

Music Therapy in ADHD and Autism

Prof.Dr.Ömür Bütev Dolğun

Fine Arts Education Department, Artvincoruh University, Turkey

Corresponding Author:Prof.Dr.Ömür Bütev Dolğun

Abstract: Music therapy has been identified as a research-based branch(Rickson et al.:2016; Australian Music Therapy Association: 2012) and it can improve especially gross and fine motor coordination and skills of individuals who have ADHD and Autism. Music therapist behaves like an artist for he/she uses contents of music such as sound and rhythm. In this means, music can be used in children to prevent especially their attention and speech disorder. In this study various regular and irregular rhythm implications have been used on children with Autism and ADHD. In addition to the usage of different children songs, musical games had also been used. As a conclusion it had been observed that children with ADHD and Autism paid more attention to what they are doing, they expressed themselves better and started to behave less hyper.

Keywords: ADHD, Autism, Music Therapy.

Date of Submission: 12-07-2018

Date of acceptance: 28-07-2018

I. INTRODUCTION

1.1 MUSIC THERAPY

Music therapy is one of the terms that are used frequently for the last few years. Although there are many definitions to this subject, a few of them will be emphasized here. According to Stige (2012; 210), professional music therapy is hidden in cultural processes. Wigram&Gold (2006) noted that studies have identified the role played by music therapy in diagnosis and clinical evaluation. According to Ansdell(2003;152-153) music therapy can be seen as the elaboration of a constant story about music implementations as modern implementation, discipline and as a profession in certain methods by certain people in certain contexts and certain ends in the 20th century. According to Bruscia (2016; 9), another difficulty in defining music therapy is that it has a multidisciplinary quality and music therapy, more than it is a subject on its own, is also a hybrid area that matches up with and covers the both areas (music and therapy) and other branches such as art, health, medicine, education, psychology, human sciences and etc. Again according to Bruscia (2016; 11), music therapy as a field of art gets organized with science, and focuses on interpersonal and sociocultural processes and as a science, its liveliness gets gained through art and gets humanized with therapist-counsellor relationship. According to Wigram, Saperston& West (1995) today music therapy is seen both as an art and science. According to Bruscia (2016;20) and Thompson (2009; 208) we can take the history of music therapy to the establishment of National Music Therapy Association in The United States in 1950. According to Wigram, Saperston& West (1995), music therapy has a long story but a short history. Merle-Fishman&Marcus(1982) stated that Nordoff& Robbins were the first ones who have investigated a correlation relationship between musical behaviour and pathology. According to Ak (2006; 235-243), there are basically two methods in the usage of music as a treatment; the first of them is the active method which includes rhythm, harmony in the sounds, dance, song and the using of a musical instrument; and the other one is passive method which is based on listening. According to Thompson (2009; 210), the music therapy that's implemented in the active method includes both the individual and in group musical participations of the patients. It also beneficial for the patients for playing a instrument helps the development of fine and gross motor control, facilitated cooperation and attention. According to James et al. (2015: 52) the studies in the literature there are specific songs, which are with lyrics and these songs related to target skills and musical improvisation. There are numerous study and implementation made with music therapy and it is noticed that active methods are more frequently used than the passive methods.(Rickson: 2006; Kim, Wigram& Gold:2009;Shore:2003;Wigram:1999;Gattino et al:2011; MerleFishman&Marcus:1982) In addition to these, there are also studies that are held in music therapy centres.(Forinash; 1992) Besides that they are some scales and approaches on this branch such as "The Music Therapy Communication and Social Interaction Scale(MTCSI; Guerrero et al.:2014)and Musical Communicativeness Scale (Nordoff&Robbins:1977,2007) and they were developed. (Bell;2014:61)Nordoff and Robbins had theorized their approach in 1959-1960.(Aigen: 2005)Music can help to organize verbal communication. « *Music provides an alternative means of communication for those who are nonverbal, and for others it can help to organize verbal communication.*» (Shore; 2003:123)

1.2 ADHD

ADHD (Attention Deficit Hyperactivity Disorder) is conservatively forecasted to occur in 3% to 6% of children and it is more common in males.(Rickson,2006;40; Tannock:1998;Sanjiv: 2004) According to Thompson&Miller(2013) ADHD is seen in 3-7% of school age children. According to Schlack et al.(2007; 827) children who are with ADHD diagnosis have many psychosocial problems in their environments such as their schools and their families. According to Schlack et al.(2007; 829) between the main symptoms of ADHD there are inattention, hyperactivity and impulsiveness. To prevent that attention deficit and hyperactivity, it can be used music therapy at times. Music therapy aims for hyperactivity to decrease and attention span to increase.. Some of the the music therapy sessions has been used various materials such as Orff Instruments and toys (Kim et al.; 2008: 1761)

1.3 AUTISM (ASD)

According to American Psychiatric Association (2013) Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder and according to American Psychiatric Association (2013),Vincent (2017), James et all.(2015) ASD influences social communication, social interaction, restricted and repetitive behaviour, interest or activities. “Autistic disorder (AD) is a neurodevelopmental disorder of children’s communicative and social skills as well as their motor repertoire.” (Venuti et all.; 2012:2255) According to Prizant (1996;173) it has been forecasted that 50% of children with ADHD diagnosis do not obtain speech skills. According to James et al. (2015; 39) people who have Autism Spectrum Disorder does not develop functional speech (between 25% and 61%).Music Therapy has been implemented as a treatment on children with ASD (Green et all; 2006; Reschke-Hernandez: 2011; James et all: 2015). Also in this research; songs, rhythms, improvisations and musical games that were composed by the researcher herself specially for this research were used.

II. METHOD OF THE STUDY

In this study; has been concentrated on children who are in primary schools. It is obviously known that primary schools are very important on children’s lives. In this study has been aimed for children’s movements to be reduced and their attention span to be increased. It had been used music therapywith various rhythm implications, musical games and songs on these children. Children in this study are between 6 and 9 years old and all of them are male except one. According to their teachers and parents these children are hyper, misbehaved and non-adaptive. They prevent lessons in their classrooms.

The instruments and materials that are used in this study are given below:

TOYS

A pair of balls
A lego block set
Drawing cards and papers

INSTRUMENTS

Piano (Thomson)
Metallophone
A small drum and a tambourine
A pair of egg shakers
Rhythm sticks
Cymbal
Castanet
Maraca
Recorder

It is known that on children who are diagnosed with ADHDhave poor motor coordination and this deficit can cause inattention and hyperactivity. (Thompson&Miller: 2013) In this study has been aimed that verbal skills, gross and fine motor coordination and creativity can be expanded on these children.

2.1. FINDINGS

In this study it had been studied with five children who were ADHD diagnosis. One of them was K. (6) and according to his teachers, he prevented lessons in his classroom and he disturbed, hit and injured his classmates. His impulsivity was more dominant among his other symptoms. In the beginning of the first session he could not sit even for a minute and he was constantly very active. After he was met with, he was asked about his favourite songs. Then these songs had been played on the piano. After that, Orff Instruments had been introduced to him and various musical implications continued for several minutes with these instruments.

In the next session with K., rhythm implications had been used for 60 to 90 seconds; and had been repeated two times. Nearly 5 minutes had been spent playing various musical games. K. was more active in that session. Also

various animals' virtual materials in rhythm implications with Orff instruments had been used. Irregular rhythms had been benefited from.

Irregular rhythms mean the rhythm form is not always the same nor equal in a musical piece. Most of the songs are on regular rhythms while the others are not. In irregular rhythms, the rhythm for is not always the same and the measurements not equal. The activities in the study which were with irregular rhythms had been repeated as rhythm implications, musical games and songs with piano accompanies more than one repeats. K. was very interested in especially these irregular rhythm activities.

In the 3rd session Orff Instruments were used in the activities again and children songs which were taught to him a week ago were repeated. K. was provided to use both of his hands in these activities, for example he could use maraca with his right hand, and with his left hand he could use another Orff instruments, such as a small drum. Also, his attention span increased to 2 minutes in these implications. K. could also sing at the same time. It was a rather important finding for it showed he was using both of the hemispheres of his brain. In the fourth session, his attention span increased to 2,5 minutes (approx. 150 seconds) and it had been repeated 2 times. Besides that, new children songs and activities on irregular rhythms were added to the session. Also, it was observed that K. started to be interested in musical games. In the 5th session, his attention span increased to 3 minutes (approx. 180 seconds) and these activities were repeated 2 times. Various mathematic implications have been used with egg shakers. With these activities, it was aimed for his reflexes to increase. In the 6th session, his attention span was again 3 minutes; yet it increased to 4 minutes (approx. 240 seconds) in the 7th week. Besides that various musical games with balls –that were constantly distracting him during the implementations so they got included in these implementations- were played and these games continued for 5 minutes. Meanwhile his attention span started to increase and his reflexes started to improve. In the 8th session, K. was again very active. The song span and rhythms span got increased to 5 minutes. At the same time, he started to choose his Orff Instruments himself. These activities have been repeated many times especially with irregular rhythms. It can be seen on the table below which shows of the K.'s musical development.

	Attention Span	Numbers of the Musical Games	Numbers of the Songs on the Piano (and) Orff instruments	Numbers of the Rhythm implications
1st Session	Less than a minute	---	2 (On the Piano) 2 (With Orff Instruments)	4(Regular Rhythms)
2nd Session	1-1,5 minute (2 Repeats)	2	2 (On the Piano) 2 (With Orff Instruments)	4(Regular Rhythms) 2(Irregular Rhythms)
3rd Session	2 minutes (2 Repeats)	2	3 (On the Piano) 3 (With Orff Instruments)	4(Regular Rhythms) 3(Irregular Rhythms)
4th Session	2,5 minutes (2 Repeats)	3	3 (On the Piano) 3 (With Orff Instruments)	4(Regular Rhythms) 4(Irregular Rhythms)
5th Session	3 minutes (2 Repeats)	3	3 (On the Piano) 3 (With Orff Instruments)	4(Regular Rhythms) 4(Irregular Rhythms)
6th Session	3 minutes (2 Repeats)	3	3 (On the Piano) 3 (With Orff Instruments)	4(Regular Rhythms) 4(Irregular Rhythms)
7th Session	4-5 minutes (3 Repeats)	3	3 (On the Piano) 3 (With Orff Instruments)	4(Regular Rhythms) 4(Irregular Rhythms)
8th Session	5 minutes (3 Repeats)	3	4 (On the Piano) 4 (With Orff Instruments)	4(Regular Rhythms) 4(Irregular Rhythms)

D. is one of the 4 students that were made group therapy with in this study. D. was a very active boy who is 8 years old and was also diagnosed with ADHD like K. At the same time D. had a speech disorder and was a stutterer. For that reducing his speech disorder was very important, various regular and irregular rhythm implications with and without words were frequently used. He was very interested in drum, so this instrument was mostly used in the implementations. It should also be stated that he was the only student who made improvisations all by himself. The activities started from 2 minutes and 4 repeats. In the next sessions, the activity spans were 3, 4 and 5 minutes. Also either regular or irregular rhythms were used.

Another student in the study, A. was a very shy and introverted boy who was 8 years old. He is the second student of the music therapy group. He was also diagnosed with ADHD. In the first sessions he was not talking to other students in the group therapy and was not even trying to express himself. In the late sessions, however, he started to express himself and started to behave more participative. Because of rhythm activities were very hard for him, these samples were used in a simpler way. In the next sessions it was observed that he had got used to these implications and his attention span increased to 5, sometimes 6 minutes and for 5 repetitions.

E. was 8 years old. She was calmer and more mature than other children in group music therapy. She was the only female student and the only student who was not taking any medicines. The reason she was not taking any medicine was because her parents did not accept their child's ADHD diagnosis. The activities with her were started from 2 minutes and 4 repeats yet in the next sessions these samples continued as 3, 4 and 5 minutes and 5 repetitions and I used especially irregular rhythm activities with words.

Y. (8) participated in the sessions two weeks later. His hyperactivity was more dominant among his other symptoms. According to his teachers and parents, he was quite hyper and was constantly running among the desks during lessons. Although he was very shy, in the next sessions he got more sociable during the group music therapy sessions. The activities with him were started from 2 minutes and 4 repetitions but afterwards these activities increased to 3, 4 and 5 minutes and 5 repeats.

These children were also made group music therapies with which continued for nearly 40 or 45 minutes. «*Music can also be used to organize behavior when working with a group of children, by having them walk or otherwise move to the rhythm of the music* » (Shore: 203; 121,122). In these sessions it was observed that the children waited for each other's turns and that they became more participative and compatible. They shared the Orff instruments with each other. All these developments were very important for both the children and the researcher.

Another student in this study, A. (9) has an ASD and attention deficit disorder. His parents were lecturers and his father participated in every session with him.

A. could not make eye contact when he was met with for the first time and he could not say «I» or «you», similar to other children with Autism. In the study it was aimed for him to be able to speak these sentences and use his fine and gross motor skills. Therefore many various irregular rhythm practices were used in this regard. They were also used, for he paid more attention to these practices.

A. was very interested in Orff instruments, especially in maraca. In the 3rd session he started to do the irregular rhythm practices successfully. Another problem of his was that he did not have efficient motor skills, especially fine motor coordination and skills. To improve his coordination and skills, many musical games and we used many various irregular rhythm implications were frequently played. In the 4th session it was started to use various diction activities and it was observed that these activities very beneficial for him.

Finest detail of this study was that he sat on the researcher's lap suddenly on the 5th session at his own will, which shows that he expanded his comfort zone. He was not making physical contact with anyone except his father before.

It was observed that on implications with regular rhythms, children could lose attention but on irregular rhythms children pay more attention and they become able to focus on their activities because the irregular rhythms are rather complex. When their parents and teachers were talked to about their children after doing studies with the children for over 9 months; they said the children's attention span expanded and their academic success improved and they became more sociable and participant.

III. CONCLUSION

A playground was used in the study of Kern (2006) which was done with four male children who were receiving education in different classrooms and between the ages of 3 to 5 and were diagnosed with autism. Inside this playground there were tools like jumping and sliding structures, three sandboxes, a wooden house and various instruments. Kern's purpose was primarily, to develop the peer developments of the children. As a result of the study, it was observed that the children had not shown a significant social interaction in the games they were playing on their own, and that their attention to sounds and instrument using possibilities significantly increased on group activities. In this study it has also been observed that the self-confidences of the children had improved in especially group music therapy and they expressed themselves easily and socialized. In that regard,

it had achieved the same results as Kern's study. In the study of yet another person who made implementations on this field Shore (2003) where he studied children with autism, and some who were diagnosed with both autism and Asperger Syndrome; Shore used percussion instruments with one of the students and piano with another. According to Shore who stated he achieved important results at the end of his study, the children became capable of communicating with their therapists and to be able to repeat the implementations their therapists are making. In the study of Rickson (2006) which he implemented to one control group and two experimental groups, various rhythmic samples had been implemented by making 13 children between the ages of 11 to 16 play them. After the greeting song, constructed rhythmic practices had been made. In order to do this, the student was asked to pick an instrument and 8 measures of 4/4 samples had been implemented by the student with the therapist's guidance. The next step is the improvisation step. At the end of this study it was stated that these implementations contribute to the decrease of ADHD symptoms inside the classroom and these implementations can be suggested. The study that were implemented by Kim et al. (2009) was done with 10 children between the ages 3 to 5 and have autism diagnosis and who had not received music therapy or play therapy before. At the end of the study it had been observed that the children who received improvised music therapy responded more compatible to the implementation than the children in the play therapy.

As a result of this study, various music therapies that had been implemented on children who were diagnosed with ADHD and/or ASD had made positive outcomes and the attention span of the children had significantly increased and developed the interactions positively. As a result, the especially the irregular rhythm implementations drew the attention of the children more and caused their attention spans to increase, and their impulsivity and hyperactivity to decrease. Besides that children with ADHD and/or Autism do not have any boundaries. In these studies which are with irregular rhythm implications, it was aimed that «the disorder within the order» has been taught to them through these activities.

REFERENCES

- [1]. SCHLACK, R., HÖLLING, H., KURTH, B.M., HUSS, M. (2007): Die Prävalenz der Aufmerksamkeitsdefizit-/Hyperaktivitätsstörung (ADHS) bei Kindern und Jugendlichen in Deutschland, Erste Ergebnisse aus dem Kinder- und Jugendgesundheitsurvey (KiGGS), Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz, May 2007, Volume 50, Issue 5-6, pp 827-835 (Date of Access: 14.07.2018) <https://link.springer.com/content/pdf/10.1007%2Fs00103-007-0246-2.pdf>
- [2]. RICKSON, D. J. (2006): Instructional and Improvisational Models of Music Therapy with Adolescents Who Have Attention Deficit Hyperactivity Disorder (ADHD): A Comparison of the Effects on Motor Impulsivity, *Journal of Music Therapy*, XLIII (1), 2006, 39-62. (Date of Access: 14.07.2018)
- [3]. SHORE, S.M. (2003): The Language of Music: Working with Children on the Autism Spectrum, *Journal of Education* • Volume 183, pp. 113-125 (Date of Access: 14.07.2018) <http://journals.sagepub.com/doi/pdf/10.1177/002205740218300209>
- [4]. JAMES, R., SIGAFOOS, J., & GREEN, V.A., & LANCIONI, G.E. & O'REILLY, M.F., & LANG, R. & DAVIS, T. & CARNETT, A. & ACHMADI D. & GEVARTER, C. & MARSCHIK, P.B. (2015): Music Therapy for Individuals with Autism Spectrum Disorder: a Systematic Review, *Journal of Autism Developmental Disorder* (2015) 2: pp. 39-54 (Date of Access: 14.07.2018) <https://link.springer.com/content/pdf/10.1007%2Fs40489-014-0035-4.pdf>
- [5]. GREEN, V. A., PITUCH, K.A., ITCHON, J. CHOI, A., O'REILLY, M., SIGAFOOS, J. (2006): Internet survey of treatments used by parents of children with autism, *Research in Developmental Disabilities*, Volume 27, Issue 1, January-February 2006, pp. 70-84 (Date of Access: 14.07.2018) <http://www.cis.edu.rs/wp-content/uploads/2015/03/Internet-survey-of-treatments-used-by-parents-of-children-with-autism.pdf>
- [6]. RESCHKE-HERNANDEZ, A.E. (2011): History of Music Therapy Treatment Interventions for Children with Autism, *Journal of Music Therapy*, Volume 48, Issue 2, 1 July 2011, pp. 169-207, <https://doi.org/10.1093/jmt/48.2.169> (Date of Access: 14.07.2018)
- [7]. AMERICAN PSYCHIATRIC ASSOCIATION (2013): Diagnostic and Statistical manual of mental disorders (5th Edition), Washington, DC: Author
- [8]. THOMPSON, R. & MILLER, N.J (2013): ADHD cognitive symptoms, genetics and treatment outcomes, Nova Biomedical Publishers, New York. (Date of Access: 14.07.2018)
- [9]. THOMPSON, R. (2009): Music, thought and feeling: Understanding the Psychology of Music, Oxford University Press.
- [10]. AK, A.Ş. (2006): Avrupa ve Türk-İslam Medeniyetinde Müzikle Tedavi, Tarihi Gelişimi ve Uygulamaları, Ötüken Neşriyat, Genişletilmiş II. Baskı, Yayın Nu: 669, Kültür Serisi: 323, İstanbul.
- [11]. BRUSCIA, K.E. (2016): Müzik Terapiyi Tanımlamak Defining Music Therapy, Nobel Yaşam, Çeviri Editörü: Doç. Dr. Burçin Uçaner Çift dalöz, 3. Basımdan Çeviri, Ankara.

- [12]. VENUTI,P., CARIA, A., ESPOSITO, G., DE PISAPIA, N., BORNSTEIN, M.H., DE FALCO, S. (2012): Differential brain responses to cries of infants with autistic disorder and typical development: An fMRI study, *Research in Developmental Disabilities* 33 (2012) pp.2255–2264<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3496246/> (Date of Access:14.07.2018)
- [13]. STIGE, B.(2012): *Elaborations Toward a Notion of Community Music Therapy*, Barcelona Publishers.
- [14]. ANSDELL, G.(2003): The Stories We tell: Some Meta-Theoretical Reflections on Music Therapy, *Nordic Journal of Music Therapy*, 12(2),pp.152-159.(Date of Access:14.07.2018)
- [15]. KIM, J., WIGRAM, T., GOLD, C.(2009): Emotional,motivational and interpersonal responsiveness of children with autism in improvisational music therapy, SAGE Publications and the National Autistic Society, Vol 13 (4), pp.389-409.(Date of Access:14.07.2018)
- [16]. FORINASH, M.(1992): A Phenomenological Analysis of Nordoff-Robbins Approach to Music Therapy: The Lived Experience of Clinical Improvisation, *Music Therapy*, Volume 11, Issue 1, 1 January 1992, pp.120–141(Date of Access:14.07.2018)
- [17]. WIGRAM, T.,SAPERSTON, B.& WEST, R.(1995): *The Art and Science of Music Therapy: A handbook*, Routledge Taylor & Francis Group, New York.
- [18]. WIGRAM, T. (1999) Assessment methods in music therapy: a humanistic or natural science framework? *Nordic Journal of Music Therapy*, 8, pp.6–24(Date of Access:14.07.2018)
- [19]. PRIZANT, B.M.(1996): Brief Report: Communication, Language, Social, and Emotional Development, *Journal of Autism and Developmental Disorders*, Vol.26, No.2, 173- 178
- [20]. WIGRAM, T., GOLD, C.(2006): Music therapy in the assessment and treatment of autistic spectrum disorder: clinical application and research evidence, *Child: care, health and development*,32,5,pp.535-542<http://www.brainisohertz.it/p/nuovi2/Musicoterapia%20ed%20Autismo.pdf> (Date of Access:14.07.2018)
- [21]. KIM, J., WIGRAM, T., GOLD, C.(2008): The Effects of Improvisational Music Therapy on Joint Attention Behaviors in Autistic Children: A Randomized Controlled Study,*Journal of Autism Developmental Disorders*, 38:pp.1758–1766<http://upload-community.kipa.co.il/1231201318791.pdf>(Date of Access:14.07.2018)
- [22]. GATTINO, G.S, RIESGO, R.D.S, LONGO, D., LEITE, J.C.L., FACCINI,L.S.(2011): Effects of relational music therapy on communication of children with autism: a randomized controlled study. *Nordic Journal Music Therapy*, Vol.20, No:2, pp. 142-154. https://www.researchgate.net/profile/Julio_Cesar_Leite/publication/233139999_Effects_of_relational_music_therapy_on_communication_of_children_with_autism_A_randomized_controlled_study/links/5ab0d9f2a6fdcc1bc0be753c/Effects-of-relational-music-therapy-on-communication-of-children-with-autism-A-randomized-controlled-study.pdf (Date of Access:14.07.2018)
- [23]. MERLE-FISHMAN C.R., MARCUS, M.L. (1982): Musical Behaviors and Preferences in Emotionally Disturbed and Normal Children: AnExploratory Study, *Music Therapy*, 2 (1), pp.1-11https://watermark.silverchair.com/2-1-1.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAAagwggGkBgkqhkiG9w0BBwagggGVMIIBkQIBADCCAYoGCSqGSIB3DQEHATAeBglghkgBZQMEAS4wEQQMVTczPGVHlc9bKp8DAgEQgIIBWyuar08v9KokS7RUV1z-q6ESVWYUhp94CJn2pM2Nyb9-UKQFVpKqbgQ28RriEyqKnU4qIaDgmXjkrM8ma9h20Nd02dnCj0nvyJPlhoDG53a-rjqHHQm7aMSjT8p_IgGyJ3g_rAfmQo2TvshARMsyfGdqgFoKDbU5-aAGBSuxRHaQfE6kn4yi3-cH9EWMJaxCd5T8Uhx92q7Bsx09ue7GbbGptDTteeAhbP_3LOnGgqn2mqC2NYZV6pheqL2Eya67Tg7GRZ2cVhMs8a8nwyugakM96e5vmKP7iu3OMtliRmp3ge74VCoyy9e_tutu2JCD5N11U3qy_QPQXldm6NTtxUwqUNmaBncZnlmDiZs7cVRpU8bWtadCoNDTMuqi2vcxJ91mlv-pep0MYc52NwPHa82CuC4Y3KYK_zIs92sK_oJV_Mh_aAjKfic_CmlYp_DvbYAxWiKbNlwdxOf (Date of Access:14.07.2018)
- [24]. VINCENT,S: (2017): Music Therapy for Autism Is a Promising Treatment, Shows a Controlled Study, February 15, 2017, <https://www.emaxhealth.com/13644/music-therapy-autism-promising-treatment?>(Date of Access:14.07.2018)
- [25]. KERN, P.,ALDRIDGE,D. (2006): Using Embedded Music Therapy Interventions to Support Outdoor Play of Young Children with Autism in an Inclusive Community-Based Child Care Program, *Journal of Music Therapy*, Volume 43, Issue 4, 1 December 2006, pp.270–294.(Date of Access:14.07.2018)
- [26]. AUSTRALIAN MUSIC THERAPY ASSOCIATION (2012): *Music Therapy*, Australian Music Therapy Association. Retrieved from www.austmta.org.au(Date of Access:14.07.2018)
- [27]. RICKSON,D.J., CASTELINO, A., MOLYNEUX, C., RIDLEY, H., UPJOHN-BEATSON, E.(2016): What evidence? Designing a mixed methods study to investigate music therapy with children who have autism spectrum disorder (ASD), in *New Zealand contexts, The Arts in Psychotherapy*,Volume 50, September 2016, pp. 119-125 (Date of Access:14.07.2018)

- [28]. GUERRERO, N., HUMMEL-ROSSI, B., TURRY, A., EISENBERG, N., SELIM, N., BIMBAUM, J., MARCUS, D., & RITHOLZ, M. (2014): Music Therapy Communication and Social Interaction Scale – Group
- [29]. AIGEN, K. (2005): Being in Music: Foundations of Nordoff-Robbins Music Therapy, The Nordoff-Robbins Music Therapy Monograph Series, Volume One, Barcelona Publishers
- [30]. NORDOFF, P. & ROBBINS, C. (1977): Creative music therapy. New York: Harper & Row.
- [31]. NORDOFF, P. & ROBBINS, C. (2007). Creative music therapy: A guide to fostering clinical musicianship (2nd ed.). Gilsum, NH: Barcelona
- [32]. BELL, A.P., PERRY R., PENG, M., MILLER, A.J. (2014): The Music Therapy Communication and Social Interaction Scale (MTCISI): Developing a New Nordoff-Robbins Scale and Examining Interrater Reliability, Music Therapy Perspectives, 32(1), 2014, pp.61-70 https://www.researchgate.net/profile/Adam_Bell8/publication/275144327_The_Music_Therapy_Communication_and_Social_Interaction_Scale_MTCISI_Developing_a_New_Nordoff-Robbins_Scale_and_Examining_Interrater_Reliability/links/5676bcd108ae0ad265c593ab.pdf (Date of Access: 14.07.2018)
- [33]. SANJIV, K. (2004): Examining Brain Connectivity in ADHD, Psychiatric Times, 1. Jan. 2004, p.40 (Date of Access: 14.07.2018)
- [34]. TANNOCK, R. (1998). Attention Deficit Hyperactivity Disorder: Advances in Cognitive, Neurobiological, and Genetic Research. The Journal of Child Psychology and Psychiatry and Allied Disciplines, 39(1), 65-99. (Date of Access: 14.07.2018)

Prof. Dr. Ömür Bütev Dolğun. "Music Therapy In Adhd And Autism." IOSR Journal Of Humanities And Social Science (IOSR-JHSS). vol. 23 no. 07, 2018, pp. 90-96.