

# Profiles of the Most Preferred and the Most Effective Music Therapy Approaches being Utilized with Children with Autism Spectrum Disorders According to the Opinions of Music Therapists in the U.S.<sup>1</sup>

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## Abstract

The purpose of this study was to identify and analyze opinions of music therapists practicing in the United States, regarding various music therapy approaches currently being utilized with children diagnosed with Autism Spectrum Disorder. Music therapy approaches were analyzed for possible correlations between music therapists' preferences, and opinions regarding the effectiveness of music therapy approaches for the use with children with Autism Spectrum Disorder. Results showed that Behavioral Approach, Sensory Integration Approach to Music Therapy and Creative Music Therapy were found as most preferred and most effective music therapy approaches. Although Behavioral Approach was the primary preference of music therapists; Sensory Integration Approach was reported as the most effective approach for the use with children with Autism Spectrum Disorder. The future research about these approaches are needed and recommended.

**Keywords:** Autism Spectrum Disorder, Music Therapy Approaches, Behavioral Approach, Sensory Integration Approach, Creative Music Therapy

## 1. Introduction

Autism as a distinct developmental disorder was first identified by Kanner (1943). He described a group of children who were relatively normal in physical appearance but who exhibited severely disturbed behavior patterns that included extreme social aloofness and aloneness, lack of emotional responsiveness, avoidance of eye contact, failure to respond to sensory stimulation, lack of language development or failure to use language adequately for communication, excessive attachment to objects, and preoccupation with ritualistic, repetitive, and obsessive behaviors.

The Center for Disease Control and Prevention (CDC) estimates that one in 68 children in the United States has an autism spectrum disorder, or ASD. The latest estimate is roughly 30 percent higher than the CDC's previous measure, released in 2012, which found that 1 in 88 children had autism, based on health and education records (Pearson, 2014). ASD, is a neurological disorder that affects brain function, causing a lifelong developmental disability (Autism Society of America, 1995; Schmidt Peters, 2000).

Although the concept of ASD has become more familiar in the last few decades, important questions remain about the most accurate and efficient procedures for diagnosis, the increase in prevalence, and the best treatments (Lord, & Bishop, 2010). Even though there is no certain cure for ASD, research shows that early diagnosis followed by individualized intervention can significantly improve children's ability to function well and live meaningful lives (NRC, 2001).

Of all the various interventions and techniques utilized for treatment and education of ASD, music therapy is recommended as a treatment utilized with children with ASD (Del Olmo, 1998; Grandhin, & Scarino, 1986; Schmidt Peters, 2000). Multiple studies exist regarding the efficiency of music therapy for children with ASD. According to these studies, music therapy has been deemed as an effective treatment model for children with ASD (Brownell, 2002; Buday, 1995; Crowe, 2011; Edgerton, 1994; Eren, Deniz, & Duzkantar, 2013; Hardy, & LaGlasse, 2013; Kalas, 2012; Katagiri, 2009; Kern, & Aldrigde, 2006; Lim, & Draper, 2011).

Music therapy is difficult to define due to its many different interdisciplinary components. There are disciplines associated with "music" and there are also disciplines associated with "therapy" (Bruscia, 1998). Results of this interdisciplinary structure inherent in music therapy have created a wide variety in approaches to practicing music therapy and it is important to discern the differences and commonalities of various music therapy approaches.

For this research, in order to avoid any linguistic confusion about terminology, the term "approach" was selected to represent other similar terms currently found in music therapy profession, such as "school," "method," "model," and "technique" (Anthony, 1963; Bruscia, 1998). In current music therapy literature, a

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variety of music therapy approaches were identified by different authors (Darrow, 2007; Dileo- Maranto, 1993; Kern, & Humpal, 2013; Schmidt Peters, 2000; Wigram, Peterson, & Bonde, 2002).

Although music therapy approaches may emphasize different types of music experiences, and use different terminology or structure; the common basic principle of all these approaches to music therapy is to enhance the quality of life of individuals.

For the education and treatment of children with ASD, the majority of music therapy literature and research recommends highly-structured music therapy approaches (Brownell, 2002; Eren, Deniz & Duzkantar, 2013; Katagiri, 2009; Lim, & Drapper, 2011; Mahlberg, 1973; Staum, & Flowers, 1984; Watson, 1979). However, there are also studies in which creative and improvisational approaches are reported as effective (Alvin, 1978; Alvin & Warwick, 1991; Boxill, 1985; Edgerton, 1994; Kern, 2013; Kim, Wigram, & Gold, 2008; Nordoff & Robbins, 1968, 1971, 1977; Saperston, 1973).

For this research, 17 music therapy approaches were identified to examine according to related literature (Darrow, 2007; Wigram, Peterson, & Bonde, 2002). Nevertheless, since it is not the purpose of this study, not all music therapy approaches listed below are detailly profiled. Only three -most preferred- and -most effective- approaches will be introduced and profiled as the result of the survey.

These approaches has been listed as followed with abbreviations that will be used:

	<b>Music Therapy Approaches</b>	<b>Abbreviations</b>
1	The Orff Approach to Music Therapy	OMT
2	The Kodaly Approach to Music Therapy	KMT
3	The Dalcroze Approach to Music Therapy	DMT
4	Kindermusik and Music Therapy	KinMT
5	Guided Imagery and Music of Bonny	GIM
6	Creative Music Therapy (Nordoff-Robbins)	CMT
7	Psychodynamic Approach to Music Therapy	PMT
8	Behavioral Approach to Music Therapy	BMT
9	Music Therapy in Wellness	MTW
10	Neurologic Music Therapy	NMT
11	Biomedical Music Therapy	BioMT
12	Sensory Integration Approach to Music Therapy	SIMT
13	Analytical Music Therapy (Priestley)	AMT
14	Improvisational Music Therapy (Alvin)	IMT
15	Developmental Music Therapy	DevMT
16	Social Stories in Music Therapy	SSMT
17	Drum Circle-Drumming Protocols	DCDP

### 1.1. Problem Statement

Within the music therapy approaches being utilized in the music therapy profession, not all of them are appropriate to utilize with children with A.S.D. Among the accesible resources, no other study is found which clarifies the most preferred and most effective approaches being utilized with the children with A.S.D. Therefore it is considered important to ask music therapists who currently work with children with A.S.D. about their preferences and opinions regarding the effectiveness of music therapy approaches that they utilize with their patients. After disclosing their preferences and opinions regarding the effectiveness of music therapy approaches, the top three music therapy approaches being utilized with children with A.S.D. are profiled and identified.

### 1.2. Research Questions

In order to identify current tendencies within the selected music therapy approaches for this study, opinions of music therapists who work/have worked with children with ASD were researched. The following research questions were formulated:

1. What are the opinions of music therapists regarding their level of knowledge of various music therapy approaches?
2. What are the preferences of music therapists regarding various music therapy approaches being utilized with children with ASD?
3. What are the opinions of music therapists regarding the effectiveness of various music therapy approaches being utilized with children with ASD?
4. What are the profiles of the three most preferred and effective music therapy approaches for children with ASD according to correlations between music therapists' preferences and opinions regarding the effectiveness of various music therapy approaches?

### *1.3. Purpose of the Study*

The purpose of this study was to analyze the level of knowledge, preferences and opinions of music therapists about the effectiveness of music therapy approaches. In addition to this, whether there is any correlation between preferences and opinions about the effectiveness of music therapists about various music therapy approaches being utilized with children with ASD was investigated.

In the accessible literature available for reviewing, very little research exists that clarifies music therapy approaches which are preferred and found effective by the professionals for the use with children with ASD. There is also no concise list of music therapy approaches offered by American Music Therapy Association (AMTA) to utilize commonly with children with ASD. Considering the increasing number of children with ASD, the need to provide the most effective treatment and/or education for this population is crucial. With a better understanding of the efficacy of music therapy approaches, children with ASD can experience the full benefits of music therapy.

### *1.4. Assumptions and Limitations of the Study*

In this study, it is assumed that survey participants represent the general board-certified music therapist population in the United States. In addition, it is assumed that music therapists are eligible to make fair assessments and an honest declaration of their opinions regarding the level of knowledge, preferences and effectiveness of music therapy approaches.

This study was limited to music therapists who identified themselves board certified (MT-BC) and have worked before/work currently with children with ASD.

This research focuses only on the “opinions” of music therapists regarding the level of knowledge, preference and effectiveness of various music therapy approaches.

Profiling process of this research focuses only top three music therapy approaches that have been preferred and found the most effective by the music therapists for children with A.S.D.

## **2. Method**

### *2.1. Research Design*

Descriptive method was utilized in this study. Descriptive research does not neatly fit into the definition of either quantitative or qualitative research methodologies. The term descriptive research refers to the type of research question, design and data analysis, that will be applied to a given topic (Knupfer & McLellan, 1996). Descriptive studies are aimed at finding out “what is,” so observational and survey methods are frequently used to collect descriptive data (Borg & Gall, 1989).

Music therapy literature and research were reviewed and an online survey was prepared to identify the opinions of music therapists regarding various music therapy approaches being utilized with children with ASD in the United States. The data was collected, evaluated and correlation analysis were conducted to examine the relationships between the components, and findings were discussed.

### *2.2. Participants*

The participants of this study consisted of professional board-certified music therapists who have worked before/work currently with children with ASD in the U.S. After approval by Institutional Review Board (IRB), a list of e-mails of board-certified music therapists (N=5,383) was supplied by Certification Board for Music Therapists (CBMT).

### *2.3. Materials*

Materials for this research were as following: (a) Survey questionnaire containing 4 categories: (1) *Demographics* (state, gender, age, ethnicity, education degree, major of undergraduate/graduate education, number of years practicing in music therapy), (2) The opinions of music therapists regarding the *level of knowledge* of various music therapy approaches, (3) The *preferences* of music therapists regarding various music therapy approaches to utilize with children with ASD, and (4) The opinions of music therapists regarding the *effectiveness* of various music therapy approaches to utilize with children with ASD.

The response options consisted of multiple choice, ranking and 5-point Likert scale. Levels of 5-point Likert scale regarding each components are shown in Table 1. (b) An e-mail list of the board-certified music therapists purchased from CBMT; (c) Access to the internet and an online survey administration company Survey Planet ([www.surveyplanet.com](http://www.surveyplanet.com)); (d) secure personal computer with Microsoft Word, Microsoft Excel and SPSS Statistic 17 software.

**Table 1.** 5-Point Likert Scale Rating System for Each Components

Components	5-Point Likert Scale (Least-to-Most)				
	1	2	3	4	5
<b>Knowledge</b>	No idea	Very little	Somehow	Quiet	In depth
<b>Preference</b>	Never	Rarely	Sometimes	Often	Always
<b>Effectiveness</b>	Not	Slightly	Somewhat	Very	Extremely

**2.4. Procedure**

An online survey including 4 different categories was prepared. All e-mail addresses in the list (N=5,383) were sent a survey invitation with the survey link from the e-mail address of the researcher. In the invitation e-mail, an informative message about the purpose of the study and the web link of the online survey was presented to the board-certified music therapists in which they were also informed that their participation in and completion of the survey was their implied consent. The completion time for the survey was stated as about 20 minutes. Participants were reminded of the existence of the online survey after a 2-week period from the first invitation in an attempt to increase number of respondents. 2 weeks after the reminder e-mail, the survey was ended.

**2.5. Ethical Considerations**

The identities of participants were kept anonymous via the online administration of the survey. No identifying information was stored, and the researcher only had access to aggregated data.

**2.6. Analysis**

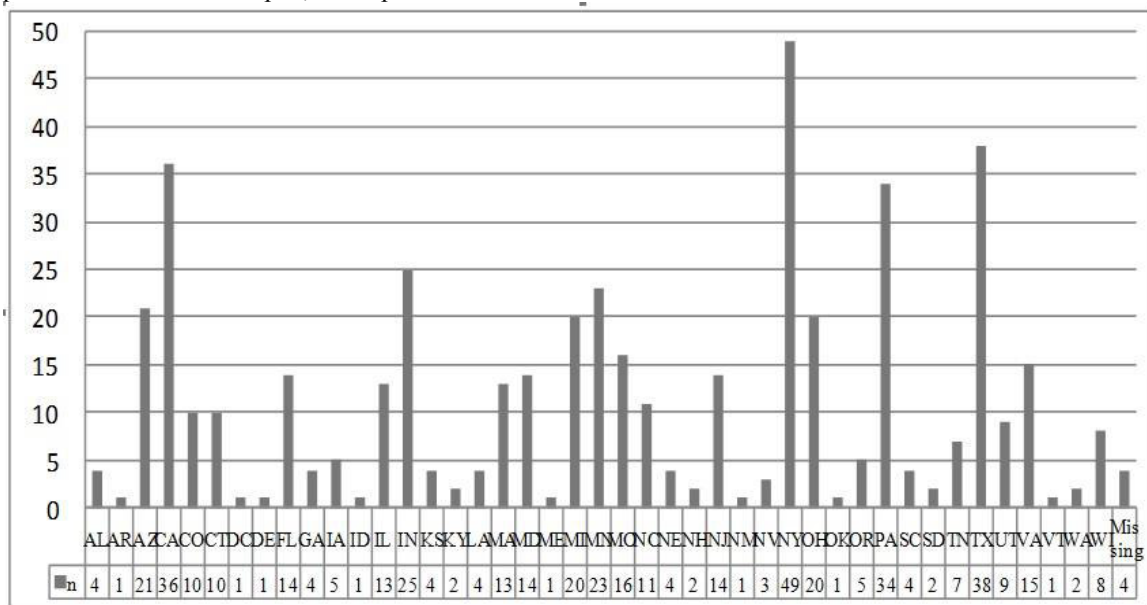
At the end of deadline, collected survey responses were exported in Excel format from Survey Planet and uploaded into SPSS 17.0 for data analysis in descriptive statistics and correlations. In descriptive statistics, while frequencies and percentages were calculated, mean scores were also considered. Besides descriptive statistics, bivariate correlation (Pearson-r) was used to identify whether there was a correlation between level of knowledge, preference and effectiveness components. After an overview regarding the results of all 17 approaches for each component, the first three most preferred and effective music therapy approaches according to opinions of music therapists were focused and analyzed in this research paper.

**3. Results**

The survey invitation e-mail was sent to the 5,383 potential participants. 513 respondents (9.53% response rate) answered the survey. Of the 513 respondents, 477 music therapists declared that they have worked before/work currently with children with ASD.

**3.1. Demographics**

The demographic information of the music therapists which responded to the survey is presented in this section. The states they perform the profession, gender, age range, ethnicity, degree of education, number of years in practice as a music therapist, are exposed.



**Figure 1.** Number of the Respondents According to the States

Music therapists from 43 states replied to the survey. The highest responses identified as follows: New York (49), Texas (38), California (36), Pennsylvania (34), Indiana (25), Minnesota (23), Arizona (21), Michigan (20), and Ohio (20) respondents. The location of respondents can be found in Figure 1.

**Table 2. Age Range**

Category	N	%
20-25	56	11,7
26-30	131	27,5
31-35	83	17,4
36-40	47	9,9
41-45	36	7,5
46-50	25	5,2
50-above	99	20,8
<b>Total</b>	<b>477</b>	<b>100</b>

**Table 3. Ethnicity**

Category	N	%
Black/Afro-American	9	1,9
White/Caucasians	429	89,9
Native American	2	0,4
Asian	15	3,1
Hispanic	13	2,7
Other	9	1,9
<b>Total</b>	<b>477</b>	<b>100</b>

Of the 477 respondents, 437 (91.6 %) were female and 40 (8.4%) were male. The largest proportion of respondents (27.5 %) reported an age range of 26-30 years, followed by the age range of 50 years and above (20.8%), and 31-35 years (17.5%). A complete list of respondent age ranges is shown in Table 2. Regarding ethnicity, the dominant ethnic group was White/Caucasian (89.9 %), followed by Asian (3.1%), and Hispanic (2.7%). Ethnicity results are shown in Table 3.

**Table 4. Degree of Education**

Category	N	%
Baccalaureate	200	41,9
Equivalency	21	4,4
Master	224	47,0
Doctorate	21	4,4
Still studying in a Graduate Program	11	2,3
<b>Total</b>	<b>477</b>	<b>100</b>

**Table 5. Practicing Music Therapy**

Category	N	%
Less than 1 year	59	12,4
1-5 years	148	31,0
6-10 years	105	22,0
11-15 years	51	10,7
16-20 years	28	5,9
More than 20 years	86	18,0
<b>Total</b>	<b>477</b>	<b>100</b>

51.4% of respondents reported holding graduate degree (master or doctorate). The level of education of respondents is listed in Table 4. The percentage of respondents who reported working as music therapist for 'less than 10 years' was 65.4%. 16.6% of respondents have been working for 11 to 20 years, and 18% of them have been working for more than 20 years. The number of years practicing music therapy is shown in Table 5.

### 3.2. Opinions of Music Therapists Regarding Music Therapy Approaches

Opinions of music therapists regarding music therapy approaches are presented in this section which involves the level of knowledge of the music therapists regarding various music therapy approaches, their preferences and opinions regarding the effectiveness of those approaches.

### 3.2.1. The Level of Knowledge of Music Therapists Regarding Various Music Therapy Approaches

The level of knowledge of music therapists regarding various music therapy approaches are listed in this section.

**Table 6.** The Level of Knowledge of Music Therapists Regarding Various Music Therapy Approaches

Approaches	OMT	DMT	KMT	KinMT	GIM	CMT	PMT	BMT	MTW	NMT	BioMT	SIMT	AMT	IMT	DevMT	SSMT	DCDP
N	47 4	46 9	47 1	46 7	47 0	46 9	46 8	47 0	47 3	46 5	46 8	46 6	46 3	46 9	46 9	47 0	47 0
Missing	3	8	6	10	7	8	9	7	4	12	9	11	14	8	8	7	7
Mean	2,9 8	1,9 5	2,2 2	2,2 8	3,2 1	3,5 2	3,2 1	3,9 4	3,0 1	2,9 8	2,5 1	2,8 5	2,3 3	2,9 9	3,1 4	2,5 8	3,3 3

According to mean coefficients of the level of knowledge of music therapists, top 3 music therapy approaches were ranked in order as follows: Behavioral Approach to Music Therapy ( $\mu=3.94$ ), Creative Music Therapy ( $\mu=3.52$ ), Drum Circle-Drumming Protocols ( $\mu=3.33$ ). The complete list of level of knowledge of music therapists regarding music therapy approaches is shown in Table 6.

### 3.2.2. Top Preferences of Music Therapy Approaches

The preferences of music therapists regarding various music therapy approaches are listed in this section.

**Table 7.** The Preferences of Music Therapists Regarding Various Music Therapy Approaches

Approaches	OMT	DMT	KMT	KinMT	GIM	CMT	PMT	BMT	MTW	NMT	BioMT	SIMT	AMT	IMT	DevMT	SSMT	DCDP
N	41 9	40 3	40 0	40 7	40 2	43 9	40 7	44 2	39 8	40 5	39 2	43 4	39 6	42 5	41 8	41 3	42 4
Missing	58	74	77	70	75	38	70	35	79	72	85	43	81	52	59	64	53
Mean	2,4 7	1,5 4	1,5 4	1,7 1	1,2 0	3,2 9	1,7 9	3,7 9	1,8 9	2,4 5	1,4 7	3,4 6	1,3 6	3,0 5	3,1 3	2,8 3	2,7 1

According to mean coefficients, the three most preferred music therapy approaches to utilize with children with ASD were Behavioral Approach to Music Therapy ( $\mu=3.79$ ), Sensory Integration Approach to Music Therapy ( $\mu=3.46$ ), Creative Music Therapy ( $\mu=3.29$ ). A complete list of preferences is shown in Table 7.

### 3.2.3. The Opinions Regarding Effectiveness of Music Therapy Approaches

The opinions of the music therapists regarding the effectiveness of various music therapy approaches are listed in this section.

**Table 8.** The Opinions Regarding Effectiveness of Music Therapists Regarding Various Music Therapy Approaches

Approaches	OMT	DMT	KMT	KinMT	GIM	CMT	PMT	BMT	MTW	NMT	BioMT	SIMT	AMT	IMT	DevMT	SSMT	DCDP
N	29 5	17 1	18 0	21 0	21 8	34 4	25 4	36 7	23 7	28 3	19 7	33 4	18 8	30 1	30 7	32 4	28 9
Missing	18 2	30 6	29 7	26 7	25 9	13 3	22 3	11 0	24 0	19 4	28 0	14 3	28 9	17 6	17 0	15 3	18 8
Mean	3,3 1	2,6 4	2,5 5	2,8 0	1,5 9	4,1 7	2,4 2	4,0 8	2,6 3	3,4 0	2,3 8	4,2 0	2,0 4	3,9 1	3,8 0	3,3 4	3,9 5

According to mean coefficients, the three most effective music therapy approaches per opinions of music therapists were Sensory Integration Approach to Music Therapy ( $\mu=4.20$ ), Creative Music Therapy ( $\mu=4.17$ ), Behavioral Approach to Music Therapy ( $\mu=4.08$ ). A complete list of opinions regarding the effectiveness of music therapy approaches is shown in Table 8.



### 3.3. Profiles of the Most Preferred and Most Effective Music Therapy Approaches According to Opinions of Music Therapists

Even though the profiles of all 17 approaches were analyzed, only the top 3 approaches -within the list of preferences and within the list of opinions regarding the effectiveness- were considered in the detailed explanation of the study.

After a brief description, the frequencies of preference and the opinions regarding the effectiveness of the addressed approach are presented. In addition to this, correlated approaches are shown in this section.

#### 3.3.1. Profile of Behavioral Approach to Music Therapy (BMT)

*Behavioral Approach to Music Therapy* is considered as the use of behavioral techniques such as; stimulus-response, task analysis, prompting, errorless learning, chaining, shaping and successive approximation, modeling, reinforcement, extinction, response cost, time out etc., in the process of music therapy. This approach is based on the Behaviorism which focuses on observable behaviors, not underlying processes (Stanley, Johnson, Robb, Brownell & Kim, 2004; Schmidt-Peters, 2000). Behaviorism is based on the theories and work of Pavlov, Watson, Thorndike, Skinner, Wolpe, and Bandura (Schmidt-Peters, 2000, Wilson, 2000). Therapists who work from a behavioral orientation carefully observe a client's behaviors and target specific undesirable behaviors for change. Treatment uses operant or classical conditioning techniques employing various types of reinforcers to increase more appropriate or adaptive behaviors and responses (Schmidt-Peters, 2000). In behavioral approaches, the therapist assumes an active and directive role, structuring the environment and providing rewards and consequences to help the client achieve the desired changes (Scovel, 1990). Music is considered as a strong stimulus, a powerful motivator, a positive reinforcement, and a desirable reward to create or maintain appropriate behaviors (Schmidt-Peters, 2000). Therefore, behavioral approach and music therapy can create good teamwork.

After the brief description of the behavioral approach to music therapy, the profile of this approach is presented as followed.

**Table 9.** Frequencies of Preferences and Opinions regarding the Effectiveness of BMT

Preference				Effectiveness		
	Category	n	%	Category	n	%
1	Never	28	6.3	Not Effective	11	3.0
2	Rarely	42	9.5	Slightly Effective	18	4.9
3	Sometimes	81	18.3	Somewhat Effective	59	16.1
4	Often	133	30.1	Very Effective	123	33.5
5	Always	158	35.7	Extremely Effective	156	42.5
<b>Total</b>		442	100	<b>Total</b>	367	100

Of the 442 respondents, 35.7% declared that they always prefer to utilize Behavioral Approach with children with ASD, followed by 30.1% stating that they often, and 18.3% citing that they sometimes utilize this approach with children with ASD. Of 367 respondents, 42.5% declared that they find Behavioral Approach to Music Therapy extremely effective, followed by 33.5% stating that they find very effective, and 16.1% citing that they find this approach somewhat effective to utilize with children with ASD. For complete results, see Table 9.

Note of interest, although Behavioral Approach was reported as the most preferred music therapy approach, per the opinions of music therapists regarding the effectiveness of this approach, it was identified as the third effective approach.

In addition to the frequencies of preferences and opinions the effectiveness of behavioral approach to music therapy, correlated approaches are exposed as following.

**Table 10.** Preferences and Opinions regarding Effectiveness of “Behavioral Approach to Music Therapy” and Its Correlation with Other Music Therapy Approaches

Approaches		Drum Circle- Drumming Protocols	Social Stories in Music Therapy	Developmental Music Therapy	Improvisational Music Therapy (Akin)	Analytical Music Therapy (Presley)	Sensory Integration Approach to Music Therapy	Biomedical Music Therapy	Neurologic Music Therapy (NMT)	Music Therapy in Wellness	Behavioral Approach to MT	Psychodynamic Approach to MT	Creative Music Therapy (Nordoff- Robbins)	Guided Imagery and Music (Bonny-GIM)	Kindermusik and Music Therapy The Kodaly	Approach to Music Therapy The Orff Approach to Music Therapy			
Preference	Behavioral Approach to Music Therapy	Pearson Correlation	.129**	.051	.098	.057	-.037	-.139**	-.071	1	.130**	.151**	.023	.172**	.063	-.003	.243**	.305**	.098*
		Sig. (2- tailed)	.009	.311	.051	.258	.467	.004	.156	.010	.002	.648	.000	.212	.954	.000	.000	.000	.046
		N	413	399	396	402	398	424	400	442	395	402	391	426	393	415	413	409	413
Effectiveness	Behavioral Approach to Music Therapy	Pearson Correlation	.252**	.274**	.293**	.350**	.035	-.067	-.058	1	.235**	.172**	.197*	.348**	.248**	.320**	.403**	.257**	.004
		Sig. (2- tailed)	.000	.001	.000	.000	.643	.246	.395	.001	.007	.013	.000	.002	.000	.000	.000	.000	.946
		n	252	138	145	176	182	304	215	367	200	244	159	301	152	276	275	281	251

\*\*Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

According to correlation results for the preference component; Behavioral Approach showed the strongest relationships with Social Stories in Music Therapy ( $r=0.305$ ;  $\alpha=0.01$ ), Developmental Music Therapy ( $r=0.243$ ;  $\alpha=0.01$ ), and Sensory Integration Approach ( $r=0.172$ ;  $\alpha=0.01$ ). According to correlation results for the effectiveness component; Behavioral Approach showed the strongest relationship with Developmental Music Therapy ( $r=0.403$ ;  $\alpha=0.01$ ), Kindermusik and Music Therapy ( $r=0.350$ ;  $\alpha=0.01$ ), and Sensory Integration Approach ( $r=0.348$ ;  $\alpha=0.01$ ). The complete list is shown in Table 10.

### 3.3.2. Profile of Sensory Integration Approach to Music Therapy (SIMT)

*Sensory Integration Approach to Music Therapy* is considered as the use of sensory integration techniques in the process of music therapy. Sensory integration is the system’s process of taking in and organizing billions of bits of uncoordinated sensory input which is actually the simultaneous stimulation of every major sensory system, all the time, non-stop! Therefore, the process of sensory integration involves sorting, logging, and assigning priority order to sensory information so that an “efficient” response to resolve a problem can be delivered (Berger, 2002). Music involves various elements such as; rhythm, melody, harmony, dynamics, timbre, texture and form; and the variations within each element (Berger, 2002; Schmidt-Jones, 2013; Levitin, 2006). By the means of its elements, music can be regarded as a multi-dimensional and multi-sensorial stimulus. These features of music make it suitable to associate with sensory integration techniques.

Music therapy treatment can be easily and effectively formulated for sensory integration goals. Interventions such as rhythm internalization, adaptive responses to environment of auditory and visual stimuli, auditory integration and discrimination, auditory-physical integration, motor planning, vestibular actions, body coordination in space, auditory-visual integration: see-hear sound, auditory-mental-physical coordination, pacing of body movement, sequencing, limit-setting and behavioral redirection, creativity, self-initiative and task organization, speech and language (Berger, 2002).

After the brief description of the sensory integration approach to music therapy, the profile of this approach is presented as followed.

**Table 11.** Frequencies of Preferences and Opinions regarding Effectiveness of SIMT

Preference				Effectiveness		
	Category	n	%	Category	n	%
1	Never	58	13.4	Not Effective	3	0.9
2	Rarely	35	8.1	Slightly Effective	12	3.6
3	Sometimes	96	22.1	Somewhat Effective	46	13.8
4	Often	140	32.3	Very Effective	128	38.3
5	Always	105	24.2	Extremely Effective	145	43.4
<b>Total</b>		434	100	<b>Total</b>	334	100



Of the 434 respondents, 32.3% declared that they often prefer to utilize Sensory Integration Approach with children with ASD, followed by 24.2% stating that they always, and 22.1% citing that they sometimes prefer to utilize this approach with children with ASD. Of 334 respondents, 43.4% declared that they find Sensory Integration Approach to Music Therapy extremely effective, followed by 38.3% stating that they find very effective, and 13.8% citing that they find this approach somewhat effective to utilize with children with ASD. Complete results are shown in Table 11.

Conclusion of interest, however Sensory Integration Approach was reported only the second most preferred music therapy approach to utilize with children with ASD, it was stated as the most effective music therapy approach regarding opinions of music therapists.

In addition to the frequencies of preferences and opinions the effectiveness of sensory integration approach to music therapy, correlated approaches are exposed as following.

**Table 12.** Preferences and Opinions regarding Effectiveness of “Sensory Integration Approach to Music Therapy” and Its Correlation with Other Music Therapy Approaches

Approaches		The Orff Approach to Music Therapy	The Dalcroze Approach to Music Therapy	The Kodaly Approach to Music Therapy	Kindermusik and Music Therapy	Guided Imagery and Music (Bony-GIM)	Robbins (Nordoff-Robbins) Creative Music Therapy	Psychodynamic Approach to MT	Behavioral Approach to MT	Music Therapy in Wellness	Neurologic Music Therapy (NMT)	Biomedical Music Therapy	Sensory Integration Approach to Music Therapy	Analytical Music Therapy (Priestley)	Improvisational Music Therapy (Akin)	Developmental Music Therapy	Social Stories in Music Therapy	Drum Circle-Drumming Protocols
Preference	Pearson Correlation	.182**	.221**	.186**	.180**	.063	.162**	.068	.172**	.143**	.331**	.223**	1	.184**	.223**	.350**	.300**	.230**
	Sig.(2-tailed)	.000	.000	.000	.000	.211	.001	.175	.000	.005	.000	.000	.000	.000	.000	.000	.000	.000
	n	409	397	394	400	397	422	400	426	394	398	389	434	394	414	410	405	411
Effectiveness	Pearson Correlation	.154*	.124	.037	.165*	-.042	.153*	.074	.348**	.157*	.278**	.168*	1	.056	.396**	.378**	.204**	.223**
	Sig (2-tailed)	.018	.149	.660	.028	.578	.011	.291	.000	.030	.000	.032	.493	.000	.000	.001	.001	
	n	234	138	146	177	177	276	208	301	191	238	163	334	151	257	252	265	237

\*\*Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

According to correlation results of preference component; Sensory Integration Approach showed the strongest relationships with Developmental Music Therapy ( $r=0.350$ ;  $\alpha=0.01$ ), Neurologic Music Therapy ( $r=0.331$ ;  $\alpha=0.01$ ), and Social Stories in Music Therapy ( $r=0.233$ ;  $\alpha=0.01$ ). According to correlation results for the effectiveness component; Sensory Integration Approach showed the strongest relationship with Improvisational Music Therapy ( $r=0.396$ ;  $\alpha=0.01$ ), Developmental Music Therapy ( $r=0.378$ ;  $\alpha=0.01$ ), and Behavioral Approach to Music Therapy ( $r=0.348$ ;  $\alpha=0.01$ ). The complete list is shown in Table 12.

### 3.3.3. Profile of Creative Music Therapy -Nordoff-Robbins (CMT)

*Creative Music Therapy* is an improvisational approach to individual and group therapy developed by Paul Nordoff, an American composer-pianist, and Clive Robbins, a British-trained special educator (Bruscia, 1987). The Nordoff-Robbins approach is called “creative” because it involves the therapist in three interrelated levels of creative work (Robbins, 1984). First, the therapist creates and improvises the music which will be used as therapy. Second, the therapist uses the improvised music creatively within each session-to seek out, gain, and maintain contact with the client from moment to moment- to “create” the therapeutic experience. Third, the therapist also creates a progression of therapeutic experiences from session to session, supporting stages in the client’s creative development. The primary purpose of the improvisation created by the therapist is to engage the client in music-making (Nordoff & Robbins, 1971). In fact, the client’s responses to music are at the very core of the therapeutic experience, and it is through the coactive music -making of the client(s) and therapist(s) that therapy takes place (Nordoff & Robbins, 1977). Creative music therapy is active rather than receptive approach and making music has a greater place than listening to it (Nordoff & Robbins, 1965). Clinical problems that have been addressed through creative music therapy include: obliviousness, unresponsiveness, passivity, withdrawal, mutism, perseveration, stereotypy, echolalia, regression, negativism, resistiveness, apathy, dependency, insecurity, ego-disorganization, lack of control, lack of expressive freedom, lack of creativity, and uncommunicativeness (Bruscia, 1987).

After the brief description of creative music therapy, the profile of this approach is presented as followed.

**Table 13.** Frequencies of Preferences and Opinions regarding Effectiveness of CMT

Preference				Effectiveness		
	Category	n	%	Category	n	%
1	Never	62	14.1	Not Effective	4	1.2
2	Rarely	44	10.0	Slightly Effective	18	5.2
3	Sometimes	118	26.9	Somewhat Effective	57	16.6
4	Often	135	30.8	Very Effective	103	29.9
5	Always	80	18.2	Extremely Effective	162	47.1
<b>Total</b>		439	100	<b>Total</b>	344	100

Of the 439 respondents, 30.8% declared that they often prefer to utilize Creative Music Therapy with children with ASD, followed by 26.9% stating that they sometimes, and 18.2% citing that they always prefer to utilize this approach with children with ASD. Of the 344 respondents, 47.1% declared that they find Creative Music Therapy extremely effective, 29.9% stating that they find very effective, and 16.6% citing that they find this approach somewhat effective to utilize with children with ASD. For complete results, see Table 13.

Of interest, although Creative Music Therapy was reported as the third most preferred music therapy approach per the opinions of music therapists regarding the effectiveness of this approach, it was identified as the second most effective approach for the use with children with ASD.

In addition to the frequencies of preferences and opinions the effectiveness of creative music therapy, correlated approaches are exposed as following.

**Table 14.** Preferences and Opinions regarding Effectiveness of “Creative Music Therapy” and Its Correlation with Other Music Therapy Approaches

Approaches		The Orff Approach to Music Therapy	The Dalcroze Approach to Music Therapy	The Kodaly Approach to Music Therapy	Kindermusik and Music Therapy	Guided Imagery and Music (Bonny-GIM)	Creative Music Therapy (Nordoff-Robbins)	Psychodynamic Approach to MT	Behavioral Music Therapy in Wellness	Music Therapy in Wellness	Neurologic Music Therapy (NMT)	Biomedical Music Therapy	Sensory Integration Approach to Music Therapy	Analytical Music Therapy (Prestley)	Improvisational Music Therapy (A.M.T.)	Developmental Music Therapy	Social Stories in Music Therapy	Drum Circle-Drumming Protocols	
Preference	Creative Music Therapy (Nordoff-Robbins)	Pearson Correlation	.177**	.141**	.035	.097	.091	1	.346**	-.139**	.181**	-.026	-.039	.162**	.194**	.411**	.126*	-.021	.233**
		Sig.(2-tailed)	.000	.005	.482	.050	.067	.000	.004	.000	.607	.440	.001	.000	.000	.011	.673	.000	
		n	415	402	400	407	401	439	407	424	396	398	391	422	395	422	410	405	417
Effectiveness	Creative Music Therapy (Nordoff-Robbins)	Pearson Correlation	.255**	.110	.118	.083	.155*	1	.286**	-.067	.156*	.037	.091	.153*	.201*	.226**	.141*	.228**	.614**
		Sig.(2-tailed)	.000	.187	.145	.271	.036	.000	.246	.026	.581	.248	.011	.011	.000	.025	.000	.000	
		n	253	145	154	179	183	344	221	304	204	230	163	276	159	258	255	280	253

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

According to correlation results of preference component; Creative Music Therapy showed the strongest relationships with Improvisational Music Therapy ( $r=0.411$ ;  $\alpha=0.01$ ), Psychodynamic Approach to Music Therapy ( $r=0.346$ ;  $\alpha=0.01$ ), and Drum-Circle and Drumming Protocols ( $r=0.233$ ;  $\alpha=0.01$ ). According to correlation results of effectiveness component; Creative Music Therapy showed the strongest relationship with Drum-Circle and Drumming Protocols ( $r=0.614$ ;  $\alpha=0.01$ ), Psychodynamic Approach to Music Therapy ( $r=0.286$ ;  $\alpha=0.01$ ), and Orff Approach to Music Therapy ( $r=0.255$ ;  $\alpha=0.01$ ). The complete list is shown in Table 14.

#### 4. Conclusion and Discussion

The purpose of this research was to identify the current preferences of music therapy approaches being utilized with children with ASD and opinions of music therapists regarding each approach and its effectiveness. For this purpose, the research questions were analyzed as follows:

##### 4.1. Demographics

According to results; of 477 music therapists, the majority were female and approximately half of respondents (53.7%) had graduate degree. More than half (65.4%) have been working less than 10 years.

#### 4.1.1. What are the opinions of music therapists regarding their level of knowledge of different music therapy approaches?

What the music therapists learned and know regarding different music therapy approaches in general was the first component of this research. According to the level of knowledge of music therapists regarding music therapy approaches, the three most known music therapy approaches were in order as follows: (1) Behavioral Approach to Music Therapy, (2) Creative Music Therapy, (3) Drum-Circle and Drumming Protocols. Two of them also found in the lists of most preferred and effective music therapy approaches. It shows that the knowledge may affect the preference and opinions about effectiveness regarding music therapy approaches.

#### 4.1.2. What are the preferences of music therapists regarding different music therapy approaches being utilized with children with ASD?

Preferences of music therapists showed that the three most preferred music therapy approaches to utilize with children with ASD were (1) Behavioral Approach to Music Therapy, (2) Sensory Integration Approach to Music Therapy, (3) Creative Music Therapy. Considering the characteristics of children with ASD, it is expected that behavioural, and sensory integration are taking place in the most preferred music therapy approaches. Although the current treatment methods for children with ASD show tendencies towards structured approaches, Nordoff-Robbins Creative Music Therapy took place in the three most preferred music therapy approaches. The studies of Edgerton (1994), and Turry and Marcus (2003) indicated the effectiveness of these approaches on children with ASD and these results support the results of this study. Also Improvisational Music Therapy (which can be classified in the same category with Creative Music Therapy opposite of structured music therapy approaches) took place as fifth most preferred. This shows that a mixed picture occurs from structured and non-structured (creative) approaches according to the preferences of music therapists.

On the other hand, although the Neurologic Music Therapy is known as an effective music therapy approach for sensory, motor, and cognitive disorders (Altenmuller, & Schlaug, 2013; Harris, 2007), it is an unexpected result that this approach could take a place as ninth preferred music therapy approach which is quite low. Possible explanations of this situation may be that this approach needs an additional training for practice, and not every music therapists may have the opportunity to join to this additional training regarding time and money issues, and/or research made in the last years regarding NMT were mostly for the population such as clients with dementia, stroke, brain injury, Parkinson's, and it didn't cover children with ASD primarily.

#### 4.1.3. What are the opinions of music therapist regarding the effectiveness of different music therapy approaches being utilized with children with ASD?

The most effective three music therapy approaches to utilize with children with ASD were (1) Sensory Integration Approach to Music Therapy, (2) Creative Music Therapy (3) Behavioral Approach to Music Therapy. All music therapy approaches were also in the most preferred music therapy approaches. However the order was different. Although Behavioral Approach was in the first place in the three most known and in the three most preferred music therapy approaches, it is reported as the third most effective music therapy approach for children with ASD. This result can be considered as unexpected. Although there is more research results show the effectiveness of Behavioral Approach (Ospina, 2008; Eren, Deniz, & Duzkantar, 2013; Lim & Draper, 2011), Sensory Integration Approach took the first place regarding effectiveness. A possible explanation of this result may be the tendency towards the changing of order of importance in treatment of children with ASD. It should also be emphasised that since the mean coefficients between the approaches were not so significant this difference regarding order may be not so important. Another controversial point, Drum-Circle and Drum Protocols was in the three most known music therapy approaches but it was not in the list of the three most preferred music therapy approaches despite this, it was found the fourth effective approach for the children with ASD. Considering the research results regarding the effectiveness of drumming and rhythm interventions in treatment of symptoms and anxiety of autism (Boso, Emanuela, Minazzi, Abbamonte & Polliti, 2007; Strong, 2013), it was expected to be found effective. But it must be questioned why music therapists don't prefer while they find this approach effective for children with ASD.

#### 4.1.4. What are the profiles of the three most preferred and effective music therapy approaches for children with ASD?

According to correlation results regarding preferences of music therapy approaches, music therapists who primarily preferred *Behavioral Approach to Music Therapy* also showed tendencies of preferring Social Stories in Music Therapy, Developmental Music Therapy, and Sensory Integration Approach; those who primarily preferred *Creative Music Therapy* also showed tendencies of preferring Psychodynamic Music Therapy, Drum-Circle and Drumming Protocols, and Improvisational Music Therapy; and those who primarily preferred *Sensory Integration Approach* also showed tendencies of preferring Developmental Music Therapy, Neurologic Music Therapy, and Social Stories in Music Therapy; to utilize with children with ASD.

According to correlation results regarding effectiveness of music therapy approaches, music therapists who primarily found *Sensory Integration Approach* effective also found Improvisational Music Therapy, Developmental Music Therapy and Behavioral Approach to Music Therapy effective; those who primarily found



*Creative Music Therapy* also found Drum-Circle and Drumming Protocols, Psychodynamic Music Therapy and Orff Approach to Music Therapy effective; and those who primarily found *Behavioral Approach to Music Therapy* effective also found Developmental Music Therapy, Kindermusik and Music Therapy, and Sensory Integration Approach effective to utilize with children with ASD.

Finally, related literature includes various research results about music therapy approaches and autism. All of these comparisons demonstrate that results from this research support the results of previous scientific research and show similarities with regard to certain aspects. Suggestions for future research were listed as follows: Starting with the lists found in this research, it is recommended that more research may be carried out to identify the effectiveness, strength and limitations of each music therapy approach, to compare the effectiveness of music therapy approaches and to find the best combinations of treatment for the children with ASD. It is also recommended that a similar research may be carried out for different populations for different aims.

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### References

- Altenmuller, E., & Schlaug, G. (2013). The beneficial effects of music making on neurorehabilitation, *Acoustic, Science, & Technology*, 34 (1), 5-12.
- Alvin, J. (1978). *Music therapy for the autistic child*. London: Oxford University Press.
- Alvin, J., & Warwick, A. (1991). *Music therapy for the autistic child* (2nd Ed.). New York: Oxford University Press.
- Anthony, E. M. (1963). Approach, method, and technique. *English Language Teaching*, 17 (2): 63-67.
- Autism Society of America (1995), *National Conference of Autism Proceedings*, (1st. Ed.), Autism Society of America Publisher.
- Berger, D.S. (2002). *Music therapy, sensory integration and the autistic child*, PA: Jessica Kingsley Publishers.
- Blake, R. L., & Bishop, S. R. (1994). The Bonny method of guided imagery and music (GIM) in the treatment of post-traumatic stress disorder (PTSD) with adults in the psychiatric setting, *Music Therapy Perspective*, 12 (2), 125-129. doi: 10.1093/mtp/12.2.125
- Borg, W. R. & Gall, M. D. (1989). *Educational research: An introduction*, 5th. Ed. White Plains, NY: Longman.
- Boso, M., Emanuele, E., Minazzi, V., Abbamonte, M., & Politi, P. (2007). Effect of the long-term interactive music therapy on behaviour profile and musical skills in young adults with severe autism, *The Journal of Alternative and Complementary Medicine*, 13 (7), 709-712. doi:10.1089/acm.2006.6334. Retrieved from <http://online.liebertpub.com/doi/abs/10.1089/acm.2006.6334>
- Boxill, E. H. (1989). *Music therapy for the developmentally disabled*. Rockville, MD: Aspen System.
- Brownel, M. D. (2002). Musically adapted social stories to modify behaviors in student with autism: Four case studies. *Journal of Music Therapy*, 39 (2), 117-144.
- Bruscia, K. (1987). *Improvisational models of music therapy*, Springfield: Charles C. Thomas Publisher.
- Bruscia, K. (1998). *Defining music therapy*, Gilsum, NH: Barcelona Publisher.
- Buday, E. M. (1995). The effects of signed and spoken words taught with music on sign and speech imitation by children with autism, *Journal of Music Therapy*, 32 (3), 189-202.
- Burns, D. S. (2001). The effect of the Bonny method of guided imagery and music on the mood and life quality of cancer patients, *Journal of Music Therapy*, 38 (1), 51-65.
- Crowe, B. J. (2011). Establishing communication with a boy with autism utilizing recorded music, In A. N. Meadows (Ed.), *Developments in Music Therapy Practice: Case Study Perspectives* (pp. 119-133). Gilsum, NH: Barcelona Publishers.
- Darrow, A. A. (2007). *Introduction to approaches to music therapy* (2nd Ed.). Silver Spring, MD: The American Music Therapy Association, Inc.
- Del Olmo, F. (1998). Biomedicine brings hope for autism. *The Dalls Morning News*, (Saturday, January 3), 25A.
- Dileo-Maranto, C. (Ed.) (1993). *Music therapy: International perspectives*. Pipersville, PA: Jeffreys Books.
- Edgerton, C. L. (1994). The effect of improvisational music therapy on the communicative behaviours of autistic children, *Journal of Music Therapy*, 31 (1), 31-62.

- Eren, B., Deniz, J., & Duzkantar, A. (2013). The effectiveness of embedded teaching through the most-to-least prompting procedure in concept teaching to children with autism within Orff-based music activities, *Educational Sciences: Theory and Practice*, 13 (3), 1877-1885.
- Grandhin, T., & Scarino, M. M. (1986). *Emergence: Labelled autistic*. Novato, CA: Arena Press.
- Hadley, S. (2003). *Psychodynamic Music Therapy: Case Studies*, NH: Barcelona Publisher.
- Hardy, M. W., & La Gasse, A. B. (2013). Rhythm, movement, and autism: Using rhythmic rehabilitation research as a model for autism, *Frontiers in Integrative Neuroscience*, 7 (19), 1-9.
- Harris, B. (2007). Identifying Neurologic Music Therapy Techniques Amenable to Automotion, *Conference on Frontiers in Education-FECS*, 409-412. Retrieved from <http://www2.dsu.nodak.edu/users/bharris/Research/identifying.pdf>
- Kalas, A. (2012). Joint attention responses of children with autism spectrum disorder to simple versus complex music, *Journal of Music Therapy*, 49 (4). 430-452.
- Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, 2, 217-250.
- Katagiri, J. (2009). The effect of background music and song texts on the emotional understanding of children with autism, *Journal of Music Therapy*, 46 (1), 15-31.
- 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*, 43 (4), 270-294.
- Kern, P. (2013). Autism spectrum disorders primer characteristics, causes, prevalence, and intervention, In P. Kern & M. Humpal (Eds.) *Early Childhood Music Therapy and Autism Spectrum Disorder* (pp.23-38). Philadelphia, PA: Jessica Kingsley Publishers.
- Kern, P. & Humpal, P. (Eds.) (2013). *Early Childhood Music Therapy and Autism Spectrum Disorder*. Philadelphia, PA: Jessica Kingsley Publishers.
- Kim, J., Wigram, T., & Gold, C. (2008). The effect of improvisational music therapy on joint attention behaviours in autistic children: A randomized control study, *Journal of Autism and Developmental Disorder*, 38 (9), 1758-1766. Retrieved from <http://link.springer.com/article/10.1007/s10803-008-0566-6>
- Knupfer, N. N. & McLellan, H. (1996). Descriptive research methodologies. In D. H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 1196-1212). New York: Macmillan.
- Levitin, D. J. (2006). *This is your brain in music*, New York: Penguin Group.
- Lim, H. A., & Draper, E. (2011). The effects of music therapy incorporated with applied behaviour analysis verbal behaviour approach for children with autism spectrum disorders, *Journal to Music Therapy*, 48 (4). 532-550.
- Lord, C., & Bishop, S. L. (2010). Autism spectrum disorder. *Social Policy Report*, 24 (2), 3. Retrieved from <http://www.inaap.org/uploads/pdf.pdf>
- Mahlberg, M. (1973). Music therapy in the treatment of an autistic boy. *Journal of Music Therapy*, 10 (4), 89-193.
- National Research Council (NRC) (2001). *Educating children with autism*. Committee on Educational Interventions for Children with Autism. C. Lord & J. McGee (Eds.) Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.
- Nordoff, P., & Robbins, C. (1965). Improvised music for autistic children, *Music Journal*, Volume 23, 39+.
- Nordoff, P., & Robbins, C. (1968). Improvised music as therapy for autistic children. In E. T. Gaston (Ed.), *Music in Therapy* (pp.191-195). New York: Macmillan.
- Nordoff, P., & Robbins, C. (1971). *Therapy in music for handicapped children*. London: Victor Gollancz Ltd.
- Nordoff, P., & Robbins, C. (1977). *Creative music therapy*. New York: John Day.
- Ospina, M. B., Seida, J. K., Clark, B., Karkhaneh, M., Haartling, L., Tjosyold, L., & Vandermeer, B. (2008). Behavioral and developmental interventions for autism spectrum disorder: a clinical systematic review, *Plosone*, doi: 10.1371/journal.pone.0003755. Retrieved from <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0003755#pone-0003755-g002>
- Pearson, C. (2014). Autism Rate Has Increased. *Huff Post Parents*, Retrieved from [http://www.huffingtonpost.com/2014/03/27/autism-rate-1-in-68\\_n\\_5041858.html](http://www.huffingtonpost.com/2014/03/27/autism-rate-1-in-68_n_5041858.html)
- Robbins, C. (1984). On creative music therapy, *International Association of Nordoff-Robbins Music Therapy Newsletter*, Volume 4 (November). London: The Nordoff-Robbins Music Therapy Centre.
- Saperston, B. (1973). The use of music in establishing communication with an autistic mentally retarded child. *Journal of Music Therapy*, 17 (4), 184-188.
- Schmidt-Jones, C. (2013), *The basic elements of music*, Available: [https://textbookequity.org/Textbooks/TBQ\\_the-basic-elements-of-music.pdf](https://textbookequity.org/Textbooks/TBQ_the-basic-elements-of-music.pdf) (June, 11 2017).
- Schmidt-Peters, J. (2000). *Music therapy, an introduction* (2nd Ed.). Springfield, IL: Charles C Thomas Publisher.
- Scoval, M. A. (1990). Music therapy within the context of psychotherapeutic models. In R. F. Unkefer (Ed.), *Music therapy in the treatment of adults with mental disorders* (pp.96-108). New York: Schirmer.



- Stanley, J., Johnson, C. M., Robb, S. L., Brownell, M.D., & Kim, S.H. (2004). Behavioral approach to music therapy In A. A. Darrow /Ed.) *Introduction to Approaches in Music Therapy* (pp.103-123). Silver Spring, MD: The American Music Therapy Association, Inc.
- Staum, M. J., & Flowers, P. J. (1984). The use of simulated training and music lessons on teaching appropriate shopping skills to an autistic child. *Music Therapy Perspectives*, 1 (3), 14-17.
- Strong, J. (2013). *Calming Anxiety-Based Behaviours in Autism with Rhythmic Entrainment Interventions (REI) Drumming Rhythms*, Strong Institute, Retrieved from <https://www.stronginstitute.com/resources/calming-anxiety-based-behaviors-in-autism-with-rei.html>
- Watson, D. (1979). Music as reinforcement in increasing spontaneous speech among autistic children. *Missouri Journal of Research in Music Education*, 4 (3), 8-20.
- Wilson, G.T. (2000). Behavior therapy. In R. J. Carosini & Dç Wedding (Eds.), *Current psychotherapies* (6th ed. pp.205-240).Itasca,IL: F. E. Peacock.
- Wigram, T, Peterson, I. N., & Bonde, L. O. (2002). *A comprehensive guide to music therapy*, London, UK:Jessica Kingsley Publishers.
- Turry, A., & Marcus, D. (2003). Using the Nordoff-Robbins approach to music therapy with adults diagnosed with autism In J. D. Wiener, & L. K. Oxford (Eds.) *Action Therapy with Families and Groups: Using Creative Arts Improvisation in Clinical Practice* (pp. 197-228). Washington, DC, US: American Psychological Association, ix, 299 pp. doi: 10.1037/10610-009 Retrieved from <http://psycnet.apa.org/index.cfm?fa=buy.optionToBuy&id=2003-00832-009>