



The Effect of Poetry Therapy on the Development of Language and Social Skills in Children with ASD

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Authors

Shabani Minaabad M.*¹ PhD

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ABSTRACT

Aims Regarding the language deficiency in children with autism spectrum disorder (ASD) and delay in their development of social activities, providing intervention and training to improve these skills is of great importance. The present study aimed to determine the effectiveness of children's educational poems on the development of social activities and language skills in autistic children.

Materials & Methods This quasi-experimental study was conducted with a pre-test and post-test and a control group. The statistical population included all children with ASD (age range: 10-12 years) referring to the Welfare Organization, Exceptional Children's Schools, and healthcare centers and clinics in Ardabil, Iran in the time period between March and September 2019. A total of 30 individuals were selected through voluntary sampling and randomly assigned to experimental (n= 15) and control (n= 15) groups, and answered the Vineland Social Maturity Scale (VSMS) and the Test of Language Development (TOLD) questionnaires. The children's educational poems were practiced with the experimental group for 16 sessions (60 minutes; 2 sessions per week). Then, at the end of the interventions, both experimental and control groups were evaluated again by study instruments. Data were analyzed using descriptive statistics and multivariate analysis of covariance (MANCOVA).

Findings Children's educational poetry significantly improved social activities ($p<0.01$) and language skills ($p<0.01$) in children with ASD.

Conclusion Poetry therapy was effective in increasing the use of language skills and improving appropriate social skills. Also, teaching such skills can be used as an effective intervention method in schools, medical centers, and speech therapy centers.

Keywords Language Skills; Social Skills; Poetry Therapy; Autism Spectrum Disorder

CITATION LINKS

[1] Lego therapy for children with autism spectrum disorders: Theoretical Foundations, applications, levels of performance and effectiveness [2] Synopsis of behavioral sciences/ clinical psychiatry [3] Dietary correlates of hyperactive behavior in children [4] Investigating and comparing the linguistic characteristics of autistic children [5] The effect of storytelling on speech language in children with autism (mild to medium spectrum) [6] An investigation of language impairment in autism: Implications for genetic subgroups [7] The effectiveness of puppet therapy intervention on social skills of male students with autism disorder [8] Comprehensive text book of psychiatry [9] Theory of mind (a new approach to transformational psychology) [10] How children tell a lie from a joke: The role of second-order mental state attributions [11] Membership brochure [12] Music therapy for all, introduction to: Music therapy including music therapy in Iranian literature [13] The effect of group poetry therapy on reducing depression symptoms in students [14] Gilliam autism rating scale (GARS-2) [15] The effectiveness of applied behavioral analysis (ABA) on symptoms of autism [16] Vineland social maturity scale: An update on administration and scoring [17] Clinical art therapy [18] Psychotherapy [19] Moving toward cohesion: Group dance/movement therapy with children in psychiatry [20] Multitouch tablet applications and activities to enhance the social skills of children with autism spectrum disorders [21] The effect of music therapy along with play therapy on social behaviors and repetitive behaviors of children with autism [22] The effectiveness of storytelling on social interactions of children with autism disorder [23] The effect of inactive music therapy on symptoms, communication deficit, and social interaction of children with autism spectrum disorder [24] The effectiveness of storytelling on improving communication skills and social interactions in children with autism [25] The effect of rhythmic singing style on the quality of speech of children in autism (autistic) seven to ten year old Persian-speaking boy

¹Department of Linguistics, Payam-e-Noor University, Tehran, Iran

*Correspondence

Address: Department of Linguistics, Payam-e-Noor University, Tehran, Iran. Postal Code: 4318314556.
Phone: +98 (21) 33750686
Fax: +98 (21) 33750686
Shabani110@yahoo.com

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Introduction

The term autism spectrum disorder (ASD) was first coined by Bleuler in 1912. The term was not used to describe people with ASD but referred to ASD thinking as opposed to logical thinking. Hence, Bleuler is not considered a pioneer of ASD since the first studies on ASD were seen in the works of Connor and Asperger, two physicians in 1934 and 1935 [1]. In primary school children, the rate estimated of ASD prevalence is 157 per 10,000 children in the United Kingdom (1.26). The preliminary investigation of Ghanizadeh in school children (2008) indicated a rate of 19 per 1000 for probable autistic disorder and 5 per 1000 for probable Asperger syndrome, which is more than the reported rates across the world (1.26). ASD is one of the neurodevelopmental disorders. According to the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), ASD is diagnosed by such major symptoms as impaired communication, impaired reciprocal social interaction, and restricted, repetitive, and stereotyped patterns of behaviors or interests [2]. In fact, autism affects three major behavioral domains, including social interaction, verbal communication (language), and stereotyped behavioral patterns. Therefore, among different groups of children with special needs, children with developmental disorders such as ASD have many problems in social relations, behavioral patterns, and social communication (language) [3].

Language, as one of the great functions of the human mind, has been the subject of much scientific research. It is one of the most high-level cognitive activities in the human brain and is regarded as one of the most effective instruments for expressing thoughts and emotions. Language disorder results in the inability to communicate with the environment. Speech is an objective and audible expression of language. Both speech and language can be damaged for various reasons. ASD is one of the disorders that negatively affects language skills and social interactions. Thus, it is important to study the linguistic and communication characteristics of this group of disorders by language and communication experts [4]. Studies show that one of the main characteristics of children with ASD is that they do not have the right verbal ability to communicate properly, and that the linguistic domains of these children, mainly pragmatics and semantics, are problematic [4]. In another study, one of the problems observed in children with ASD was that these children had a delayed onset of speech or had problem in speech development [5]. Accordingly, language and speech problems are among the major challenges in children with ASD [6]. So, it is important to study the linguistic and speech aspects of this disorder and find a solution for improving such skills in children with ASD.

Children with ASD have many problems with their social skills, too. Social skills play an important role in a person's life and success, but these children have significant difficulties in learning and applying these skills. Social skills include behaviors that help a person interact effectively with others and avoid undesired responses [7]. ASD belongs to the group of pervasive developmental disorders (PDD) characterized by sustained impairment in interactive social skills and limited repetitive communication patterns. The onset of the disease is from birth to about three years of age [8]. Studies show that people with ASD have multiple disorders in social interaction [9]. Children with ASD often have difficulty in establishing and maintaining social relationships. They usually face limitations in social communication, and attempt to socialize in rigid ways. These problems should not be viewed as a lack of interest in or reluctance to socialize, but rather as a result of their inability to use appropriate social, communication, and language skills. In fact, one of the major problems of children with ASD is social interaction disorder, which is related to the inability to use social skills [10]. A child with ASD may be isolated or may become self-absorbed or refuse help from others while doing things [9]. Therefore, as the prevalence of children with ASD has increased, it is important to find a cost-effective therapy for the development of language and social skills in them. In this respect, poem therapy is one of the treatments that has not received significant attention.

Nowadays, the actual number of psychotherapy systems and methods is unclear. Some of these systems have gained popularity, but other methods of psychotherapy such as art therapy and its various methods have not been introduced yet. Artistic methods such as painting, music, theater, storytelling, photography, sculpturing, and poetry have a huge impact on humans and can have a healing effect. Poetry therapy is a creative art therapy that uses poetry and other stimulating forms of literature to achieve therapeutic goals and personal growth [11]. Some scholars have studied poetry and rhythmic games in terms of their effects on different aspects of social life and others have studied the effect of poetry on emotional development or children's psychomotor and cognitive development. A study by Schmidt Peters [12] showed that poetry therapy was effective in reducing depression [13]. But the effect of using rhythmic speech (poems) as a game on the social and linguistic skills of children, especially those with developmental and neurodevelopmental disabilities such as autism, has not been considered significantly yet. Given the importance of the subject and the lack of sufficient studies in this field, it seems necessary to conduct surveys with appropriate interventions for developing social activities and language skills of autistic children. Therefore, the

present study was carried out to investigate whether children's educational poems are effective on the development of social activities and language skills in children with ASD.

Materials and Methods

This quasi-experimental study was carried out as pre-test and post-test with control and experimental groups (Table 1).

Table 1) Diagram of the present study

Group	Random	Pre-test	Independent variable	Post-test
Experimental group	R	T1	X	T2
Control group	R	T1	-	T2

The statistical population included all children with ASD (aged 10-12 years) referring to the Welfare Organization, Exceptional Children's Schools, and healthcare centers and clinics of Ardabil, Iran in time period between March and September 2019. A total of 30 participants were randomly selected and assigned to experimental (n= 15) and control (n= 15) groups. Subjects in the population were sampled by a random process, using either a random number table, so that each person remaining in the population has the same probability of being selected for the sample. The sample size was determined by personal estimation, that is, the researcher determined a certain percentage of the population through considering such factors as the degree of population heterogeneity, distribution of trait (s) in the population, available facilities and possibilities, and time.

The main inclusion criteria are definitive diagnosis of autism using Gilliam Autism Rating Scale (GARS) and psychiatrist approval, lack of oral and maxillofacial disorders, lack of anatomical disorders of speech organs, absence of oral apraxia, absence of visual and auditory problems and cranial nerve disorders. Also, the language environment of all participants was Persian.

The exclusion criteria are depression, maxillofacial disorder, parents' dissatisfaction with their children's participation in the study, and aggression and severe self-injury of participants.

Instruments used in this study are as follows:

1- Gilliam Autism Rating Scale (GARS): This scale helps diagnose people with ASD. The test, which was standardized in 1994, summarizes the characteristics of autistic people based on the data of 1,094 individuals from 46 states of three countries, including Colombia, Puerto Rico, and Canada. The GARS is based on the definitions presented by the American Autism Society (1994), the American Psychological Association (APA), and the DSM-5. This scale is suitable for people aged 3 to 22 years, and parents and professionals can complete it at school or at home.

The questionnaire consists of four subscales and each subscale consists of 14 sections with a score of 0-3 for

each question. The first subscale describes repetitive behaviors, motor disorders, and strange behaviors. The second subscale, which deals with communicative skills, covers items 15 to 28 and describes verbal and nonverbal behaviors that are symptoms of autism. Social interaction is the third subscale containing items 29-42. Finally, the fourth subscale, which deals with developmental disorders, includes items 43-56 and raises key questions about the childhood development of individuals. The maximum and minimum score for each of the three subscales of repetitive behaviors, communication, and social interaction is 42 and zero, respectively. Each child's overall score is a maximum of 140 and a minimum of zero. A higher score indicates a problem in that specific subscale and a lower score indicates an improvement in it. Also, the reliability of this test has been confirmed in various studies. Studies show a coefficient alpha of 0.90 for repetitive behaviors, 0.89 for communicative skills, 0.93 for social interaction, 0.88 for developmental disorders, and 0.96 for autism semiology. In addition, the validity of the test has also been confirmed by comparison with other autism diagnostic tools and demonstrated through several reviews [14]. Regarding the reliability of this test in Iran, the Cronbach's alpha coefficient for repetitive behaviors was 0.74, communicative skills 0.92, social interactions 0.73, developmental disorders 0.80, and total score 0.89 [15].

2- Vineland Social Maturity Scale (VSMS): This scale assesses the ability of individuals to meet their own practical needs and accept responsibility. This scale has 117 items. The information required in each item is not obtained through test but through interviews with informants (parents, nurses, siblings, or anyone who knows the child well). The scale is based on what the individual is capable of doing in daily life. This scale includes eight subscales: General self-help ability, self-help eating, self-help dressing, self-direction, occupation skills, locomotion skills, communication skills, and socialization skills. It should be noted that in the present study, among the social development subscales, only three categories of general self-help ability, self-direction, and communication skills were used. Also, the scale has been standardized on 620 males and females in each age group (from birth to age 30) with a validity coefficient of 0.88 and a reliability coefficient of 0.92 [16]. In the present study, parents of children with ASD assessed the scale of autistic behavior in their children, but the researcher scored them.

3- Test of Language Development (TOLD): TOLD-P:3 was designed and developed by Newcomer and Hamil (1998). This test was adapted and standardized by the Special Education Organization of Iran in 2001. The subtests consisted of picture vocabulary, relational vocabulary, oral vocabulary, syntactic understanding, sentence imitation, morphological completion, word discrimination, phonological analysis, and word production. This test

is based on a two-dimensional model. One dimension consists of linguistic systems with listening components (reception), organization (composition), and speech (expression), and the other dimension includes linguistic features with semantic, syntactic, and phonological components. This two-dimensional model is the theoretical basis for the preparation of 9 subtests, out of which 6 subtests are related to semantics and syntax and are part of the main subtests and 3 subtests are related to phonology and are regarded as complementary. Semantic features are presented by three subtests: The picture vocabulary subtest including listening system, oral vocabulary subtests that cover the speech system. These three subtests measure lexical repertoire. As mentioned earlier, by considering the theoretical model underlying this test, five additional benefits can be obtained by combining the standardized scores of the tests. These benefits include syntax, semantics, listening, organizing, and speaking. In the present study, only three categories of understanding relational vocabulary, syntactic understanding, and word discrimination were used. Based on the alpha coefficients test manual for all individuals, the mean alpha coefficients of different age levels were

obtained using the z-transform method. The alpha coefficient for the subtests and the components was very good. Higher coefficients indicate that the test sample is quite valid and the results can be used with confidence. Mean alpha coefficients for picture vocabulary, relational vocabulary, oral vocabulary, syntactic understanding, sentence imitation, morphological completion, word discrimination, phonological analysis, and word production were 0.76, 0.89, 0.89, 0.74, 0.90, 0.81, 0.90, 0.94, and 0.82, respectively [4].

Intervention sessions

After the pre-test, rhythmic poetry training consisted of 16 intervention sessions. Based on the pre-test model, 16 sessions were held (60 minutes; two sessions per week). In these sessions, which were arranged using credible scientific resources [12] and expert consultation, the researcher intervened to improve the development of social activities and language and writing skills in autistic children using various techniques of melodic intonation therapy (MIT). Moreover, all subjects were re-evaluated in the post-test. Table 2 shows summarize the stages of MIT adapted from the research carried out by Schmidt Peters.

Table 2) Summarize the stages of MIT adapted from the research carried out by Schmidt Peters

Session	Contents
1	Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the first song selected from the comment CD and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak (a percussion instrument), wood, triangle, bells, agogo, flute, harmonica; clapping and singing the selected song in group and individually and continuing the practice for 1 hour; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age.
2	Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from the last session in group and individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; clapping and singing the selected song in group and individually and continuing the practice for 1 hour; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age.
3	Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from the last session in group and individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; clapping and singing the selected song in group and individually and continuing the practice for 1 hour; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age.
4	Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from the last session in group and individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; singing the selected song in group and individually and continuing the practice for 1 hour; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age.
5	Practicing rhythmic talking between the examiner and the subjects for 15 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 1 hour; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical training such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom).
6	Practicing rhythmic talking between the examiner and the subjects for 15 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 1 hour; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical training such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom).
7	Practicing rhythmic talking between the examiner and the subjects for 15 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 1 hour; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical training such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom).

Continue of Table 2) Summarize the stages of MIT adapted from the research carried out by Schmidt Peters

Session	Contents
8	Practicing rhythmic talking between the examiner and the subjects for 15 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 1 hour; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom).
9	Practicing rhythmic talking between the examiner and the subjects for 20 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 55 minutes; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom); The time dedicated to music and songs decreased since the ninth session, and the time for normal and non-musical conversation increased.
10	Practicing rhythmic talking between the examiner and the subjects for 25 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes with an instrumental song; Holding a breathing competition for attracting and motivating the subjects in the class; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 50 minutes; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom).
11	From this session on, the time of rhythmic exercises gradually decreased and the time of rhythmic speaking increased. This included: Practicing rhythmic talking between the examiner and the subjects for 30 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 45 minutes; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom).
12	Practicing rhythmic talking between the examiner and the subjects for 35 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes with an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 40 minutes; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom).
13	Practicing rhythmic talking between the examiner and the subjects for 40 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes listening to an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 35 minutes; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom).
14	Practicing rhythmic talking between the examiner and the subjects for 40 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes listening to an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the exercise for 30 minutes; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom); Practicing talking slowly in a rhythmic way and then repeating the sentences in a normal way.
15	Practicing rhythmic talking between the examiner and the subjects for 55 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes listening to an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 25 minutes; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom); Practicing talking slowly in a rhythmic way and then repeating the sentences in a normal way.
16	Practicing rhythmic talking between the examiner and the subjects for 60 minutes before the start of the exercise in a stretched and calm manner; Breathing for 10 minutes listening to an instrumental song; Blowing a flute and training with it as 2-4 and 4-2 rhythms for 10 minutes; Training with a harmonica for 10 minutes; Practicing the songs from last session in group or individually for 20 minutes; Practicing two new songs selected from the comment CD (played from the CD) and then in the next stage with the help of musical instruments such as tambourine, Khash Khashak, wood, triangle, bells, agogo, flute, harmonica; and singing the selected song in group and individually and continuing the practice for 20 minutes; Singing a favorite song from the book based on the subjects' personal tastes; Practicing rhythmically for 15 minutes on the text of a book that the subjects themselves had chosen based on their age; Giving physical trainings such as sit-up, squat, and push-up along with rhythmic talking (to prevent any boredom in the classroom); Practicing talking slowly in a rhythmic way and then repeating the sentences in a normal way.

Findings

Based on the data of the study, in both experimental and control groups, most children were 9 years old. Also, the majority of children in both groups had one sibling and most of them were firstborns. Besides, the

educational level of mothers of the majority of children in both experimental and control groups was diploma, and they were mainly housewives. Regarding the educational level of fathers, the majority of the children in the experimental group

were under diploma or diploma, while the majority of fathers in the control group held an associate's degree. In addition, the majority of fathers were employed in both groups. Finally, the economic status of the majority of children in both groups was moderate. In this study, 30 subjects, 50% in the control group and 50% in the experimental group were attribution.

In the following, we will describe the status of the main variables of the research hypotheses in both groups. Table 3 shows the descriptive statistics related to the scores of social development and language skills of autistic children in both groups in pre-test and post-test stages.

Table 3) Descriptive statistics of social and language skills of the experimental and control groups during the measurement steps

Variable	Group	Mean±SD
Social skills development		
General self-help		
Pre-test	Experimental	12.95±2.28
	Control	11.80±3.31
Post-test	Experimental	15.81±2.01
	Control	12.05±1.79
Self-direction		
Pre-test	Experimental	2.25±1.14
	Control	3.50±2.03
Post-test	Experimental	6.21±1.62
	Control	3.42±1.92
Communication		
Pre-test	Experimental	2.71±1.80
	Control	4.12±2.82
Post-test	Experimental	8.42±2.13
	Control	4.45±2.71
Language skills development		
Understanding relational vocabulary		
Pre-test	Experimental	19.82±1.63
	Control	18.33±1.10
Post-test	Experimental	24.60±2.45
	Control	18.60±1.86
Syntactic understanding		
Pre-test	Experimental	11.20±1.58
	Control	12.47±1.99
Post-test	Experimental	22.13±3.52
	Control	12.87±1.92
Word discrimination		
Pre-test	Experimental	12.07±1.16
	Control	11.67±1.44
Post-test	Experimental	17.27±2.77
	Control	13.91±1.32

There are significant differences between the two groups in terms of the variables studied post-test. The null hypothesis is confirmed for the normal distribution of scores related to the development of social and language skills. So, the normality of the distribution of pre-test and post-test scores in the experimental and control groups is confirmed. The results of Box's M test show a correlation between the covariances in the experimental and control groups ($F = 1.45$; $p = 0.052$; Box = 52.86). As Table 4 shows, the F value was significant for all variables of social skills development ($p < 0.05$). Therefore, the correlation of the covariate variables (pre-tests) with the dependent variables (post-tests) is linear for each of the covariates.

As shown in Table 5, the significance levels of all tests indicate that there is a significant difference between the experimental and control groups in at least one of the dependent variables (social development and language skills development; $F = 16.08$; $p < 0.001$). The effect or difference was 0.81. In other words, 81% of the individual differences in the post-test scores of social development and language skills development in autistic children were related to the influence of educational poems on children. Since statistical power is equal to one, there is no possibility of a second type error. Therefore, the main hypothesis of the study is confirmed.

Table 4) One-way covariance analysis to test the linearity of the covariate and dependent variables

Source of change	F	p
Social skills development		
General self-help	8.03	0.000
Self-direction	37.40	0.000
Communication	176.21	0.000
Language skills development		
Understanding relational vocabulary	5.86	0.023
Syntactic understanding	32.22	0.000
Word discrimination	6.69	0.0014

Table 5) Multivariate tests on the mean of post-test in experimental and control groups with pre-test control

Statistical power	p	F	Value	Test
1	0.001	16.08	0.81	Pillai's Trace
1	0.001	16.08	10.9	Wilks' Lambda
1	0.001	16.08	4.43	Hotelling's T-squared
1	0.001	16.08	4.23	Roy's largest root

Discussion

The results showed that teaching children's educational poems is an effective way for improving the development of social activities and language skills in children with ASD. Accordingly, the main hypothesis of the study was confirmed. This finding is broadly in line with the findings of researchers who explored the impact of poetry and rhythmic games on different aspects of social life, emotional development, and psychomotor and cognitive development in children. So, it can be concluded that in a therapeutic activity associated with music and poetry, a child with ASD will attempt to provide a suitable, desirable, and timely response to a stimulus. For example, a child who speaks little will try to speak more to achieve his/her goals. A child who uses his/her 5 senses less, will try to use these senses more, and a child who has less control over his/her movements will learn how to control and direct them. Therefore, these interventions will greatly help in the recovery of children with ASD, which is recommended to be provided to this group of children in addition to current treatments [17-20]. The results depicted that poetry therapy is effective in increasing the social skills of children with ASD. This finding is generally in line with the results of Hossein Khanzadeh and Imenkah [21], who showed that music therapy along with play therapy can

increase social behaviors, and at the same time decrease isolation and repetitive behaviors in children ASD. Also, this finding is generally in line with the results of Nasiri *et al.* [22], who indicated that storytelling and its related structure are effective in improving social interactions in autistic children. In addition, this finding is similar to the results of the study conducted by Khanjani and Khaknejad [23], who showed that music therapy enhances communication and language skills and reduces symptoms of autism. Finally, this finding is in line with the results of Falahi and Karimi-Sani [24], who reported that storytelling is effective in reducing autism symptoms, improving communication skills, and social interactions in children with ASD. Performing music and poetry in groups (playing musical instruments or singing) is a multi-quality activity that affects reflections of the human nervous system. Meanwhile, most children with ASD enjoy this practice and get actively involved in such activities. So, such activities can enhance their ability to focus and interact with others, thereby enhancing their communication and social skills. Thus, engaging in music-making techniques can provide a promising approach to facilitating the linguistic expression in autistic children who are unable to speak. Also, music therapy and poetry encourage more autistic people to participate in designed social/linguistic and cognitive/motor activities. Music and poetry provide a useful context, in which a sense of curiosity and exploration of environmental stimuli in autistic children is enhanced. In fact, children encourage through music. Poems and hymns can also be combined to create a form of musical social storytelling, which is useful for practicing social skills.

In this study, the effect of music therapy and poetry on children with ASD was determined. Music is, above all, an emotional need. It stimulates the brain's emotional system (limbic system), leading to emotional stimulation of the inner state. Also, in many situations when there is no speech or expression, music can cause empathy and emotion, and most importantly expand feelings. Therefore, music is the best way for autistic children to interact, socialize, get out of their inner world, and pay attention to their living environments.

The results obtained from the analysis of the data related to the second hypothesis showed that there was a significant difference between the experimental group and the control group regarding the development of language skills. In other words, children's educational poems increased the development of language skills in autistic children in the experimental group compared to the control group. This finding is in line with the results of Ferdosi *et al.* [25] who reported that after performing the rhythmic singing method, continuous speech quality, mean length of utterance, verb count, and speech rate increased, and echolalia percentage decreased in children. As a result, the rhythmic

singing method has a positive effect on the speech quality indicators of autistic children. In explaining this finding, it can be said that language is a social contract that exists between speakers of a community and includes semantics, word formation, syntax, and cognitive abilities of words and phrases. Language disorders include perceived and expressive disorders, such as aphasia and dyslexia. When a person has difficulty understanding others, he has perceived disorders, and if he has difficulty expressing his thoughts and opinions, then he has expressive disorders. Due to cognitive and communication problems, autistic children usually have both speech and language disorders and both speech and language skills can be enhanced by music and poetry activities. Musical activities that motivate children with ASD to follow the lyrics of the song are useful for enhancing their perceptual-linguistic skills, as group singing reduces the subjects' anxiety about speech. Meanwhile, vitality in group sessions increases the desire to speak and read. Playing wind instruments along with singing can strengthen the muscles associated with speech in autistic children. Control of the muscles responsible for breathing, tongue, lips, and cheeks is essential for speech and playing wind instruments enhances this ability. In addition, rhythmic singing helped children with ASD to talk in a much better way. Finally, adapting the rhythm of the song and singing improved the language skills of autistic children.

The main limitations of the present study include the lack of a follow-up stage and limited sample size. It is suggested that future studies use a larger sample size with children from different cultural and economic backgrounds.

Conclusion

According to the DSM-5, ASD is characterized by such major symptoms as impaired communication and social interactions along with restricted and stereotyped patterns of behaviors or interests. In the present study, it was observed that using children's poems is effective in improving the language and social skills of children with ASD. Therefore, it can be concluded that poetry therapy, which is a subset of art therapy, can be a cost-effective, new, and appropriate method for treating children with ASD.

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