

# The Effectiveness of Music Therapy on Reducing Alexithymia Symptoms and Improvement of Peer Relationships

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## Abstract

**Introduction:** Individuals with alexithymia are under the pressure of correlated physio-emotional stress that would not come out as speech. These problems prevent emotion regulation and make people incompatible in life.

**Method:** The purpose of this study was examining the effectiveness of music therapy on reducing symptoms of alexithymia and enhancing peer relationships. The method was quasi-experimental with two experimental and control groups. Through multi-stage sampling, one hundred and eighty girls were screened for alexithymia's symptoms. Thirty of the 57 identified children, were selected randomly and assigned into control (n=15) and experimental (n=15) groups (mean 11.8 Years old) randomly in Isfahan, Iran. The instruments were the Rieffe's Alexithymia Questionnaire for children and Sociometry for evaluating peer relationships. The music therapy was nine sessions which was done for the experimental group. Data was analysed with the repeated measure ANCOVA.

**Results:** The results indicated that music therapy had a significant positive effect on reducing alexithymia in the experiment group (ES = -0.34, (OP = -0.92), while there was no significant change in the control group (p >0.05). The results stayed stable after two months follow-up. Although the results showed peer relationships, the helper dimension improved; other peer relationships, the popularity, and rejection, were not influenced significantly.

**Conclusion:** In conclusion, music therapy positively affects reducing alexithymia symptoms of female preadolescents. Thus, using music therapy for reducing alexithymia symptoms is suggested.

**Keywords:** Music therapy, Alexithymia, Peer Relationships

## Introduction

The word alexithymia was at first used by Sifneos in 1973 to describe a difficulty in verbalizing feelings. It mentions verbalizing and a diminution of a fantasy of psychosomatic patients. [1] Neuroimaging studies have provided additional evidence for an association of alexithymia with differences in brain activation for various tasks. Moreover, they involve emotional processing, such as the processing of emotional pictures [1], the processing of facial expressions of emotion [2], the imagery of autobiographical emotional events [3] and during empathy for pain [4]. People with alexithymia are at risk for somatic and affective disorders because these individuals have difficulties in recognizing and regulating their emotions [5-7]. People with this difficulty are under the pressure of much correlated physio-emotional stress that would not come out as speech. These problems prevent emotion regulation and make people incompatible in life [1]. Moreover, young people with alexithymia might not achieve emotional independence (self-differentiation) in adulthood [8]. Music has clear and measurable effects on emotional experiences and is almost

universal in its emotional appeal [9].

Researches have shown that musical activities could facilitate all aspects of childhood development, such as attention, concentration, impulse control, social functioning, and self-expression [10-12]. Music can lead humans to a way that could be the strongest medium between therapists, clients, and peers [13]. Social relations are always regarded as an important aspect of child development; this lack of [13] positive social behavior could be a risk factor for the low quality of future socio-emotional relations [14].

As a verbal and non-verbal way, music can evoke emotional expressions, feelings, and attitudes [15]. Music can bring success in many different aspects; therefore, success and competence could bring self-worth to one [16, 17]. The results of a research by Goerlich et al. indicated that alexithymia is correlated with impairment in emotion which is transferred by music and speech [18]. Also, specific musical interactions that originate from culture and emotions could be expressed in a new way of the relationship which is provided by musical atmosphere. This aspect of music could be very important in therapy. In other words, music can relate people together, where words are unable to do so [15]. Hence, music can substitute with words when people have difficulty with words. Indeed, alexithymia is a problem that people have while expressing their emotions through words.

As Bruscia [19] implied, music therapy can produce a situation, atmosphere, and environment for establishing trust, agency, and confidence. As Edwards [20] implied, music therapy is a relational therapy. Music therapy can change the psychological state, mood, and social interactions of a person. For alexithymia, producing this kind of relationship is very important, especially for children. Alexithymic children cannot develop a good relationship with others; therefore, they have peer relationship problems. They cannot build a good emotional explanation; thus cannot establish a good relationship with their peers. The structure of peer relations and social status of a child is in the base of mood, behavior, quality of communication, sensitivity, and even academic achievement [21-24], and music can change all of them. Music can give the alexithymic children confidence and trust for communicating with others, especially their peers [25, 26].

Hartup [27] pointed out that peers affect children's development. Especially when peer context is more extended, the child may be rejected or accepted by the peers. Social interactions and relations may negatively or positively influence children [21, 28]. Besides, friendship quality between peers and friendship reciprocity can predict resilience. Therefore, encouraging adolescents to make reciprocal friendships can lead them to be more resilient [29]. Music activities are often in groups that include two or more people. In this kind of atmosphere, they feel secure and learn how to connect with each other. Also, because music is a joyful activity, it could motivate children to join a group and interact with others [13].

Music therapy firstly could be a starter for a child's non-verbal relations and as a result may facilitate verbal

relations, and could influence child peer relations [12, 21]. It can be stated that, the influence of music therapy for reducing emotional problems in children and improving child peer relations is not frequently studied. The effectiveness of this type of treatment has been confirmed in many psychological and psychiatry disorders, especially in children and adolescents [21, 30]. Therefore, one purpose of this research was to find an answer to this question: Can music therapy affect the peer relationship of alexithymic children?

Through music therapy, individuals improve their affective states and behaviors by using music experiences such as free improvisation, singing, listening, discussing, and moving to music to achieve treatment goals that improve emotion regulation.[21]. As musical relation is non-verbal, it can be a useful way of making primary relationships with people who have emotional or behavioral difficulties. As previous research has indicated, music therapy can be used for autistic, learning disorders, attachment problem children and also for children with cancer and physical problems [18, 31-34]. Music therapy can decrease pain and anxiety in hospitalized child [35].

Recent research about emotion processing deficits has investigated the co-occurrence of autistic spectrum syndrome (ASD) and alexithymia. Alexithymia is estimated to affect around 10% of the general population. A rate of 85% has been observed in a sample of adults with ASD [36, 37]. In a recent study, Silani et al. [38] measured empathic brain responses in participants with ASD and neurotypical control while observing another person experiencing pain. The results showed that the levels of alexithymia, but not a diagnosis of autism, were associated with the degree of empathic brain activation in anterior insula. The results demonstrated that the empathy deficit widely attributed to ASD can be explained by the extent of alexithymic traits and does not constitute a universal social impairment in autism.

What is the similarity between ASD and alexithymic children? Both children have problems with language. Although ASD and alexithymic children do not have the same language problems, they are both not able to use their language as the same as a normal child. This similarity between ASD and alexithymic children directed the authors. The ASD children have a language delay, and alexithymic children have a problem in expressing and verbalizing emotions. If music therapy is effective in ASD children, it can be supposed that alexithymic children can also benefit from music therapy. Accordingly, the aim of this study was to investigate the effectiveness of music therapy on the symptoms of alexithymic children and to improve their peer relationships.

## Method

A semi-experimental approach with a pretest-posttest-follow-up design was used in this study. The statistical population included all elementary school female students studying at grade 6 in 2017-2018 in Isfahan. The design was purposeful. After screening for finding alexithymia in students, based on the score of above 19 in the Alexithymia Questionnaire for Children, the samples

were selected and assigned randomly in experimental and control groups. The students who completed the Peer Relationship Status Test would also elaborate in the next sub-section. Data were collected from 187 of sixth-grade female students studying in district-13 of Isfahan aged 11-13 (Mean=11.80) years. Of 187 students, 57 students, were chosen by the score in the alexithymia questionnaire for children (with a score of above 19). Thirty of these children were chosen randomly to participate and were randomly assigned into control (n=15) and experiment (n=15) groups. Inclusion criteria included having more than 19 scores in the pre-test of the Alexithymia Questionnaire for Children and parents' consent for participating in this study. The exclusion criteria included the absence of more than one session of the intervention and having a specific illness, problem or disorder, like autism and depression.

Most of the children had an average to high socio-economic status. All of the children lived in Isfahan.

After receiving the moral code from the University of Isfahan (R.UI.REC.1398.050), parents of all participating children were contacted and informed about the study purpose. The researchers asked parents to sign a consent form to allow their child to participate. Parents received feedback on the project at the end. The school director, all the supervisory authorities and teachers were aware of the purpose and the application of the project. The intervention was taken place in the counseling room of the elementary school of district-13 of Isfahan. All the samples participated until the end of the study.

The intervention program lasted for six weeks (because of spring break), and it was thoroughly structured and organized. The music therapy program was nine sessions, and each session took 1 hour. The subjects participated once every five days in the intervention situation. The intervention was adopted from Cassity and Cassity's book titled: Multimodal psychiatry music therapy for adults, adolescents, and children [39].

The following instruments were used to collect data:

**Alexithymia Questionnaire for Children:** The Persian version of the Alexithymia Questionnaire for Children [40], which was translated and psychometrically tested, was used. The original adult questionnaire for alexithymia has been (TAS-20) developed by Bagby et al. [7]. Rieffe et al. [41] have developed the children's questionnaire based on the original test (TAS-20). The children's version consists of

20 questions representing three factors of alexithymia: Difficulty Identifying Feelings (DIF), Difficulty Describing feelings (DDF), and Externally Oriented Thinking EOT. The Cronbach's alpha for this test is 0/75, and the internal correlation of questions is about 0/40. Also, the Persian version of the test was normalized with 0.64 Cronbach's alpha [40].

**Peer Relationship Status:** All sixth-grade pupils participated in sociometry. Based on Coie et al.'s method for sociometry, the pupils named their peer as follow: 1) Naming three classmates who you prefer to choose to be friends or play with 2) Naming three classmates who you do not like to choose to be your friends or work with 3) Naming three classmates who help the others mostly. Researchers reassured children of the confidentiality of their responses before answering the questions. The three categories used to state a child's social status were: 1. Popular (mostly chose in the first question), 2. Rejected (primarily selected from the second question) and 3. Helper (mainly chose in the third question). Children who had high liking and Helper scores (mostly chose from the first and third question) were accepted by their peers. Children who had high disliking (mostly chose from the second question), and low Helper and liking scores were rejected by their peers [12]. The data extracted by the Sociometric Naming Test is the most valid and reliable scale for assessing peer relationships [42].

Repeated ANCOVA measure was performed. The researcher studied the effect of music therapy on alexithymia and peer relationship scores. Comparing experimental and control groups in the pre-test, post-test, and follow-up, repeated measure (ANCOVA) was used. Moreover, the Alpha Cronbach for the Post Hoc test was  $\alpha=0.05$ .

**Results**

According to the findings of the present study, Table 2 shows the mean and standard deviation of the alexithymia score in the control and experiment groups. As shown, the alexithymia score of the experimental and control group in the pre-test was almost similar. The results indicated that the experimental group had the lowest mean in the follow-up stage (16.67). Table 3 shows the mean and standard deviation for the categories of peer relationships (rejection, popularity, and helper). No significant change was observed in their mean score.

**Table 1. Structure of Music Therapy Sessions**

Session 1	Establishing a participatory relationship between subjects and investigator, explaining the goals of the meeting and participating. Using ice braking musical games for initiating relationship between peers.
Session 2	Describing different emotions. Making a musical atmosphere using musical activities such as: asking the participants to match different facial expressions pictured on cards to different music pieces.
Session 3	Coordinating facial expressions and emotions using games such as: different music and pictured cards.
Session 4	Increasing social participating and turn taking with joining and playing in percussion instruments group play.
Session 5	Expressing and coordinating different emotion in music making according to different imaginary emotional situations.
Session 6	Facilitating emotion expression with painting and drawing while listening to music and describing every painting.
Session 7	Increasing non-verbal expressions with duet playing of percussion instruments.
Session 8	Working with differentiating emotions and impulse control using making two different music pieces according to two opposite emotion (like happiness and sadness).
Session 9	Group music improvising and performing for other participants. Reviewing last sessions, participants status, and providing recommendations to continue learn techniques.

Shapiro-Wilk test and Kolmogorov Smirnov test and homogeneity of variances, based on Levin test ( $p \leq 0.05$ ), were done as the presumption of study. Also, Box's M test was used for homogeneity of covariance ( $p \leq 0.05$ ). The Mauchly's test of the Sphericity value was insignificant for alexithymia and peer relationships ( $p \leq 0.05$ ). Therefore, the hypothesis of intragroup variance and homogeneity of the covariance was confirmed.

The results of repeated measure analysis covariance for alexithymia scores presented in Table 4 show the main impact of time ( $P=0.001$ ,  $F=13.23$ ), and the interactive effect of group and time ( $P=0.001$ ,  $F=10.44$ ) were all statistically significant. This result indicates that music therapy had a significant positive impact on reducing alexithymia scores. Besides, group and time's interactive effect shows the effect was stable after a two-month follow-up assessment. Table 5 indicates that none of the categories of peer relationships had a significant F score

( $p > 0.05$ ). Findings show that music therapy did not have a considerable effect on peer relationship status. Finally, the Post Hoc test was used to compare the alexithymia results in the three assessment stages.

Table 6 reveals a significant difference between pretest and post-test, pretest, and follow up ( $P=0.001$ ) for alexithymia in the experimental group. No significant difference was seen between post-test and follow-up ( $P=0.84$ ) in the experimental group. The Post Hoc test results showed a significant difference between pretest and post-test, and between pretest and follow-up test regarding the mean scores of alexithymia in the experimental group. Nevertheless, there was no significant difference between the post-test and the follow-up test in the experimental group ( $p=0.84$ ), indicating the stability of the intervention effect on alexithymia in the experimental group. Pairwise comparison results showed no significant differences in the control group.

**Table 2. Alexithymia's Descriptive Statistics of Experimental and Control Groups**

Assessment Stage	Group	Mean	Standard Deviation
Pre-test	Control	22.33	2.89
	Experiment	20.67	2.32
Post-test	Control	22.20	3.39
	Experiment	16.73	3.90
Follow up	Control	22	3.64
	Experiment	16.67	4.18

**Table 3. Peer Relationships' Descriptive Statistics in the Experimental and Control Groups**

Variable	Assessment Stage	Group	Mean	Standard Deviation
Rejection	Pre-test	Control	1.93	1.67
		Experiment	2.93	3.75
	Post-test	Control	1.80	2.46
		Experiment	3.40	3.90
	Follow up	Control	1.67	1.76
		Experiment	3.20	3.90
Popularity	Pre-test	Control	2.67	2.25
		Experiment	3.73	3.53
	Post-test	Control	2.40	1.40
		Experiment	3.80	3.32
	Follow up	Control	4.07	1.85
		Experiment	1.67	3.30
Helper	Pre-test	Control	2.53	2.41
		Experiment	2.73	3.24
	Post-test	Control	2.47	2.47
		Experiment	1.87	2.44
	Follow up	Control	2.93	2.57
		Experiment	2.47	2.72

**Table 4. Test of Greenhouse-Geisser for Alexithymia**

Variable	Source	F	Sig	Test power	Effect size
Alexithymia	Time	13.23	0.0001	0.997	0.364
	Time*Group	10.44	0.001	0.995	0.344

\* F scores are significant at the 0.000 and 0.001 levels and Test powers are significant at the 0.997 and 0.995 levels.

**Table 5. Test of Greenhouse-Geisser for Peer Relationships**

Variable	Source	F	Sig
Rejection	Time	0.21	0.760
	Time*group	0.50	0.508
Popularity	Time	1.39	0.310
	Time*group	0.27	0.670
Helping	Time	2.43	0.117
	Time*group	1.32	0.270

\*F scores are not significant (all are below the 0.05 level)

**Table 6.** Post Hoc test results to determine the impact of intervention on research variables.

Variable	Group	Assessment Stage (Mean)	Comparative Assessment Stage (Mean)	Mean Difference	Standard Deviation	Sig
Alexithymia	Experiment	Pretest (20.67)	Posttest (16.73)	3.94	0.67	0.001
			Follow up (16.67)	4.00	0.77	0.001
		Posttest (16.73)	Follow up (16.67)	0.06	0.32	0.84
	Control	Pretest (22.33)	Posttest (22.20)	0.13	0.76	0.86
			Follow up (22.00)	0.33	0.90	0.71
		Posttest (22.20)	Follow up (22.00)	0.20	0.36	0.60

## Discussion

Encouraging emotional expression could facilitate the development of emotional skills. Thus, it could be stated that music can be the translation of emotion. In these kind of circumstances, social context plays an important role and according to the study of Theorell et al. [30], it can be suggested that individual's social environment, especially family and media, plays an important role in the emotional competence of people. Music therapy decreased the symptoms of alexithymia because music helped children express their emotions. As Goerlich et al. suggested, a reduced sensitivity to emotional qualities of speech and music was observed in alexithymic individuals. They proposed that use of music therapy as a treatment for alexithymia can reduce its symptoms especially when happy music is used. Happy music can affect the central and posterior of the left hemisphere of the brain<sup>18</sup>. In the current study, this effect may be more because the resiliency of the pre-adolescent's brain is more than adult. Therefore, using happy music therapy in the current research could reduce the alexithymia symptoms in pre-adolescents [18].

During the sessions of music therapy, children had good experiences for establishing desirable relations with other kids as music therapy helped them to communicate with others in a trusty environment. Music therapy used the nonverbal capacity of children for helping them to regulate their emotions. Emotion regulation had a good effect on the symptom of alexithymia. Thus, music therapy had a positive effect on the symptoms of alexithymia. In other related studies, the findings support such a relationship and proves that musical interventions can connect participants to each other and expand emotional experiences [12, 43-45]. Furthermore, according to the study of Errkila et al., little is known about the role of improvisation technique in music therapy; however, this particular technique offers an alternative form of therapy with some unique contents. For those clients who do not benefit from verbal psychotherapy, music therapy –by its nonverbal ways of expressing and interacting- might offer an effective option. In addition, evoking and dealing with emotions is usually associated with music therapy, which supposedly is appropriate for the treatment of emotional disorders [46]. Also, it has been found that ensemble playing was associated with lower alexithymia score which is consistent with previous research [40]. Since ensemble playing requires social interaction which requires emotional competence, this association can be related to an effect of ensemble playing on the development of emotional competence. Regarding the study of Allen and Heaton, if it can be shown that participants' emotional

states can be reliably induced by music, and they can link these with verbal descriptions, the clinical treatment of alexithymia will take a significant step forward [27].

However, results showed that music therapy doesn't have a significant effect on the improvement of peer relations in any of its subscales (popularity, rejection, and helper), although the helper subscale had a small but significant improvement in the follow-up assessment. The possible reasons for this kind of change could be the limited time for the intervention for changing the popularity status in peers .

It is possible that the reduction of alexithymia's symptoms could enhance emotional management; and as a result, the social abilities will improve. The most important point in peer relations is time. When a child is in a group that she/he could not accept, the sociometry of her/his could not change in a short period of time. If the child's group changes, it is possible to see a change in the social status of the child in the group. For this reason, the follow-up result is better than the post-test result. Actually, the child has to struggle for social status. The child is changed, but the group has not accepted the changes. It takes a long time for the group to accept the changes that has taken place in the child and let the child improve social status.

However, it could be stated that in spite of enabling the children in emotional regulation, their peer relationships may not change, because of the fact that rejected or abandoned children are labeled by their peers. So, enhancing peer relations requires more time or may even require changing the environment.

## Conclusion

People with alexithymia are under the pressure of correlated physio-emotional stress that does not come out as speech. These problems prevent emotion regulation and make people incompatible in life. Also, alexithymic children cannot establish a good relationship with their peers. Considering the results of various studies, patients described how music elicited emotion and experiences that had not been felt with such intensity [40-42]. The results of the present study suggested that music therapy has a significant influence on symptoms of alexithymia. This effect remained significant even when follow up was taken after two months. Further, it has been found that group music improvisation enhances a child's understanding of his/her or other emotions which is favorable with other studies [40, 44, 47]. Although, the peer relationship status did not change significantly through the therapy session and follow-up assessment, thus, it is recommended to develop long-term music



therapy programs to enhance communication skills and peer relationships. Moreover, according to literature review, a difference was observed between the alexithymia of girls and boys [48]. Hence, gender seems to be a moderating variable. Thus, it is suggested to investigate the moderating role of gender in future studies. To date, little is known about the implications of combining people with different levels of skill in music therapy group. On the other hand, Hense has mentioned the challenges of putting aside musical skills of participants in music therapy [49]. Therefore, it suggested that the backgrounds and experiences of patients must be taken into account. This could be an important area for future investigations.

### Conflict of Interest

The authors declare that they have no conflict of interests and no financial benefits from this study.

### Ethical Approval

This study was approved by the ethics committee of the University of Isfahan and received the moral code from the University of Isfahan (R.UI.REC.1398.050). An informed written consent was obtained from all the parents of the participating.

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