptional schools during 2021-2022 and among them 30 students were selected in available sampling method as the sample case and categorized in experimental group (15 students) and control group (15 students). Data collection tools included Wechsler (4th edition) scale to evaluate students' attention and concentration of active memory, Sinha and Singe social adjustment questionnaire and Shahim aggression questionnaire. The validity of research instruments was confirmed by the approval of specialists, the reliability of social adjustment questionnaire was determined through Kruder-Richardson and for the other research instruments, the reliability was estimated and approved by calculating Cronbach alpha coefficient ($\alpha > 0.7$). Prior to the study, Pre-test of attention and concentration, social adjustment and aggression was implemented in both groups. The experimental group received music therapy through the training package in 12 sessions, but the control group did not receive any training therapy. After the training course in the post-test stage, both of the groups answered to the same questionnaire of pre-test stage. The research data was analyzed with one way and Multivariate Covariance Analysis.

Results: The results revealed that the music therapy had a positive effect on the increase of students' attention and concentration, social adjustment and their two subscales, also on the reduction of their aggression with its two subscales ($P < 0.05$).

Conclusion: According to the effectiveness of the music therapy in the present research, it was suggested to apply periodically the methods of music therapy with the aim to increase their

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attention and concentration and social adjustment, and also to decrease intellectually disabled students' aggression and anxiety.

Keywords: Attention and Concentration, Aggression, Intellectual Disability, Music Therapy, Social Adjustment

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Introduction:

The existence of disorders, diseases, physical, mental and behavioral disabilities, especially among children, is one of the main problems of families in human societies, which with the advancement of science; Experts are looking for solutions to these problems. One of these disabilities that have been considered by researchers and therapists in recent years is disorders caused by mental retardation, which according to the available evidence; its prevalence is increasing in human societies. The main features of this disorder include vague and severe anxiety about several events or activities on most days for at least 6 months, academic, social and occupational dysfunction, difficulty in controlling anxiety and the severity and duration of anxiety beyond the likelihood of threatening events. (1).

Mental retardation disorder is a complex disability that is associated with developmental disabilities in various physical, psychological, developmental, social and educational dimensions. Functional disabilities of these people affect all aspects of their lives such as psychological, behavioral, self-perceptual, executive functions, visual and auditory memory and interpersonal relationships (2). Mental developmental disorder is characterized by deficiencies in cognitive abilities (such as problem solving, planning, reasoning, judgment) and adaptive function (3).

One of the important tasks of the educational system of any country is to prepare all members of society, especially exceptional students, to learn for the future and to create the ability and competence to manage life and deal with bad living conditions (4). The importance of attention in learning is obvious. Before a child can learn, he must be able to focus on what is going on. Children with mental disabilities; Due to their lower-than-average mental and intelligence functions in daily life, they have difficulty maintaining concentration, balance, controlling momentary stimuli, and memory. The scope of attention and focus of these children is basically less than they can focus on different processes and they are not able to pay attention to different aspects of a task (5). Students with intellectual disabilities need skills that enhance their social adjustment more than they need classical instruction such as math; Trainings such as improving memory and attention that underlie learning (6, 7). Psychologists also emphasize that the performance of tasks depends on the ability to concentrate, and if there is no ability to concentrate, a lot of time and effort will be wasted and work productivity will be reduced. The

increase in the above factors occurs through training, work planning or the use of motivating and facilitating factors and tools (8).

Social adjustment, such as physical, emotional, and mental development, is a continuous quantity and is gradually perfected, and is achieved naturally throughout life and in dealing with experiences (9). People with intellectual disabilities also often face serious deficiencies in adaptive skills (10). Because compared to normal children, they have special conditions and are simply not able to adapt to the environment. Mental retardation, social rejection of the mentally retarded child, special family problems and stressful relationships of the mentally retarded child with parents, especially siblings, are among the causes of incompatibility in the mentally retarded child (11). These children face many failures due to various limitations, which often result from their cognitive limitations, and the consequence of all these failures is failure; which will be the beginning of aggression in various forms (10). Aggressive behaviors are one of the most difficult and common behavioral problems among people with mild to severe mental disabilities. Durand believes; Children with mental retardation use aggression as a tool to meet their needs due to a lack of behavioral coffers. Aggression of such children has been considered as one of the major problems of educators, teachers and parents (12).

Considering what has been said about some of the problems and cognitive and behavioral disorders of students with intellectual disabilities; Society does not prepare children with mental disabilities for adult life like others. Their adult lives are very different from the lives of ordinary people. This type of disorder is an unpredictable phenomenon that may become part of family life that leads to structural, procedural, and emotional changes and imposes enormous burdens on the family, on various subsystems, and on health. Family affect. Decker, Coat, & Holst reported that children with mental retardation showed behavioral problems in the form of poor peer relationships, low self-esteem, and running away from home, stealing, aggressive behaviors, attention deficit, anxiety, maladaptation, and antisocial behaviors. Give (13). Simera also points out that 30% of students with mental retardation drop out of school before finishing high school, and 61% of them are unemployed in adulthood. These statistics show how public education and school and family and community systems strongly affect their quality of life (14). Because of behavioral problems, they may be excluded from social settings and gradually become skeptical about their abilities. These children may not be able to control their behavior and their unresolved problems in adulthood can cause serious harm to themselves, society and family (15). According to the mentioned cases and problems, children with mental disabilities are among the groups that have many problems in the field of education, learning, social relations and behavior. Considering that exceptional students, like ordinary students, have the right to science and learning, despite having intellectual and behavioral problems; Therefore, by allocating various therapies such as music and therapy, we can try to reduce their behavioral problems and help them in special schools to acquire knowledge and knowledge, as well as appropriate social behavior and interactions with others. According to the results of similar research; Music therapy seems to be effective in reducing the behavioral and emotional problems of students with special mental disabilities in special schools. Therefore, ignoring the effectiveness of this treatment on

the variables mentioned in students with mental disabilities, especially considering the Islamic nature of the country's schools can be considered a serious vacuum in exceptional schools in Tabriz that the purpose of this study is to fill part This is a vacuum; Therefore, the effectiveness of music therapy on increasing attention and concentration and social adjustment and reducing aggression of students with intellectual disabilities in special schools in Tabriz is the aim of this study. Considering the importance of the applied subject and the lack of research that examines effective methods for improving undesirable behaviors in students with mental retardation; Especially with the growing tendency towards the use of music and related activities in the field of medicine in recent years, this study aims to investigate and solve the many behavioral problems that are rare among students. There is mental capacity in the exceptional schools of Tabriz. As a result, the research question is whether music-based therapy is effective in increasing attention and concentration and increasing social adjustment, as well as reducing aggression in students with mental retardation?

Method:

The research method is based on quasi-experimental designs in which a pre-test-post-test design with a control group was used. The statistical population included all students of the second elementary school (fourth, fifth and sixth grades) mentally retarded boys in exceptional schools in Tabriz, 173 people in the academic year 2020-2021, to determine the sample; Using the available sampling method; Thirty students with mental retardation in the second year of elementary school in Tabriz were selected who were randomly divided into two separate groups of 15 people (music therapy experimental group and control group) according to the inclusion criteria and random replacement. Inclusion criteria include: students with mental disabilities in the second year of primary school in Tabriz, not participating in psychological intervention sessions during the last six months, students' interest in participating in the research and students' parents' informed consent to participate in it was research. Exclusion criteria also included: absence of more than two sessions, unwillingness to cooperate in continuing the research and simultaneously participating in other intervention programs.

Before conducting research; written consent was obtained from the parents of the students studied. In addition, the American Psychological Association's code of ethics was observed, including respect for the principle of confidentiality of results, the possibility of subjects withdrawing from research, providing sufficient information on how to teach and research, and that the intervention would not cause any physical harm. The participating students then completed the Wechsler Children's Intelligence Scale Questionnaire - Fourth Edition and Social Adjustment and Aggression. They were then randomly divided into two groups of 15 people. Then, the subjects of the experimental group underwent the intervention of "music therapy" in 12 sessions of 45 minutes. The subjects in the control group did not receive any educational intervention. After the intervention sessions; both groups completed the same Wechsler Children's Intelligence Scale Questionnaire - Fourth Edition, Social Adjustment and Aggression.

In order to comply with ethical principles; Training sessions were held for the control group after the completion of the research. Tools and validity and reliability:

A: Attention and focus scale: To calculate the level of attention and concentration of the subjects, the active memory test was used on the Wechsler Intelligence Scale for Children - Fourth Edition. Active Memory Scale In the fourth version of the Wechsler IQ Scale for Children, there are three tests that include two main tests and one alternate test (35). Citing two main tests and one substitute test; In working memory, three level scores are obtained under the heading of "number capacity" and "number-letter sequence" level scores and "calculations" level scores. in fact; Active memory is measured through two main tests called "number capacity" and "number-letter sequence" and a substitute test called "calculations", which is of great clinical importance in interpreting the IQ profile. Using tables to convert level scores to IQ; Activated memory is obtained and reported on the first page of the registration form (35). It is noteworthy that in the present study, due to the inability of students to respond to the "number-letter sequence" section; the "calculations" substitute test was used. The following is a brief description of how the number capacity, letter-number sequence, and calculations are scored:

Number Capacity Scoring Method: After calculating the total raw score in both direct and inverse number capacity methods, the total raw score of "number capacity" is obtained. Considering the sum of two raw scores in direct number capacity (with maximum score of 16) and inverse number capacity (with maximum score of 16), refer to the tables of conversion of raw scores to level scores and level score as the total score of "number capacity" Achieves (35). In fact, these subscales are tests of the breadth of digits and the sequence of letters and numbers. To perform forward-range digits, the subject is asked to repeat the numbers as they are read aloud by the examiner. For reverse spacing, the subject must repeat the numbers upside down. Of course, in this case, too, the numbers are read aloud by the examiner (36). The range of cultivars consists of two parts that are executed separately; That is, each is performed regardless of the subject's score in the other. The maximum score for a forward run is 16; a reverse run is a total of 32 points. Then, according to the standard score tables and the age of the subject, the standard score is calculated.

Letter-Number Sequence Scoring Method: The letter-number sequence, another subtest of the Wechsler IQ scale active memory, asks the subject to repeat numbers in ascending order and words in alphabetical order. Each question consists of three attempts. For children 6 to 7 years old, diagnostic questions are used to show that they know the count and the alphabet; If the subject fails the diagnostic questions, we perform "calculations" (36).

Method of scoring calculations: Calculations are considered as the last test of the working memory scale which has 34 questions. The scoring method is zero and one and the maximum raw score is 34. This test is a substitute and its 20 questions are adapted from the third version of the Wechsler Children's Intelligence Scale. In addition, 14 new questions have been added to the test that measure mathematical calculations, mathematical knowledge and mathematical reasoning. The content of the computational test shows a lot of similarities with the quantitative verbal reasoning test in the new version of the Tehran-Stanford intelligence test, and the only

difference is in not using the pen and the notebook. Thus, in this test, the subject must perform calculations using working memory without using a notebook and automatically. This test is a substitute and in the process of testing, the subject is asked to demonstrate the ability of mathematical calculations according to the mathematical questions that are done in the field of various calculations. In other words, through this test, attention, concentration, number reasoning ability, short-term memory, long-term memory and mental alertness are measured (35). In order to measure the reliability of attention and concentration in this study, the correlation of the score of the two correctors was calculated and confirmed ($r < 0.9$).

B: Social adjustment questionnaire: To measure students' social adjustment, Sinha and Singh questionnaire (37) in the form of 55 items in three subscales: social adjustment (19 items), emotional adjustment (16 items) and academic adjustment (20 items) as two options. 0 zero and one was used. In scoring 22 questions, a score of one is calculated for the yes option and a score of zero for the no option. But for other questions, scoring is done in reverse; That is, a score of one is calculated for the no option and a score of zero for the yes option. Score between 0 and 18: Student social adjustment is low. Score between 18 and 27: The student's social adjustment is average. Score above 27: High student social adjustment.

The designers of the social adjustment test obtained the reliability coefficient of this test by the methods of halving, retesting and Richardson's fusion 0.95, 0.93 and 0.94, respectively. The content validity of this test was also confirmed by 20 psychologists. Also in Iran, Ghodsi Ahqar has examined the 55-question form of this scale in a sample of 3,000 students of different educational levels. In the present study, the reliability of the questionnaire was confirmed using Kader-Richardson ($\alpha < 0.7$).

A: Aggression questionnaire: To measure students' aggression, Shahim Questionnaire (38) in the form of 21 items in three subscales: physical aggression (7 items), relational aggression (8 items) and verbal and hyperactive reactive aggression (6 items) in a range of 4 options. Likert was rarely used with a score of 1 point, once a month equal to 3 points, once a week equal to 2 points, most days equal to 4 points. The lowest score is 21 and the highest score is 84. The cut-off point for detecting an aggressive child in each subscale is a standard deviation above average. Cronbach's alpha coefficient for the whole questionnaire is 0.91 and is very desirable. Cronbach's alpha coefficient for physical aggression is 0.85, relational is 0.89 and verbal response is 0.83 (38). Evaluating the validity of the questionnaire using principal axis factor analysis and inclination of items also led to the extraction of three factors with a specific value of more than one, which explained 59% of the variance. In the present study, the reliability of the questionnaire was confirmed using Cronbach's alpha ($\alpha < 0.7$).

T: Music \rightarrow therapy protocol to the experimental group: To teach music intervention therapy sessions to the experimental group; Music therapy package was used. This training package has been compiled in 12 45-minute training sessions. The content of the sessions in Table (1) to the samples of the experimental group, by the researcher who has a history of such research; done.

Table1. The content of music therapy training protocol to the experimental group

Meeting	Target	Method
1	Strengthen sensory and motor coordination	Perform rhythmic movements along with playing percussion on the keys of instruments
2	Stimulate and reinforce adaptive responses	Coordination of music with movements and vocals and development of sounds and movements
3	Strengthen cooperation and interpersonal communication, create attention and focus	Singing and playing in a group and acting in unison
4	Expressing feelings and emotions and discharging emotions	Singing and moving with music
5	Reduce resistance and increase cooperation	Through musical arousals
6	Strengthen self-awareness	Singing songs that introduce different organs
7	Stimulate emotional and intellectual reactions to identify the type and depth of discomfort and feelings	Simulate a simple rhythm of an instrument
8	Strengthen the scope of attention	Perform your favorite movement with music
9	Increase learning and strengthen attention and concentration	Develop hearing skills by listening to the pieces
10	Dealing with negative emotions	Musical imitations
11	Discharge different emotions	Listening to a variety of musical instruments and how they feel each sound in which part of the body
12	Strengthen trust, reduce fear and anxiety	Playing different instruments with different rhythms and intensities, singing and moving with music

SPSS software version 24 was used to analyze the data. The results were analyzed in two parts. The first part of descriptive statistics including mean and standard deviation and the second part of inferential statistics including assumptions and hypotheses of uni variate analysis of covariance and multivariate analysis of covariance were used.

Results:

Table 2 presents the descriptive statistics of the studied variables by test type and groups.

Table2. Descriptive statistics of students' attention and concentration, social adjustment and aggression and their subscales

Variable	Groups	Pre-test	Post-test
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		Average	Standard deviation	Average	Standard deviation	
	Attention and focus	music therapy	50/0.6	6/0.5	58/0.3	7/3
		Control	54/0.6	3/0.1	54/66	4/92
	Social adjustment	music therapy	8/4	3/0.4	13/4	2/64
		Control	6/0.6	2/89	8/4	3/0.6
Social adjustment	Emotional compatibility	music therapy	9/93	3/34	14/26	1/38
		Control	8/46	3/18	9/26	3/19
	Academic compatibility	music therapy	10/53	4/13	14/0.6	3/19
		Control	9/53	3/6	10/0.3	3/51
Social adjustment	music therapy	28/86	8/91	41/0.3	6/0.7	
	Control	24/0.6	8/44	28/4	8/59	
	Physical aggression	music therapy	9/93	3/63	7/0.3	0/96
		Control	11/93	5/47	10/93	3/84
aggression	Relationship aggression	music therapy	16/26	7/15	9/8	1/97
		Control	20/8	6/0.9	19	8/48
	Reactive-verbal hyperactivity aggression	music therapy	13/13	5/12	7/6	1/45
		Control	17/26	5/0.6	15/2	4/95
aggression	music therapy	39/33	13/11	25/13	2/0.4	
	Control	50	14/39	45/13	13/0.1	

Univariate analysis of covariance was used to evaluate the effectiveness of music therapy on students' focus and attention. First, the assumptions of this test were performed. The presumption of normality in the two groups was examined as follows (music therapy group statistics = 0.84, $p < 0.05$; control, statistics = 0.74, $p < 0.05$), the results of any violation of this did not show the assumption. Another assumption of this test is the homogeneity of the regression slope, which the results showed, we have not violated this assumption (variance = 7.52, $P < 0.05$). Another assumption is for variance homogeneity, which Levin test showed that we have not violated this assumption (variance = 2.81, $p < 0.01$). As a result, after confirming and confirming all the assumptions; Univariate analysis of covariance was performed. In Table 3, the results of univariate analysis of covariance for the post-test attention and focus variables are presented separately for the experimental and control groups.

Table3. Results of univariate analysis of covariance for post-test attention and focus by experimental and control groups

	Total squares	Degrees of freedom	Average squares	The amount of variance	The significance level	Effect size
pre-exam	۶۳۳/۳	۱	۶۳۳/۳	۳۷/۷۴	./... .	./۵۸
Groups	۷۲/۲۱	۱	۷۲/۲۱	۴/۳	./۰.۴	./۱۳
Error	۴۵۲/۹۶	۲۷	۱۶/۷۷			

According to Table 3, the results showed that there was a significant difference between the groups in attention and concentration ($P < 0.05$). In addition, part of the variance in changes in attention and concentration (0.13) in the post-test is related to the effect of music therapy.

Table4. Modified mean scores of attentions and concentration in students of experimental (music therapy) and control groups

Groups	group	Average	standard error
Attention and focus	music therapy	۵۸/۲۶	۱/۰.۶
	Control	۵۵/۱۴	۱/۰.۶

According to the results of the adjusted means in Table 4, the score of attention and concentration in the music therapy group is significantly higher than the control group. In fact, music therapy has been effective in increasing students' attention and concentration.

Multivariate analysis of covariance was used to evaluate the effectiveness of music therapy on students' social adjustment. First, the assumptions of this test were performed. The default normality in the two groups was examined as follows. In social adjustment (Amara music therapy group = 0.41, $p < 0.05$; control, statistics = 0.68, $p < 0.05$), in emotional adjustment (Amara music therapy group = 0.86, $0.05 < p$; control, statistics = 0.92, $p < 0.05$), in academic adjustment (music therapy group, statistics = 0.75, < 0.05 ; control, statistics = 0.52, $p < 0.05$), In general social adjustment (music therapy group, statistics = 0.59, $p < 0.05$; control, statistics = 0.52, $p < 0.05$), the results did not show any violation of this assumption. Another assumption of this test is the similarity of the variance-covariance matrix, which M.BOX results showed that we have not violated this assumption (Mbox= 23.7, variance= 3.48, $P < 0.001$). Another assumption is for variance homogeneity, which Levin test showed in all subscales of social adjustment, including social adjustment (variance = 3.2, $p < 0.01$); Emotional adjustment (variance = 30.9, $p < 0.01$); Academic adjustment (variance = 0.64, $p < 0.01$) did not violate this assumption either. As a result, after confirming and confirming all the assumptions; Multivariate analysis of covariance was performed and the results of Table 5 showed: there is a significant difference in the linear composition of the variables (variance = 8.17, $P < 0.05$, Wilkes lambda, effect size = 0.51).

Table5. Multivariate test of the difference between the mean scores of social adjustment scores of students in the two groups (music therapy and control)

	the amount of	Variance	The significance level	Effect size
Wilks Lambda	•/۴۸	۸/۱۷	•/••۱	•/۵۱

Univariate covariance test was used to compare the experimental and control groups in each of the dependent variables. Table 6 presents the results of univariate analysis of covariance for post-test social adjustment subscales by experimental and control groups.

Table6. Results of univariate analysis of covariance for post-test social adjustment subscales by experimental and control groups

	Total squares	Degrees of freedom	Average squares	The amount of variance	The significance level	Effect size
Social adjustment	۸۶/۱۱	۱	۸۶/۱۱	۱۱/۹۶	•/••۲	•/۳۲
Emotional compatibility	۱۳۱/۳۸	۱	۱۳۱/۳۸	۲۰/۹۴	•/•••	•/۴۵
Academic compatibility	۲۷/۶۵	۱	۲۷/۶۵	۲/۷۹	•/۱	•/۱۰

According to Table 6, the results showed that there was a significant difference between the groups in the subscales of social and emotional adjustment ($P < 0.016$). In addition, part of the variance of changes in social adjustment (0.32) and emotional adjustment (0.45) in the post-test is related to the effect of treatment, But there is no significant difference between the groups in the subscale of academic adjustment ($P < 0.016$). Table 7 shows the adjusted mean of the experimental and control groups in the post-test.

Table7. Modified mean of social adjustment scores and its subscales in experimental (music therapy) and control groups

Groups	group	Average	standard error
Social adjustment	music therapy	۱۲/۸۲	•/۷۴
	Control	۸/۹۷	•/۷۴
Emotional compatibility	music therapy	۱۴/۱۴	•/۶۹
	Control	۹/۳۸	•/۶۹
Academic compatibility	music therapy	۱۳/۴۹	•/۸۶
	Control	۱۱/۳	•/۸۶
Social adjustment	music therapy	۴۰/۴۶	۱/۹۳
	Control	۲۹/۶۶	۱/۹۳

According to the results of the mean differences in Table 7, the mean scores in social adjustment and the subscales of social adjustment and emotional adjustment in the re-music therapy group are significantly higher than the mean in the control group.

Multivariate analysis of covariance was used to evaluate the effectiveness of music therapy on students' aggression. First, the assumptions of this test were performed. The default normality in the two groups was examined as follows. In physical aggression (statistics music therapy group = 1.2, $p < 0.05$; control, statistics = 0.94, $p < 0.05$), in relational aggression (statistics music therapy group = 1/1, $05 P < 0.01$; control, statistics = 0.73, $p < 0.05$), in hyperactive reactive-verbal aggression (music therapy group, statistics = 0.76, $p < 0.05$; control, statistics = 37 / 0, $p < 0.05$), in aggression (music therapy group, statistics = 0.049, $p < 0.05$; control, statistics = 0.51, $p < 0.05$), the results of any violation of this assumption Did not show. Another hypothesis of this test is the similarity of the variance-covariance matrix, which M.BOX results showed that we have not violated this assumption (Mbox = 56.42, variance = 8.3, $P < 0.001$). Another assumption is for variance homogeneity, which Levin test showed in all subscales of aggression including physical aggression (variance = 22.63, $p < 0.01$; relationship aggression = 9.55 = variance, 0.01 p ; reactive-verbal aggression hyperactivity 11.43 = variance, $p < 0.01$) we did not violate this assumption either. As a result, after confirming and confirming all the assumptions; Multivariate analysis of covariance was performed and the results of Table 8 showed that there was a significant difference in the linear composition of the variables (variance = 9.28, $P < 0.05$, Wilkes lambda, effect size 0.54) .

Table8. Multivariate test of the difference between the mean scores of aggression of students in the two groups (music therapy and control)

	the amount of	Variance	The significance level	Effect size
Wilks Lambda	۰/۴۵	۹/۲۸	۰/۰۰۰	۰/۵۴

Univariate covariance test was used to compare the experimental and control groups in each of the dependent variables. Table 9 presents the results of univariate analysis of covariance for post-test aggression subscales by experimental and control groups.

Table9. Results of univariate analysis of covariance for post-test aggression subscales by experimental and control groups

	Total squares	Degrees of freedom	Average squares	The amount of variance	The significance level	Effect size
Physical aggression	۳۷/۳۱	۱	۳۷/۳۱	۵/۰۵	۰/۰۳	۰/۱۶
Relationship aggression	۳۷۲/۰۵	۱	۳۷۲/۰۵	۱۲/۸۳	۰/۰۰۱	۰/۳۳
Reactive-verbal aggression hyperactivity	۲۴۰/۶۴	۱	۲۴۰/۶۴	۲۲/۰۸	۰/۰۰۰	۰/۴۶

According to Table 9, the results showed that there was a significant difference between the groups in the subscales of relational aggression and reactive-verbal aggression hyperactivity ($P < 0.016$). In addition, part of the variance of changes in relational aggression (0.33) and in reactive-verbal aggression hyperactivity (0.46) in the post-test is related to the effect of

treatment, but in the subscale of physical aggression, there is no significant difference between groups ($P < 0.016$). Table 10 shows the adjusted mean of the experimental and control groups in the post-test.

Table 10. Modified mean scores of aggressions and its subscales in students of experimental (music therapy) and control groups

Groups	group	Average	standard error
Physical aggression	music therapy	۸/۱۲	۰/۷۳
	Control	۱۰/۰۴	۰/۷۳
Relationship aggression	music therapy	۱۰/۰۶	۱/۴۰
	Control	۱۸/۲۳	۱/۴۰
Reactive-verbal aggression hyperactivity	music therapy	۸/۳۱	۰/۸۹
	Control	۱۴/۴۸	۰/۸۹
aggression	music therapy	۲۷/۰.۰۷	۲/۱۹
	Control	۴۳/۲۰	۲/۱۹

According to the results of the mean differences in Table 10, the mean scores on aggression and the subscales of relational aggression and reactive-verbal hyperactivity in the music therapy group are significantly lower than the mean in the control group.

Discussion and Conclusion:

The present article was conducted with the aim of the effectiveness of music therapy in attention and concentration, social adjustment and aggression of students with mental disabilities among male students of exceptional secondary schools in Tabriz in the academic year 1399-400. One of the results showed that music therapy was effective in increasing attention and concentration (13%) of students. The results of this section are in line with the results of research by Jacob et al. (23), Kasuya-Yohoba et al. (24), Navagare (25), Panjeh Ali (2), Boroumand (26), Ebrahimpour and Izadi (27) and Rezaei (6) and Hadavandkhani and Mirzamani (7).

Jacob and colleagues demonstrated the effectiveness of music therapy in increasing the attention of students with mild mental disabilities in Nigeria's exceptional schools (23). In this regard, Kasuya-Yohba and his colleagues also showed that the level of control and attention as children's intellectual skills has increased significantly after music therapy (24). In this regard, the perception of attention, focus and interest of students with intellectual disabilities who had undergone music therapy, increased significantly. Receiving claw-based therapy is also an effective intervention in controlling emotion and transferring attention to children with mental disabilities (25). Boroumand also receives music therapy with an effect on the mind, which improves the concentration and attention of mentally retarded children and helps them to learn (26). Ebrahimpour and Izadi also found; Musical activities as an effective intervention in the executive functions of students with mental disabilities (27). The results of Rezaei research also showed that music increases the attention of educable mentally retarded children (6). Hadavandkhani and Mirzamani also found that music affected the attention span of mentally retarded female students (7). As a result, music therapy courses can be effective in improving the

attention and concentration of students with intellectual disabilities. Considering that the results of the studied researches all acknowledged the effectiveness of music therapy in increasing control, excitement, mind and attention and concentration of students with mental disabilities; As a result, it can be explained that children and students with mental disabilities, given that they have a passive mind; Through music therapy, the emotional, social, and cognitive-behavioral characteristics of such children can be crystallized, and students with disabilities can be helped to control their emotions as stimuli. In fact, music therapy as a non-verbal communication tool by providing a safe environment; It explores children's emotions and solves behavioral problems such as attention span and behavior, and consequently increases their attention and concentration, Because many exceptional children and adolescents can see and hear, but many cannot do what we want them to do. One of the reasons is the lack of attention and focus on them. Therefore, according to the opinion of psychologists and also according to the results of the research that was presented; Music therapy can be effective in improving the attention and concentration of students with mental retardation by affecting the mind as well as controlling their emotions.

Another result of the study was the effectiveness of music therapy in increasing social adjustment (51%) and two subscales of social adjustment (32%) and emotional adjustment (45%). But no significant effectiveness was observed in reducing academic adjustment. The results of this research are in line with the results of Ghanbari and Kazemi (28), Rezaei (6) and Nazari et al. (29). Ghanbari and Kazemi showed that music intervention, targeted therapy is effective on adjustment, social and life satisfaction in learnable students with mental disabilities (28). Rezaei also showed that music therapy increases the adaptation of educable mentally retarded children (6). Nazari et al, Also concluded that different combinations of music and coordinated movements have been effective in reducing the behavioral problems and social maladaptation of primary children with mental retardation (29). In fact, the use of music therapy can physically reduce muscle tension, reduce chronic pain, mask unpleasant feelings, and facilitate certain physical activities; and psychologically it helps to remember past events, provides a non-verbal opportunity to express a range of unconscious feelings and cognitions, strengthens abilities, strengthens identity and self-concept, transforms moods by relieving anxiety and depression. Considering the effectiveness of music therapy in improving the social adjustment of students with mental disabilities in various studies and in line with the results of the present study, it can be explained that students with mental disabilities are based on different personality traits of students. Normal and also due to mental and behavioral problems they have in interactions with others; Of course, they refuse to cooperate with others, and in a way, they become frustrated and isolated by not interacting with other peers and other people, and their social adjustment gradually decreases. As a result, music therapy intervention improves social adjustment between the mind and psyche and increases the ability to control emotions in them. However, regarding the ineffectiveness of music therapy in improving the academic adjustment of students with intellectual disabilities, it is understood that music therapy in a limited number of sessions may have been effective in emotional adjustment and social adjustment of these

students. Because they were trained to work in groups and collectively, group participation had a positive effect on controlling emotions as well as social adjustment. But in the academic adjustment of students with mental disabilities, interventions other than music-therapy interventions may be effective. Also, with the continuation of music therapy group therapy sessions, there may be a possibility of affecting academic adjustment, the results of which will be determined by further research.

Another result of the study was the effectiveness of music therapy in reducing aggression (54%) and two subscales of relationship (33%) and reactive-verbal hyperactivity (46%). But no significant effectiveness was observed in reducing physical aggression. The results of this research are in line with the results of the researches of Gol et al. (30), Calgotra and Varval (31), Abdolmaleki (32), Golmohammadi (33) and Akayousafi and Alipour (34). Gole et al. showed that music therapy course reduced the anger of students with mental retardation (30). Calgotra and Varval also found; Music therapy has been effective in reducing behavioral disorders such as aggressive, destructive and anti-social behaviors, abuse of others, self-harm and others, rebellious behaviors, etc. among children with moderate and mild mental disabilities in India (31). Abdul Maliki also showed; Providing music therapy to preschool children has reduced aggression and its dimensions (32). Golmohammadi also receives music therapy to reduce the level of aggression in the mentally retarded elementary school girls (33). Aghausefi and Alipour also showed that music therapy with rhythmic movements is an effective method in reducing aggression in children with mental disabilities (34). Based on the results of domestic and foreign research, as well as the results of the present study, it can be concluded that music therapy is as effective in controlling emotions and improving students' social adjustment; this reduces the aggression of these children. Because by holding group sessions of music therapy; Calming and calming emotions and behavioral and relationship aggressions between children is reduced and as a result, reactive and verbal aggression between them is also reduced. But in terms of physical aggression, the result of the present study was inconsistent with the result of Abdolmaleki's research. In the present study, male students in the second grade of elementary school were studied; it has been several years since they started school and due to this educational background, among the mentally retarded students, they have committed other physical aggressions against each other and this behavior has somehow become internalized in them. And has been continuous, and by holding limited sessions of music, therapy, or any other treatment, one cannot easily hope to reduce this type of aggression (32). But in Abdul Maliki's research, the students were in preschool, and in fact experienced the first year of being in the same group of students with the same problem; therefore, it is possible that music-therapy intervention has been able to reduce their physical aggression; it justifies. It is noteworthy that physical aggression, considering that it is a hereditary and personality trait of children from the beginning of life and the moment of birth did not decrease significantly with a limited number of sessions. Be. However, there is a possibility that students' physical aggression is due to ongoing training by psychologists in special schools and to mutual interaction with the children's parents, provided that such interventions are performed at a younger age and treated over time Has (32).

Based on the results of the present study on active and passive music-therapy intervention in improving attention and concentration, increasing social adjustment and reducing aggression in male students of the second year of Tabriz exceptional schools, it is perceived that active music-therapy is considered according to students' motivation. Singing, playing a song or composing a song has the first and most important effect on students' attention and concentration. Also to coordinate with other classmates; Social and emotional adjustment in them also increases and relational aggression decreases in them. Also, by singing and playing the song, a kind of reactive-verbal aggression is reduced between them. In passive music therapy, listening to music also increases attention and concentration, as well as social and emotional adjustment, and prevents aggression. Music therapy indirectly enables students to solve their problems in school in a group and participatory manner with the help of their peer group. In fact, music therapy encourages students to work in groups. Considering the effectiveness of music therapy in the present study, it is suggested to the officials and planners of the exceptional education organization; For such schools, by allocating music classes and musical instruments appropriate to the age and conditions of the students in these classes, they should pay attention to this educational method continuously and under the title of fixed school hours. Also, teachers and counselors of special schools should be taught how to interact with students by holding in-service training classes. It is also recommended to hold parent-teacher meetings; On a monthly basis, engage in interactions between teachers and school counselors with parents, especially student mothers. Finally, it is suggested that counselors, therapists, and clinical psychologists use music therapy to increase attention and concentration, improve social adjustment, and reduce aggression in students with intellectual disabilities.

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