Journal of Advances in English Language Teaching 2013;
vol.1, No.4, pp.85-95 ISSN 1805-8957
www.european-science.com/jaelt

The Effect of Musical Dialogue on EFL Learners' Syllabic Stuttering

Yaser Kheyrkhahnia [1], Behzad Ghonsooly [2], Ali Mashhadi [3]

[1] Department of English, Qeshm International Branch, Islamic Azad University, Qeshm, Iran; [2] Department of English Language and Literature, Ferdowsi University of Mashhad, Mashhad, Iran; [3] Department of Education and Psychology, Ferdowsi University of Mashhad, Mashhad, Iran

Received for publication: 21 July 2013.
Accepted for publication: 09 September 2013.

Abstract

This paper studied a technique of English speaking based on Musical Dialogue for decreasing syllabic stuttering of developmental stuttering EFL learners. Two groups of stuttering learners were selected randomly by IbnSina speech therapy clinic in relation to their speech problems. Six participants received Musical Dialogue in Experimental Group A, and eight participants received nothing as a treatment in Control Group. Sex was controlled randomly. The research tried to evaluate the time-sequential effects of Musical Dialogue on syllabic stuttering. Thus,SSI-4: Stuttering Severity Instrumentwas applied as pre-tests, post-tests, first delayed post-tests, and second delayed post-tests to estimate percentage of syllabic stuttering.Findings presented that Musical Dialogue did not have enough significant difference to influence the stutter among the EFL learners immediately after treatment. However, Musical Dialogue has had short-term and long-term effects on decreasing stuttering EFL learners' syllabic stuttering.

Keywords: Musical Dialogue, Syllabic stuttering.

Introduction

To begin, Language learning exists on spoken and written mediums significantly. A careful attention which is given to the spoken medium reveals the point that researchers have regarded to investigate the significance of speaking in L2 learning. Having a good speech to everyone is critical because speaking is the most powerful ability which human beings have in order to express their feelings through representing their souls. Speaking has much influential potency in communicating than listening, reading, and writing. For this reason, the sign of speaking necessities of having sufficient and effective studies have frequently pointed out in L2 learning (Dunkel, 1991; Joiner, 1986; Long, 1987; Mendelsohn, 1998; Rubin, 1994).

In addition, Aldridge (2001) found that the reciprocal action of a therapist in music- based experiences based on music therapy is created to refer vital necessity of an individual to extract from a desired change. In the 1940s, a treatment was presented in a holistic way which was called Music therapy. Aldridge (2001) cited, "Music therapy is widely reported in the medical literature. There has been substantial progress in the establishment of research strategies for supporting clinical practice" (p. 2). This field of study invites engagement in a context of research today. Moreover, nowadays researchers try to find the relationships between music and the brain. ERP- studies on two musicians have presented that brain responses as a reflection to musical rhythms were identical as brain activities during requiring a language (Koelsch *et al.*, 2000; Patel *et al.*, 1998). Studies presented that around 180-350 ms electrical brain responses in processing a language lateralized to the left hemisphere (Friederici *et al.*, 1993; Hahne & Friederici, 1999), and they lateralized to the right hemisphere in processing music (Koelsch *et al.*, 2000a; Patel *et al.*, 1998). Transgression of musical commonness elicited the early brain responses were around 200–350 ms for reflecting the adapting of music-syntactic information (Koel-

Corresponding author: Yaser Kheyrkhahnia, Department of English, Qeshm International Branch, Islamic Azad University, Qeshm, Iran. E-mail: kheyrkhahniayaser@gmail.com.

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sch *et al.*, 2000a; Patel *et al.*, 1998). Meaning information in music caused brain responses (maximally around 500–550 ms) for reflecting the adoption. (Koelsch *et al.*, 2000a).

On the other hand, NIDCD Information Clearinghouse (2010) claimed that "approximately 5 percent of all children will stutter for some period in their life, lasting from a few weeks to several years" (p. 1). In a comparison of stuttering boys and girls, it is estimated that the "boys are twice as likely to stutter as girls; as they get older"(p. 1), however, the number of girls who stay to stutter is three to four times lesser than the number of boys who stay to stutter. "Most children outgrow stuttering. About 1 percent or less of adults stutters" (p. 1). Although the exact-behaviorisms are not understood, there are two types of stutters that are more frequent. NIDCD (2010) mentioned that the third type of the stutter is called psychogenic stuttering which can be cleared by emotional traumas or difficulty with thoughts. "At one time, all stuttering was believed to be psychogenic, but today we know that psychogenic stuttering is rare" (p. 2). While children are still learning speech and language skills, developmental stuttering happens. It is the most frequent form of stuttering. According to scientists and clinicians, developmental stuttering happens when children's speech, language abilities, and verbal demands are incapable to meet. Developmental stuttering also continues in families.

By considering the importance of decreasing syllabic stuttering in speech among stuttering EFL learners to overcome their gloomy barriers; this study was promoted by the desire to examine syllabic stuttering to see whether Musical Dialogue had any effect on stuttering EFL learner's ability or not.

Research questions

1. Does Musical Dialogue have any effect on decreasing stuttering EFL learners' syllabic stuttering immediately after treatment?
2. Does Musical Dialogue have any short-term effect on decreasing stuttering EFL learners' syllabic stuttering?
3. Does Musical Dialogue have any long-term effect on decreasing stuttering EFL learners' syllabic stuttering?

Review of Literature

Musical Dialogue

Concordia University (2011) claimed that a music therapy university instructor in the Concordia University Department of Creative Arts Therapies has claimed thoughts and suggestions to a possible course of actions in the domain of music and medicine. Her discoveries were based on a rare cooperation between music therapy participants and musicians from a professional symphony orchestra. In this way, Richards, Hull, and Proctor (2005) believed that Musical Dialogue is a teaching technique that can be used with texts for practicing speaking fluency; they mentioned the technique in their teacher's book which is called Interchange English Book, Teachers' Edition, as a fresh idea for enhancing teachers and students. Richards *et al.* (2005) claimed that this technique "provide an innovative way to teach a variety of exercises in the Student's Book; [Musical Dialogue] makes classes livelier, more interactive, and more varied" (p. 149).

Music and speech

Koelsch *et al.* (2000) claimed that, in a MEG study, from the scheduled time brain replies, researchers believe in uncertain or tentative grounds to mirror a music-syntactic processing which was localized in Broca's area and its right homologue (Koelsch *et al.*, 2000b; Maess *et al.*, 2001), these domains are involved in syntactic language adaptation. According to Koelsch *et al.* (2000), in that MEG study, however, the neural creator of brain replies defined with EEG might not be confined, elevating the issue that other areas in the brain in the processing of music might be engaged, and there was also later super imposable brain structures which involved in the decreasing of "music with brain structures known to beinvolved in the processing of language" (p. 1). Koelsch *et al.* (2000) mentioned that, brain imaging studies on language adaptation have shown that the processing of the connected speech place in temporal and frontal areas of both hemispheres, along with superiorities of the "left hemisphere in the on-line processing of syntactic features and a preponderance of the right hemisphere for the on-line processing of prosody "(p. 1).

Moreover, in a different study, Duke University (2009) stated the powerful new information for indicating whether their beliefs were true or valid about a deep biological link between human music and speech. The two new analyzed determined that the musical speech often used over the centuries that came nighest to imitate the physics of the human language, and that we comprehend sentiments expressed through music because the music

imitated the techniques which were expressed in speech. According to Duke University (2009), the sentiments expressed through music because music imitated the techniques which were expressed in speech, and were affected by the "perception of minor chord music as sad and major chord music as happy" (para. 1).

Moreover, Duke University (2009) found that "sad or happy speech could be categorized in major and minor intervals, just as music can" (para. 2). This information is drawn from researchers' testimony for considering the main biological explanation which we recognized the value and significance of music in imitating speech which has been critical to our progressive accomplishment of the aim in finding the relationship between music and speech. To study the emotional content of music imitated speech, the Duke teams collected any collection of data and information of "major and minor melodies from about 1,000 classical music compositions and more that 6,000 folk songs and then analyzed their tonal qualities" (para. 6). They also had 10 participants to read aloud a series of single vocabularies with 10 different vowel sounds in either excited or soft voice, as well as short monologues. They "compared the tones that distinguished the major and minor melodies with the tones of speech uttered in the different emotional states" (para. 7). They found the following:

Music and language learning

Feric (2012) believed that every point or moment of the centuries, researchers in various fields - philosophers, scientists, teachers and therapists have acknowledged the functions of music for therapeutic and developmental functions. Recently, experts have made immense progresses in the coherent group of general assumptions about foreign language learning. As many researchers found that there were multiple consequential and developmental demonstrations of music's connections with language acquisition, so the most instructive containing of language and music was convinced unexpectedly. Language and music are the two typical manners in which humans behave, express, and convey their thoughts or feelings through sounds. Intense investigations and intense connections between language and music throughout history were surprisingly clear. Plato wrote that "musical training is a more potent instrument than any other, because rhythm and harmony find their way into the inward places of the soul... making the soul of him who is rightly educated graceful" (as cited in Feric, 2012, para. 2). As a matter of fact, today there is a recognizable function in a logical sign system for exchanging of information and ideas as a multimodal concept and the musical one. "In any oral interaction, only 15% of the information corresponds to verbal language, while 70% of the messages are performed through body language and the final 15% belongs to intonation, the musical character of language" (para. 2).Due to the fact that music and language have characteristics of rhythms, pitches, timbres, and dynamics, and techniques in common within themselves which could be used for teaching each of them. Therefore, teachers should work in an astonishing way to teach them both simultaneously (Feric, 2012). According to Feric (2012), some researchers believed that the linguistic and musical intelligences were different, but others believed that the linguistic and musical intelligences worked together. Due to the cooperation, the consequences of executing the linguistic and musical intelligences together are very effective. As a matter of fact, language intonation was clarified by the existence of musicality. Therefore, teachers believed that for the effective cooperation, one of the primary actions was reading with music. Instructors would have their learners to give their attention to sounds and calm "while they played music in the background and read from a foreign language text, using emphatic vocal articulation with Classical music such as Mozart, and normal articulation with Baroque music, such as J.S. Bach"(para. 5). Even though this study was almost rejected subsequently and it was differed from other related studies meaningfully. However, it was presented in those mutual connections between the musical and linguistic domains to give power of music in acquiring vocabulary and phrases that "are governed by the linguistic intelligence" (para. 5).

Syllabic stuttering

Chang (2011) mentioned that "stutter often show a dramatic decrease in stuttering during an altered-feedback condition—one that usually disrupts speech in fluent speakers—suggests that the auditory and motor centers of the brain interact differently in this group relative to fluent speakers" (para.6). Furthermore, major fluency-inducing requirements promote delayed rates of speaking ability and make outwardly delivered timing signals for movement of speech. "These conditions may compensate for a speech system that is less able to sequence speech movements rapidly and perhaps unable to rely on

internal timing of speech movements" (as cite in Chang, 2011, para.6).

Also, Prins, Hubbard, and Krause (1991) examined syllabic stress and the occurrence of stuttering. They inquired into the frequency of stuttering occurring at stress-peak and unstressed syllables in affiliated speech. Prins et al. (1991) considered in detail of the analyses in order to discover essential features from 10 young adult stutterers. Consequences revealed a consequential remarkable concurrence of stuttering circumstances without apparent causal connection of the stutter events and syllabic stress peaks specifically in polysyllabic words. Also, they tested frequent falters and pauses during speaking in three words of primary clauses and they found out that frequent falters and pauses during speaking appeared in syllabic stress independently. Prins et al. found that the stutter events and segmental errors of speech had the same kind in appearance, character, and quantity between their locus so that they were considered in connection with interpretations that regarded stuttering as a proof of non-performance in regular speech production processes.

Measurement of stuttering

Chang (2011) mentioned that factual information from recent neuro-imaging studies on the stutter provided the possible facts about fluency-inducing conditions. Also, "The main brain regions that work together to make fluent speech production possible include areas in the frontal cortex of the brain, which controls movement planning and execution, and auditory sensory regions located farther back, in the temporoparietal cortex" (para.7). Basal ganglia, thalamus, and cerebellum are the deeper areas within the brain that uphold speech movements by showing "internal timing and sequencing cues" (para.7). These brain domains and their physical links made researchers to understand brain act and anatomy unusual qualities between stuttering and fluent speakers.

Yaruss (1996) claimed that physical behaviors of researchers' studies through measuring syllabic stuttering of their participants resulted in different ranges of behaviors which connected to stuttering, but "How should I measure syllabic stuttering without measuring participants' physical behaviors?" This fact is the possible bewildering issue, because different researchers have different testing methods. In fact, Yaruss (1996) proposed one of the most frequent "measures to be made on a session-by-session basis will be a count of the number of disruptions in the participant's speech. Indeed, for some treatment approaches, regular assessment of frequency of disfluencies is imperative" (p. 2). For other treatment approximations, however, it may be less consequential that the numbers of occurrences of disfluencies within a given period of time are assessed every session. Therefore, the researchers should improve a schedule with ability to change in meeting new circumstances for some measures "(e.g., frequency and type of disfluencies or use of modification techniques) are made on a regular basis and others (e.g., speech attitude or linguistics contexts affecting fluency) are made on a less regular" (p. 3). However, there are still firm assumptions based on the limited necessities of participants.

Stuttering and therapy

Totally Sound Health (2010) believed that some studies indicated the impressiveness of sound therapy for stuttering subjects were in 82% to 100% of cases. A French Ear, Nose & Throat specialist developed sound therapy that was calledDrTomatis (1920 - 2001), and then, in 1946 he improved his own field of research known as audio- psycho-phonology, which linked medicine, psychology, music therapy, speech therapy, and special education. In addition, According to TSH (2010), ears and brains are linked with the brain hemispheres on the opposite side of each other so that the doctor used music for evaluation its effect. According to TSH (2010), DrTomatis mentioned that music went into brains through the right to the left and supported the right ear dominance. Stuttering was due to left or mixed lathe right ear dominance defended the advantages of music therapist's synopses in curing people who were the stutter. Shira (2011) claimed that music therapy mainly is a sufficient method of waking neurological changes because music engages and arouses multi areas of the brains effectively. Brains' functions are better in the conditions when the different area of it works together and when a teacher teaches their learners; their brains have high active moods. When a person joins in live music, the brains must adapt to sound, vibrations, movement, emotional states, and sequential patterns which are adapted by the brain in the same way as language learning. In another study in relation with motor related difficulty, Shira showed how stuttering therapies were alike or different to gait therapies. In Shira's form, gait therapy was the restoration to good health or condition of walking through the functionof a metric rhythm– the patient walked to restore to good health or condition of their gait pur-

posely to even, and managed intervals base on an even pulse. Shira explained that in the study, people could play live music to the gait.

Methodology

Participants

The participants in this study were 14 Iranian stuttering EFL learners. They were from Mashhad. Some participants were found by advertisements, some participants were treated at the IbnSina psychiatric Hospital of Mashhad, and some participants were treated in private speech therapy clinics, named Qaem, Varastegan, and Imam Reza. The participants were between 10 to 17 years old. They were school-age young people. All of the participants were homogenous EFL learners. Their proficiency levels were tested by Cambridge Preliminary English Test (PET), so it showed the participants had an intermediate level of English. Two groups of stuttering learners were selected homogeneously and randomly in relation to learners' speech problems and disfluencies by IbnSina speech therapy clinic. The sample included both males and females randomly. Experimental Group A had six participants who received Musical Dialogue as a treatment, and Control Group had eight participants who received nothing as a treatment. Participants were not being informed about the research study, serial tests, the serial treatments and so forth. They supposed that they participated in the natural speech therapy sessions.

Instruments

The instruments which were used in this study included SSI-4, and PET.

Stuttering Severity Instrument (SSI-4): Stuttering Severity Instrument – Fourth editionwas given to the experimental and control groups. This norm-referenced stuttering assessment is reliable and valid. It can be utilized for both clinical and academic purposes. According to Pro-Ed (2009), it assesses stuttering severity in people in the following four domains of speech characters including frequency, duration physical concomitant, and naturalness of the one's speech.

Riley (2009) made and addressed the reliability, validity, and statistical properties of the naturalness rating procedure of SSI-4. According to Riely (2009), the reliability of SSI-4 stuttering measurement was enlarged and estimated in the frequency and duration measures, and the proportion per hundred of syllabic stuttering was declared in stanine intervals. Therefore, the scale score value was the same for percentage within a given stanine. Also, intervals were familiar with estimating the scale value of duration measures. Therefore, this procedure decreased the function of trivial unusual qualities on the test score. For intra-rater reliability, on two different occasions, two trained raters and an experienced assistant observed and scored five videotaped speaking samples. In each judgment pair, the proportion per hundred of agreement was estimated by separating the minor score by the larger score. The estimated ratio was multiplied by 100 to have a percentage of agreement. The outcomes are in following table for each related parameter.

Table 1. Summary of Intra-rater Percentages of Agreement (self-Agreement).

	Experienced or trained examiners		Research team	
Parameter	M	Range	M	Range
Frequency	87.1	71.4_92.9	93.9	84.2_100
Duration	85.9	68.0_100	96.4	75_100

The following table addressed interrater reliability concerning frequency, duration, physical concomitants, total score, and naturalness. Outcomes of the analysis are in the table 2.

Most of all, Experimental Group A and Control Group were taken a SSI-4 assessment for four times. The researcher of the present paper took advantage of Examiner Record Form of Riley (2009) in the Examiner's Manual and Picture Plates as one of the present research tests. Ten from 30 songs were selected from Let's Chant and Let's Sing 4th, 5th, and 6th, English learners' book (Graham, 1999), as a reading material in order to make the participants read aloud sentences from the lyrics. Then, they were shot by a camera for evaluating the percentage of syllabic stuttering pictorially.

Table 2. Summary of Inter-rater Percentages of Agreement Between judges.

	Experienced or trained examiners		Research team	
Parameter	M	Range	M	Range
Frequency	91.0	81.2_100	91.4	54.2_100
Duration	84.8	58.1_87.2	87.8	60.0_100
Physical concomitants	82.9	50.0_100	_	_
Total score	93.4	82.2_99.5	_	_

Preliminary English Test (PET): According to Cambridge English (2013), the test is developed to be clear to all languages and nationalities. It is developed by a dedicated study programmer. "It covers all four language skills (reading, writing, listening and speaking), knowledge of grammar, and vocabulary. Reading and writing is worth 50% of the total marks and each of the other papers is worth 25%" (p. 3). The test concentrates upon on level B1 of the ordinary European Framework of Reference for Languages (CEFR). It presents intermediate English levels of participants.

Procedure

Data collection

The researcher decided to control any interference varies by time, so the sessions were held on Sundays and Fridays. First of all, the participants in Experimental Group A received the SSI-4 assessment as one pre-test one week before the therapy sessions. Next, they received Musical Dialogue as their treatment over eight sessions on Sundays and Fridays. In fact, the participants studied, and practiced 30 selected songs from Let's Chant and Let's Sing 4th, 5th, and 6th English learners' book (Graham, 1999) in a natural and fun setting. English prosodic systems such as stress, rhythm were taught deductively, that is, the researcher of the present study explained the prosodic systems and asked the participants to listen, find, and mark them while songs were being played. After that the participants were asked to repeat the songs with the true prosodic systems chorally, and individually. Then the participants moved around the room. When the music stopped, participants sang the song with the closest participant. The researcher stopped the music every 20 or 30 seconds for the participants to practice and complete the task with the true prosodic systems. For avoiding any signs of fatigue, there was another variation in applying the task, that is, the researcher played the music without pause, and then the participants shouted to sing the song with the closest participant. The participants continued the task as many times as needed during the eight sessionsto practice their syllabic stuttering and the prosodic systems. Then, they received the same SSI-4 assessment as one post-test one week after the final therapy session. First delayed post-test was applied two weeks after the final therapy session. Second delayed post-test was applied three weeks after the final therapy session.

The participants in Control Group received the SSI-4 assessment as one pre-test one week before their therapy sessions. Next, they received nothing as their treatment over eight sessions on Sundays and Fridays. The participants studied the same EFL story books and songs over eight sessions in a natural and fun setting. English prosodic systems such as stress, rhythm were taught deductively, that is, the researcher of the present study explained the prosodic systems and asked the participants to listen, repeat sentences of the books and songs chorally, and individually. Participants continued the task as many times as needed during the eight sessions. Then, they received the same SSI-4 assessment as one post-test one week after the final therapy session. First delayed post-test was applied two weeks after the final therapy session. Second delayed post-test was applied three weeks after the final therapy session.

Data analysis

The recording movies were evaluated by one of the famous speech therapists of Iran who is called Mr. Ahmad Poormohamad. On the behalf of IbnSina speech therapy clinic, he estimated the percentage of syllabic stuttering severity from pre-test, post-test, first delayed post-test, and second delayed post test. Also, every session was observed by him. In addition, Riely (2009) published the percentile ranks and severity equivalents of SSI-4 for school-age children in order to help researchers to judge the importance of the stuttering severity. He made

this percentile rank through examining 139 participants. Riely (2009) published the following table:

Table 3. Percentile Ranks and Severity Equivalents of SSI-4.

Total scores for School-age children (N=139)		
Total score	Percentile rank	Severity equivalent
6-8	1-4	Very mild
9-10	5-11	
11-15	12-23	Mild
16-20	24-40	
21-23	41-60	Moderate
24-27	61-77	
28-31	78-88	Severe
32-35	89-95	
36 and up	96-99	Very severe

Results and discussion

To state, according to the posed research questions, the present study had three following null hypotheses:

H01: Musical Dialogue has no effect on decreasing stuttering EFL learners' syllabic stuttering immediately after treatment.

H02: Musical Dialogue has no short-term effect on decreasing stuttering EFL learners' syllabic stuttering.

H03: Musical Dialogue has no long-term effect on decreasing stuttering EFL learners' syllabic stuttering.

Likewise, for rejecting or accepting the H01, H02, and H03 null hypotheses of the present research, the collected data from Experimental Group A have been analyzed with parametric statistics such as t-tests.

Table 4.The Brief Overview of Independent Sample T-Tests.

Analyses	Groups	Mean	Std. Deviation	Sig. (2-tailed)
1	Experimental Group A (pre-test)	32	2.83	.294
	Control Group (pre-test)	29.66	4.32	
3	Experimental Group A (post-test)	27.83	2.32	.148
	Control Group (post-test)	30.33	3.14	
4	Experimental Group A (first delayed post-test)	24.33	2.34	.003
	Control Group (first delayed post-test)	29.66	2.42	
5	Experimental Group A (second delayed post-test)	24.17	2.32	.011
	Control Group (second delayed post-test)	30.5	4.42	

In the first place, pre-tests of Experimental Group A andControl Group were compared. The results are written in table 4. The above estimated independent t-test showed the groups' equality. To illustrate, the Sig. (2-tailed) value of the t-test was .294 and it was also greater than .05, so the null hypothesis t-test about nosignificant difference existed between pre-tests of Experimental Group A and Control Group, that is, the two groups were initially homogeneous. Secondly, post-tests, first delayed post-test, and second delayed post-test of Experimental Group A and Control Group were compared. According to the above table, the Sig. (2-tailed) value of the t-test was .148 and it was also greater than .05, so the null hypothesis t-test about nosignificant difference existed between post-tests of Experimental Group A and Control Group. According to the above table, the Sig. (2-tailed) value of the t-test was .003 and it was less than .05, so the null

hypothesis t-test about no significant difference between first delayed post-tests of Experimental Group A and Control Group was rejected. According to the above table, the Sig. (2-tailed) value of the t-test was .011 and it was less than .05, so the null hypothesis t-test about no significant difference between second delayed post-tests of Experimental Group A and Control Group was rejected.

Table 5. The Brief Overview of Paired Sample T-Tests.

Analyses	Groups	Mean	Std. Deviation	Sig. (2-tailed)	Cohen's d
1	Experimental Group A (pre-test)	32	2.83	.000	1.611
	Experimental Group A (post-test)	27.23	2.32		
3	Experimental Group A (pre-test)	32	2.83	.001	2.95
	Experimental Group A (first delayed post-test)	24.33	2.33		
4	Experimental Group A (pre-test)	32	2.83	.008	3.03
	Experimental Group A (second delayed post-test)	24.17	2.32		

Table 5 presents a comparison of the pre-test to post-test first delayed post-test and second delayed post-test of Experimental Group A. According to the above table, the Sig. (2-tailed) value of the test was .000, so it is less than .05. Therefore, the null hypothesis test based on the lack of the significant difference between pre-test and post-test was rejected. The table presents that the mean value of the post-test was less than the pre-test, so the meansize was about 4.17. Also, according to the above table, the Sig. (2-tailed) value of the test was .001, so it was less than .05. Therefore, the null hypothesis test based on the lack of the significant difference betweenpre-test and first delayed post-test was rejected. The table presents that the mean value of the first delayed post-test was less than the pre-test, so the meansize was about 7.67. Moreover, according to the above table, the Sig. (2-tailed) value of the test was .008, so it was less than .05. Therefore, the null hypothesis test based on the lack of the significant difference between pre-test and second delayed post-test was rejected. The table presents that the mean value of the second delayed post-test was less than the pre-test, so the meansize is about 7.84.

As the result, Tables 4 and 5 presented the independent and paired sample t-tests between Experimental Group A and Control Group. To illustrate, results showed that Musical Dialogue as the treatment had neutralist effect immediately after treatment, that is, although Musical Dialogue had an effect on decreasing stuttering EFL learners' syllabic stuttering , it did not have enough significant difference to influence the stutter among the EFL learners immediately after treatment. However, results showed that not only has Musical Dialogue had a short-term effect on decreasing stuttering EFL learners' syllabic stuttering , but it also had enough significant difference to influence the stutter among the EFL learners with a large effect size, Cohen's d= 2.95, on decreasing the stutter. Also, results showed that not only has Musical Dialogue had a long-term effect on decreasing stuttering EFL learners' syllabic stuttering , but it also had enough significant difference to influence the stutter among the EFL learners with a large effect size, Cohen's d =3. 03, on decreasing the stutter.

Most of all, to discuss the questions of the present research about Musical Dialogue, studies showed that music therapy can be matched with songs for enhancing EFL learners' problems and different researchers studied this domain for finding new information. Richards, Hull, and Proctor (2005) suggested a new teaching technique for enhancing teachers in teaching fluency to EFL learners so that the re-

searcher used this technique for solving the problems of stuttering EFL learners' syllabic stuttering, so the findings presented that although Musical Dialogue had an short-term and long-term effect on decreasing stuttering EFL learners' syllabic stuttering, it did not have enough significant difference to influence the stutter among the EFL learners immediately after treatment. Also, some researchers believed in powerful new information for indicating true beliefs about the biological link between human music and speech. The researcher of present study agrees with the Shira (2011) that music therapy mainly is a sufficient method of waking neurological changes because music engages and arouses multi areas of the brains effectively. Brains' functions are better in the conditions when the different areas work together and when a teacher teaches their learners effectively; their brains have high active moods. As the matter of the fact, the researcher of the present paper believes that this time sequential changing results of Musical Dialogue in the stutter may related to the researchers' findings such as Koelsch *et al.* (2000), and Chang (2011). In fact, Chang (2011) mentioned that "stutter often show a dramatic decrease in stuttering during an altered-feedback condition—one that usually disrupts speech in fluent speakers—suggests that the auditory and motor centers of the brain interact differently in this group relative to fluent speakers" (para. 6). To clarify, major fluency-inducing requirements promote delayed rates of speaking ability and make outwardly delivered timing signals for movement of speech. "These conditions may compensate for a speech system that is less able to sequence speech movements rapidly and perhaps unable to rely on the internal timing of speech movements" (as cite in Chang, 2011, para. 6). Also, Koelsch *et al.* (2000) claimed that brain imaging showed that language adaptations for connecting speech placed in temporal and frontal areas of both hemispheres during studies of the brain and music. Thus, the researcher of the present study claims that by passing time this adaption in temporal and frontal areas of both hemispheres may be intensified. This advantage helped the auditory and motor centers of the participants' brain of the present study to overcome their stutter over 2 or 3 weeks gradually. Moreover, the researcher of the present paper believed that the time sequential changing results of Musical Dialogue in the stutter may relate to different researchers believes, that is, they believe that music depends upon the control of underlying feelings to decrease psychological barriers in learning.

Conclusions

Despite some limitations, the current study paves the way for further studies and suggests a fresh academic field. The linkage between Musical Dialogue for decreasing the stutter among EFL learners can be discussed and examined in more details. Also, the relation between physical movements in Musical Dialogue for activating parts of the brain or for overcoming psychological barriers can be investigated with more participate, so that their effect would become statistically significant with more participants. Relation between each of the treatments and syllabic stuttering can be analyzed. As participants of this study were selected from Iran, others can do the identical study in other various cultures and countries. These are some matters under discussion that can be taken into account in later research and studies.

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