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Music Therapy Services for Individuals with Autism Spectrum Disorder: A Survey of Clinical Practices and Training Needs

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Background: *Over the past decade, the definitions, diagnoses, prevalence rates, theories about the causes, evidence-based treatment options, and practice guidelines pertaining to Autism Spectrum Disorder (ASD) have undergone numerous changes. While several recent studies evaluate the effects of music therapy interventions for individuals with ASD, no current review reflects the latest music therapy practices and trends.*

Objectives: *The purpose of this study was to evaluate the status of music therapy practices for serving clients with ASD, the implementation of national ASD standards and guidelines, the awareness of recent developments, and training needs of music therapists.*

Method: *Professional members of the American Music Therapy Association who are working with individuals with ASD served as the sample for this national cross-sectional survey study (*N = *328). A 45-item online questionnaire was designed and distributed through email and social media. Participants accessed the online survey through SurveyMonkey®.*

Results: *Findings suggest music therapy practices and services for individuals with ASD have shifted and now reflect a slightly higher percentage of caseload, a broader age range of clients, and a trend to serve clients in home and community settings. Most therapeutic processes align with recommended practices for ASD and incorporate*

several of the recognized evidence-based practices. Less understood or recognized are inclusion practices and latest developments in the field of ASD.

Conclusions: *Music therapists have a solid understanding of providing services for individuals with ASD, but would benefit from advanced online training and improved information dissemination to stay current with the rapidly changing aspects pertinent to this population.*

Keywords: *music therapy; autism spectrum disorder; survey research; national assessment; clinical practices; training needs*

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that has received much attention from families, practitioners, researchers, educators, and policy makers in recent years. One of the main reasons is the ten-fold increase in prevalence over four decades, currently affecting 1 in 88 individuals (male, 1 in 54; female, 1 in 252) across all ethnic and socioeconomic groups in the United States (Centers for Disease Control [CDC], 2012). It remains unclear whether the continuing increase reflects the changes of diagnostic criteria, improved diagnostic tools, greater awareness, differences in study methodologies, or a true increase of ASD in the population (American Psychiatric Association [APA], 2013; Weintraub, 2011). Regardless, the increase in prevalence calls for research about the causes of ASD, evidence-based interventions that can improve personal independence and social responsibility of individuals with ASD, as well as practice guidelines and training for professionals to ensure high quality services.

Finding the causes of ASD will improve treatments. Currently, researchers are testing the following theories: the role of hormones (Baron-Cohen, Knickmeyer, & Belmonte, 2005), neural connectivity (Just, Cherkassky, Keller, Kana, & Minshew, 2007), genetic markers (Abrahams & Geschwind, 2008), and environmental factors (Hallmeyer et al., 2011) among others. Previous causative theories such as the "Refrigerator Mothers" (Bettelheim, 1967) and immunization (Wakefield et al., 1998) have been rejected. As the specific factors and their possible inter-connections are still unknown, the diagnosis of ASD continues to be based on criteria listed in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5™; APA, 2013). The newly released fifth edition,

DSM-5™, defines the following two core symptoms: (a) persistent deficits in social communication and social interaction across multiple contexts, and (b) restricted, repetitive patterns of behavior, interests, or activities. Symptoms must be present in the early development period and cause clinically significant impairment in social, occupational, or other important areas of the individual's current functioning. These disturbances should not be better explained by intellectual disability (APA, 2013, pp. 50–51). In the DSM-5™, severity levels for ASD determine if supports are required, substantial, or very substantial. Compared to the DSM-IV-TR (APA, 2000) used in this study, autism subtypes have been substituted with one unified ASD classification, and the three core domains (i.e., *qualitative impairment in social interaction, qualitative impairment in communication,* and *restricted repetitive and stereotypic patterns of behaviors, interest, and activities*) collapsed into two.

As there is currently no known cure for ASD, the identification of effective interventions and best fit for each individual's strengths and needs is essential for improving his or her everyday life skills (National Research Council [NRC], 2001). The National Autism Center (NAC, 2009) evaluated numerous ASD-specific interventions and classified them under *Established*, *Emerging*, *Unestablished*, and *Ineffective/Harmful* practices. In the *National Standard Report 2009* (NAC, 2009) the following 11 interventions or accumulated packages have been classified as established practices for ASD: Antecedence Package, Behavior Package, Comprehensive Behavioral Treatment for Young Children, Joint Attention Intervention, Modeling, Naturalistic Teaching Strategies, Peer Training Package, Pivotal Response Treatment, Schedules, Self-management, and Story-based Intervention Package. Music therapy also has been evaluated and received an "emerging practice" classification. This means that some studies suggest favorable treatment outcomes for individuals with ASD, but there is not enough scientific evidence available to reach "established practice" status.

In general, experts strongly recommend that intervention practices for individuals with ASD be grounded in evidence-based practice (EBP) and guided by the following principles of practices for planning and implementing interventions: The intervention is (a) family-centered and strength-based, (b) implemented in natural and inclusive environments, (c) developmentally sound, (d) coordinated with team members and provided in systematic

manner, and (e) targeting goals that are functional and oriented towards active client engagement (NRC, 2001; Schertz, 2010). Within the continuum of service delivery models (i.e., individual pull-out, small group pull out, one-to-one in class, group activity, individual during routines, or consultation), interventions that are embedded in daily activities and routines as well as collaborative and consultative services are most in compliance with the recommended principles of practices as they support normalization, continuity, maintenance, and generalization (NRC, 2011; McWilliam, 1996).

Board certified music therapists are required to provide evidence-based music therapy interventions and therefore need to stay current with latest research and practices pertinent to specific populations served (American Music Therapy Association [AMTA], 2012; Certification Board for Music Therapists [CBMT], 2010). Based on a recent meta-analysis, music therapy interventions are highly effective (overall effect size of $d = 0.76$; $p < 0.0001$) for improving communication, interpersonal skills, personal responsibility, and play in young children with ASD (Whipple, 2012). Previous systematic reviews with a wider age range reported small to medium effect sizes for improving several core skills in individuals with ASD (Gold, Wigram, & Elefant, 2006; Whipple, 2004). A research narrative review by Simpson and Keens (2011) and a historical review by Reschke-Hernández (2011) provide additional support of the positive impact of music therapy interventions and illuminate the long-standing tradition of providing music therapy services for individuals with ASD. In terms of professional practices, music therapists often combine theoretical frameworks from both music therapy and related fields in the therapeutic process. For example, Walworth, Register, and Engel (2009) have evaluated the *SCERTS® Model* for assessment and goal writing in music therapy practice, Brownell (2002) paired *Social Stories*™ with music interventions, Carpente (2009) combined the *DIR®/Floortime*™ *Model* with improvisational music therapy, Lim and Draper (2011) used the *Applied Behavior Analysis (ABA) Verbal Behavior (VB)* in music therapy, Kern, Wolery and Aldridge (2007) applied a *collaborative and consultative approach* to implement music therapy interventions, and Allgood (2005) investigated *family-centered* music therapy services. However, as of today, there are no specific practice guidelines established by AMTA for working with

individuals with ASD. A decade ago, Chandler (2004) surveyed professional members of AMTA regarding techniques and approaches used with clients on the autism spectrum. Since then, the field of ASD has seen tremendous change. At this time, there is little information as to whether those changes have influenced the professional practices and services provided by professional members of AMTA.

Therefore, the purpose of this study was to evaluate (a) the current status of music therapy practice for clients with ASD, (b) the extent to which music therapists incorporate National Autism Center (2009) identified evidence-based practices and apply the National Research Council's (2001) principles of interventions in their music therapy practice, (c) music therapists' awareness of the most recent developments in ASD, and 4) the need for additional training.

Method

Participants

Professional members of the American Music Therapy Association (AMTA), working with individuals with ASD served as the sample for this cross-sectional survey study. The sample included music therapists with the following AMTA professional membership status designations: MT-BC, ACMT/CMT/RMT, retired, inactive, and professional–other. All respondents were included as each of them reported some active involvement in providing music therapy services to individuals with ASD. Invitations to participate in the study occurred in two phases. First, 288 professional music therapists who indicated working with individuals with ASD, as listed in the 2012 AMTA digital membership database, received an email invitation to participate in this study. Six email messages were returned as undeliverable. Second, as the available database did not seem to list the accurate number of professional members working with the target population, the study invitation was extended via social media (i.e., Facebook, Twitter, and Music Therapy Listserve) and announced during the national music therapy conference in 2012.

Instrument Design

Based on current knowledge and developments in the field of music therapy and ASD, the investigators designed a 45-item online questionnaire. The questions were divided into five sections:

1. Demographics of participants
2. Professional practice
3. Assessment, clinical goals, approaches, and techniques
4. Evidence-based practice
5. About ASD

Questions chosen for this survey involved multiple-choice items with single and multiple answers allotted, contingency questions, and open-ended questions. The category "other" was provided on several items to allow for responses that had not been listed.

An expert consultant in music therapy and one in a related field (both involved with ASD) reviewed a draft of the questionnaire and provided suggestions to strengthen the construct and content validity of the instrument. The modified survey was then field-tested by six music therapy practitioners in different regions of the United States to determine the length and any difficulty with understanding the questions or limitations of the survey. Their feedback was considered and minor adjustments were made. It was concluded that the survey could be completed within 15–20 min. The finalized questionnaire included eight demographic items requesting the participants' gender, age range, ethnicity, highest level of education completed, current AMTA membership status, primary AMTA region, major role as music therapists, and years of experience working with individuals with ASD.

In the 12-item professional practice section, participants were asked to indicate the percentage of caseload served with a diagnosis of ASD, their practice setting, the age range of their clients with ASD, with whom they collaborate, and which music therapy service delivery model they provide for individuals seen in school settings. Participants also were asked to specify what percentage of music therapy clients with ASD are involved in individual and group sessions, how frequently and how long individual and groups sessions are provided per week, and to whom and how often they offer consultative services. Additionally, participants were asked about the average duration of their music therapy services for clients with ASD and how those services are funded.

In the third section of the questionnaire, participants were asked eight questions. Five questions related to reasons for assessing individuals with ASD, assessment tools in use, how often

participants assess and document client's progress, goal areas that are most often targeted, and how long it usually takes for clients to meet a specific treatment goal. The final three questions of this section addressed which clinical approach they most often apply (see Figure 7 for list), which music therapy techniques they use in sessions (see Figure 8 for list), and how individual and group sessions are structured (i.e., highly, moderately, loosely, or completely unstructured).

The evidence-based practice section reflected most recent information released by the National Autism Center (NAC, 2009) including six items. Participants were asked which of the eleven identified evidence-based practices they incorporate in their music therapy practice, if and in which manner they received training on those practices, which of the principles for implementing interventions for individuals with ASD guides their music therapy service delivery, and if and in which manner they received training on the specific principles of practice.

The final section was a short assessment of the participants' general knowledge related to ASD. Participants were encouraged to answer the best they could or indicate "I don't know" if unsure of the answer. The 10 questions pertained to identifying the core characteristics of ASD outlined in the DSM-IV-TR™, the major changes proposed in the DSM-5™, the current prevalence rate of ASD in the United States, misconceptions about causes, and how music therapy is categorized under the evidence-based practice levels identified in the *National Standards Report* (NAC, 2009). Additional open-ended questions invited participants to share their thoughts about striving to be an evidence-based practitioner, how confident they are in providing effective music therapy services to individuals with ASD, what additional information or training on ASD they would like to see offered and in which manner. They also were asked about the future of music therapy services for individuals with ASD. As an incentive for contributing to the study, individuals had an option to participate in a book drawing, which was reflected in the final question of the study.

Procedure

Prior to the data collection, the Research Ethics Committee of North Central College, Naperville, Illinois reviewed and granted approval for the research study at hand. An email message and

social media postings informed professional AMTA members about the investigators, purpose of the study, nature of questions, and length of the survey. Music therapists eligible and interested in participating in the study were instructed to access the online survey through a hyperlink to the software program SurveyMonkey®, which directed them to a consent page and additional information about the study. Participation in this study was voluntary and responses remained anonymous. Individuals retained the right to not answer a given question or discontinue the survey at any point. Participants were asked to answer the questions. No further instructions were given. Reminders for completing the survey were sent to all participants and posted on social media sites one and two weeks after the initial invitation. Data were collected for a total of six weeks. All questionnaires were then accumulated for data analysis through SurveyMonkey®.

Data Analysis

Data gathered from multiple-choice questions with single and multiple answers were tallied by SurveyMonkey® and converted into percentages. The investigators categorized narrative responses from three open-ended questions by completing the following open coding procedure: (a) Read the data as a whole to get a sense of the content, (b) re-read the data and developed codes based on exact wording from the responses or interpretation of meaning units, (c) sorted the codes into emerging themes/relationships, and (d) provided a summary of the data.

Results

A total of 328 professional members of AMTA working with individuals with ASD responded to this survey study. Out of the 282 surveys distributed to functional email addresses, 103 participated in the study. The social media posting resulted in 225 responses to the survey. As it is possible that these respondents also received an email invitation, but entered the survey through a social media link, the response rate remains unclear. It should be mentioned that some questions were not answered by all participants. Numbers of respondents for each item are therefore included in subsequent textual descriptions, tables, or figures.

Demographics of Participants

The participants of this study were mostly female (91.1%) and some male music therapists (8.9%) representing all age groups. The majority fell in the 20–39 age range, were Caucasian (91.1%), and held a Bachelor's (53.6%) or Master's degree (42.4%). Most reported MT-BC (88.2%) as their member status; other professional credentials and designations also were indicated (e.g., ACMT, CMT, RMT, LCAT, MTA, NMT Fellow). Participants were currently practicing in all regions of AMTA as well as in Australia, Canada, Mexico, Singapore, and the UK. Most indicated "practitioner" as their primary role as music therapist (89.7%). The length of time respondents had been working with individuals with ASD ranged from less than 1 year to 30+ years; most had between 1–5 years (34.5%) and 6–10 years (27.7%) work experience with this population. Table 1 displays additional demographic information.

Professional Practice

While 28.9% of the 311 respondents had fewer than 25% individuals with ASD in their entire caseload, 27.3% indicated that 26–50% of their caseload had an ASD diagnosis. An almost equal percentage of respondents (28%) reported that 51–75% of their clients were on the autism spectrum; 15.8% indicated working 76–100% with individuals with ASD.

Most respondents saw their clients with ASD in public schools (K-12) (36.9%) followed by the family's home (34.9%), and in private practice (29.2%). A few respondents (7.5%) also indicated other facilities (e.g., autism center, adult vocational center, or summer camp) where they provide services to this population. Figure 1 outlines each type of facility under the four umbrella practice settings. Respondents indicated working mainly with children/preteens (77.2%) and teens (73.5%), followed by infants and young children (58.6%). Figure 2 illustrates all age ranges represented.

The majority of music therapists (95.9%) indicated collaborating with others regarding planning and implementing of interventions when working with individuals with ASD. Respondents indicated working with parents, caregivers, and other family members (78%) as primary collaborators followed by educators (61.5%), speech-language pathologists (53.7%), and occupational therapists (45.3%); only 4.1% reported collaborating with no one. Figure 3 displays the variety of reported collaborators. ABA

Table 1
Demographics of Participants

Gender (327 respondents)	**Female** 298 (91.1%)	**Male** 29 (8.9%)						
Age range (326 respondents)	**20–29** 105 (32.2%)	**30–39** 108 (33.1%)	**40–49** 48 (14.7%)	**50–59** 46 (14.1%)	**60+** 19 (5.8%)			
Ethnicity (325 respondents)	**Caucasian** 296 (91.1%)	**African American/ Black** 3 (0.9%)	**Native American** 0 (0%)	**Hispanic/ Latin** 7 (2.2%)	**Asian/Asian American** 14 (4.3%)	**Other** 5 (1.5%)		
Degree (321 respondents)	**Bachelor's** 172 (53.6%)	**Master's** 136 (42.4%)	**Doctoral** 13 (4.0%)					
Member status (321 responses)	**MT-BC** 283 (88.2%)	**ACMT/CMT/ RMT** 10 (3.1%)	**Retired** 2 (0.6%)	**Inactive** 9 (2.8%)	**Other** 17 (5.3%)			
Region (320 respondents)	**Great Lakes** 95 (29.7%)	**Western** 42 (13.1%)	**Mid-Atlantic** 62 (19.4%)	**New England** 20 (6.3%)	**Southeastern** 32 (10.0%)	**Midwestern** 29 (9.1%)	**Southwestern** 28 (8.8%)	**Other** 12 (3.8%)
Major role (310 respondents)	**Practitioner** 278 (89.7%)	**College/ University Educator** 16 (5.2%)	**Researcher** 1 (0.3%)	**Administrator** 15 (4.8%)				
Years worked with ASD (310 respondents)	**< 1** 16 (5.2%)	**1–5** 107 (34.5%)	**6–10** 86 (27.7%)	**11–19** 56 (18.1%)	**20–29** 24 (7.7%)	**30+** 21 (6.8%)		

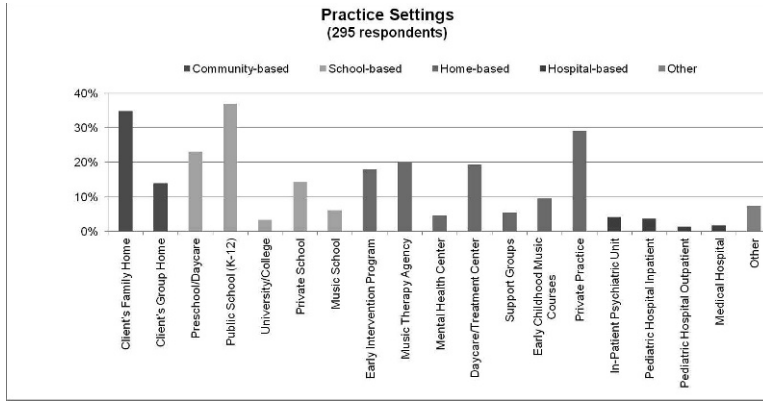

FIGURE 1.
Practice settings of music therapy service delivery.

specialists, social workers, psychiatrists, psychologists, recreation therapists, and art therapists were among other collaborators mentioned but not specifically listed in the survey.

Within school-based settings, 248 respondents indicated providing a variety of service delivery models. Group activities (i.e.,

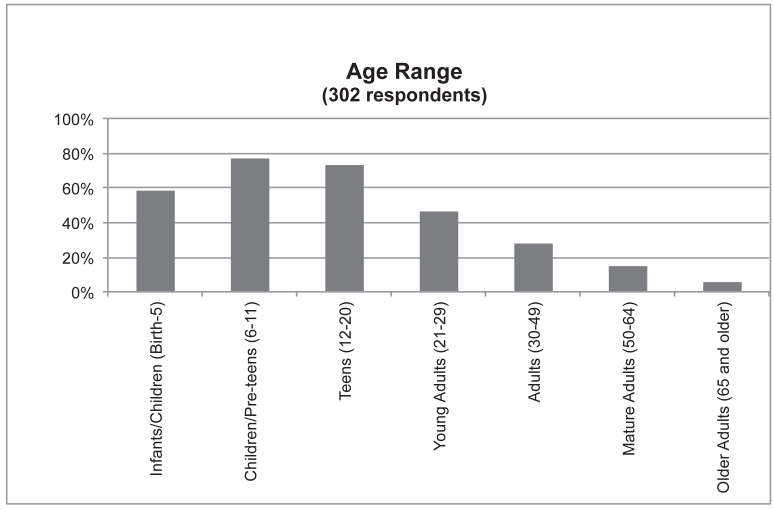

FIGURE 2.
Age range representing clients with ASD with whom music therapists work.

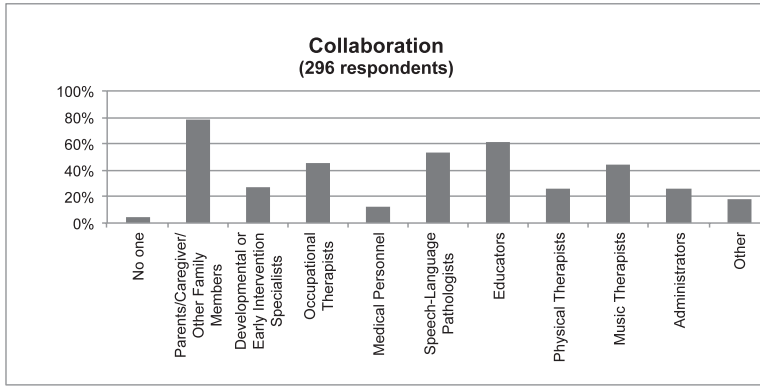

FIGURE 3.
Individuals with whom music therapists collaborate.

wherever the group is) (64.5%) and individual pullout sessions (i.e., in a separate room with individual) (60.5%) are most commonly provided, followed by small group pullout sessions (i.e., in a separate room with group) (42.3%). About 29.6% indicated providing consultative services within school-based settings. A one-on-one service delivery model in classrooms (i.e., in the client's natural environment, but apart from others) (17.3%) and seeing individuals during routines (i.e., wherever the client is) (16.9%) are less frequently provided. Several respondents (10.5%) noted that they do not work in a school-based setting, thus the listed models did not entirely describe their work situation.

Whereas 40.2% of the respondents (281 for individual sessions and 276 for group sessions) indicated seeing their music therapy clients with ASD primarily in an individual session format, 28.6% noted providing mainly group sessions. A similar number of music therapists (259 for individual sessions and 231 for group sessions) reported that the average frequency of seeing clients with ASD in individual sessions (68.3%) or group sessions (64.5%) was once per week. Yet, 14.7% provided individual sessions and 13.4% group sessions to their clients five or more times per week. Based on 293 responses (263 for individual sessions and 232 for group sessions), individual sessions (40.7%) and group sessions (39.2%) mostly lasted 30 min, followed by 45-min individual (29.7%) and group (31.5%) sessions; only under 1.3% provided sessions longer than 60 min.

Similar to the collaboration outcomes, 79.3% of the 290 respondents indicated providing consultative services (i.e., educating or advising on a specific topic) regarding clients with ASD mainly to parents, caregivers, and other family members (64.8%), as well as to educators (57.2%), speech-language pathologists (33.1%), and occupational therapists (28.6%). Music therapists also consult with administrators (29.7%), music therapists (29.0%), physical therapists (17.9%), medical personnel (11%), and others (e.g., clients themselves, ABA specialists, music educators, counselors, social workers, recreation therapists, art therapists, or organizations and support groups). Only 20.7% indicated not providing any consultative services. Consultative services were typically provided once a month (31.2%), once per week (17.8%), or as requested (28.9%).

Of the 262 individuals responding, 36.4% indicated that the average duration of music therapy services for clients with ASD was 1–3 years, followed by 4–6 years (19.9%), 4–12 months (13.8%), and seven years or more (12.5%). A small percentage of music therapists selected an average treatment duration of 1–2 months (3.4%) and less than 1 month (2.4%). Respondents (11.8%) also indicated termination due to curriculum/medical schedules, financial restrictions, changes in positions, or just entering the professional work force as factors that may determine the length of services provided.

Respondents indicated that music therapy services for clients with ASD mainly are funded by private pay (55.1%), IDEA/Special Education (34.4%), State/County Funding (28.8%), and grants (23.2%). Funding sources are illustrated in Figure 4.

Assessment, Clinical Goals, Approaches, and Techniques

The prominent reason chosen by 87.8% of the respondents for assessing individuals with ASD was to identify the client's present level of functioning for intervention planning. Respondents also indicated monitoring the client's progress (69.1%) and determining the type and intensity of services (61.5%) followed by other reasons outlined in Figure 5.

In terms of the assessment tools utilized, 62.9% of the 275 respondents indicated using self-created assessment tools. Several (57.1%) indicated using music therapy-specific assessment tools. Additional responses were 17.8% work-place specific assessment tools and 9.1% ASD-specific assessment tools.

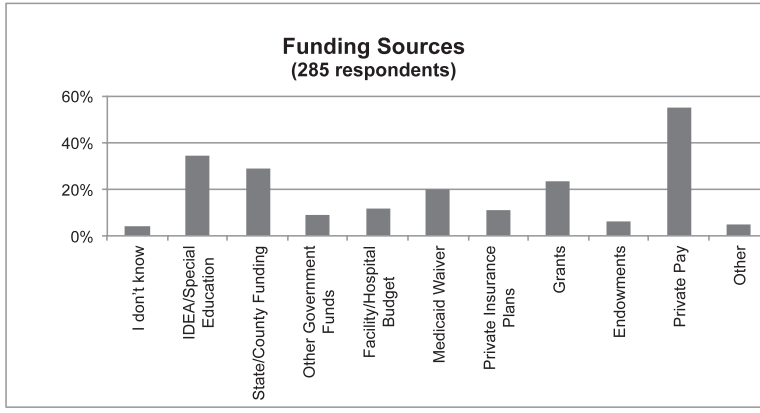

FIGURE 4.
Funding sources of music therapy services.

Most of the 272 responding music therapists indicated assessing and documenting client's progress in learning and maintaining functional goals continuously and after each session (71.3%). Weekly (7.0%), monthly (6.3%), annual (6.6%) assessment and documentation also were reported; 8.8% indicated that assessment and documentation are not required by their work place. Several respondents noted that they provide additional quarterly, semi-annual, or annual reports to various entities.

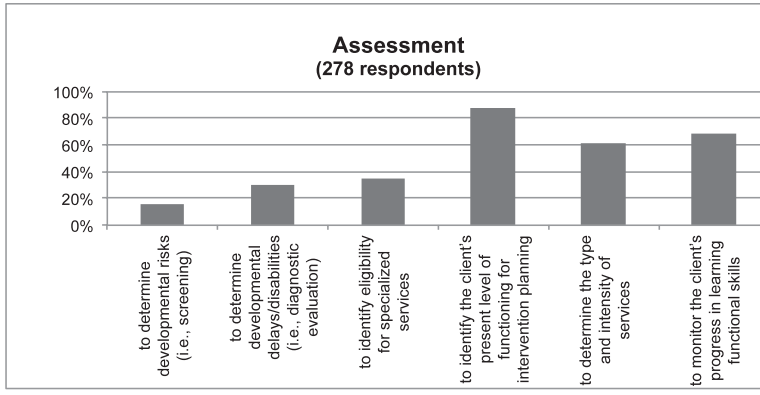

FIGURE 5.
Reasons why music therapists assess individuals with ASD.

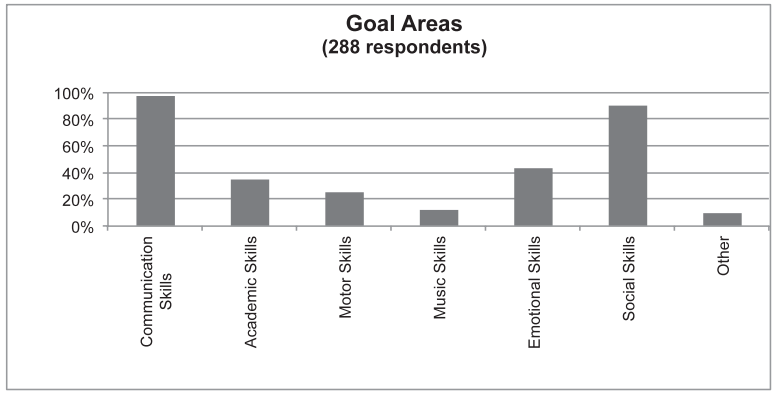

FIGURE 6.
Goal areas targeted in music therapy sessions with individuals with ASD.

The top three goal areas selected when serving individuals with ASD were communication (97.9%), social (90.6%), and emotional (43.1%) skills. Figure 6 illustrates the percentage of all goal areas targeted in music therapy sessions by the respondents. Goal areas mentioned under "Other" (9.7%) included self-regulation, sensory processing, and maintaining attention. Of the 274 individuals responding, 36.1% indicated that their clients with ASD usually achieved specific intervention goals within 4–6 months, followed by 1–3 months (28.5%), 7–12 months (23%), 1 year or more (8.8%) and less than a month (3.6%).

When working with individuals with ASD, most respondents indicated applying a behavioral approach to music therapy (54.2%). Similar response numbers were denoted for Nordoff-Robbins Music Therapy (14.4%) and Neurologic Music Therapy (13.4%). Only a few respondents chose the psychodynamic approach to music therapy (4.2%) or Biomedical Music Therapy (1.4%) when working with this population; none indicated the Bonny Method of Guided Imagery and Music (0%). Some respondents (12.3%) indicated the use of eclectic approaches (mainly blending the behavioral approach to music therapy with Nordoff-Robbins Music Therapy) and a few mentioned using the *DIR®)/Floortime*™ model under "other." Figure 7 illustrates music therapy approaches reported when working with individuals with ASD.

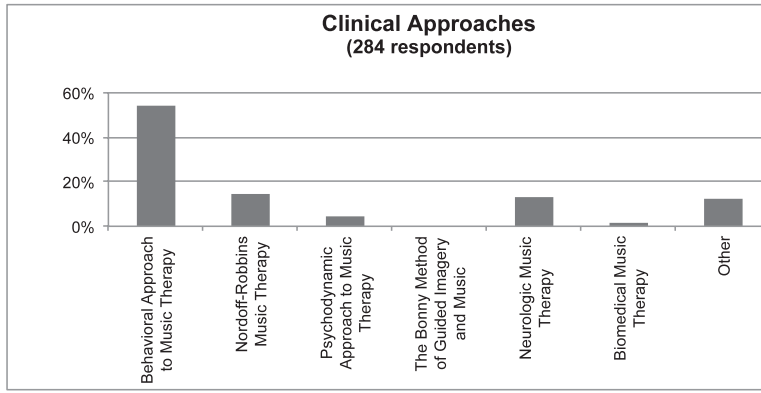

FIGURE 7.
Clinical approach applied by music therapists when working with individuals with ASD.

Music therapy techniques most frequently used with this population included singing and vocalization (98.6%), instrument play (98.6%), movement and dance (84%), free and thematic music improvisation (75.3%), and songwriting and composition (55.7%). Under "Other" (4.2%), rhythm-based activities, task-oriented music games, and music instruction were mentioned. Figure 8 displays reported music therapy techniques.

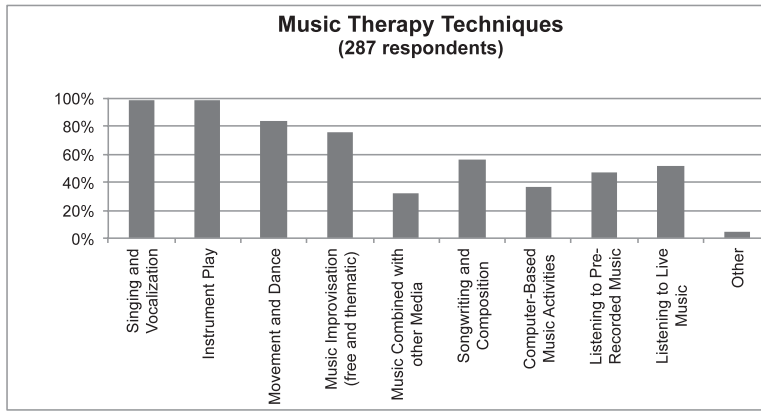

FIGURE 8.
Music therapy techniques used by music therapists when working with individuals with ASD.

TABLE 2
Evidence-Based Practices Incorporated in Music Therapy Interventions for Individuals with ASD

Identified EBP		*N*	%
Antecedence Package	Prompting	255	90.1
	Antecedence-Based Interventions	79	27.9
	Time Delay	121	42.8
Behavior Package	Reinforcement	239	84.5
	Task Analysis	115	40.6
	Discrete Trial Training	53	18.7
	Functional Behavior Analysis	82	29.0
	Functional Communication Training	74	26.1
	Response Interruption/Redirection	123	43.5
	Differential Reinforcement	64	22.6
Comprehensive Behavioral Treatment for Young Children with ASD	Early Childhood Denver Model	11	3.9
	Treatment and Education of Autistic and Communication Handicapped Children [TEACCH]	41	14.5
	Learning Experiences of Autistic Programs for Preschoolers and Their Parents [LEAP]	7	2.5
	Lovaas	12	4.2
Joint Attention Intervention	(i.e., pointing to objects, showing items to another, following eye gaze)	230	81.3
Modeling	(e.g., Video Modeling)	89	31.4
Naturalistic Teaching Strategies	Incidental Teaching	75	26.5
	Milieu Teaching	34	12.0
	Embedded Teaching	52	18.4
Peer Training Package	Peer Networks	27	9.5
	Integrated Play Groups™	32	11.3
	Peer-Mediated Social Interaction	52	18.4

TABLE 2
Continued

Identified EBP		*N*	%
Pivotal Response Treatment	Expansion of Natural Language Paradigm	27	9.5
Schedules in Form of	Words	191	67.5
	Pictures	230	81.3
	Photographs	129	45.6
	Work Stations	17	6.0
Self-Management	Checklists	100	35.3
	Wrist Counters	2	0.7
	Visual Prompts	180	63.6
	Tokens	82	29.0
Story-Based Intervention Package	Social Stories™	150	53.0

Respondents (259 for individual sessions and 242 for group sessions) indicated that they generally provide moderately structured individual sessions (55.6%) and group sessions (50.4%). However, 45% indicated providing highly structured group sessions versus individual sessions (23.6%), and 20.1% reported loosely structured individual versus group sessions (4.5%). Only 0.8% reported providing completely unstructured individual sessions versus none for group sessions (0%).

Evidence-Based Practice

Participants of this survey reported applying many of the 11 evidence-based practices identified in the *National Standards Report* (NAC, 2009) when working with individuals with ASD. Most of the 283 respondents indicated incorporating prompting (90.1%), reinforcement (84.5%), joint attention intervention (81.3%), and picture schedules (81.3%) in their music therapy sessions. Table 2 displays the eleven evidence-based practices with subcategories incorporated by music therapists in clinical practice. Out of the 287 individual responses, 61.7% indicated that they received training in some of the listed eleven evidence-based practices; 38.3% did not receive any training. Based on 177 responses, training was obtained mainly through non-music therapy or other continuing education programs (56.5%), self-study (52%), and conference general sessions (50.8%) followed by in-services (48.6%), conference or online CMTE Training (26.6%), and formal training (i.e., credentialed or certified) (15.8%) (e.g., *ABA Specialist, TEACCH, LEAP, Lovaas*).

As indicated by 285 respondents, music therapy interventions for individuals with ASD are guided by the following principles of practice suggested by the National Research Council (2001): Developmentally or age appropriate (88.4%), functional goals that are oriented toward active client engagement (85.3%), strength-based (77.2%), family-centered/client centered (73%), provided in an organized and consistent manner (66.3%), coordinated with other team members (50.5%), implemented in a natural environment (29.5%), and implemented in an inclusive environment (22.1%). Compared to obtaining training on the identified evidence-based practices, more respondents (72.3%) indicated receiving training on the indicated principles of practices than those that did not receive any training (27.7%).

For the 205 responding individuals, participants obtained training mainly through conference general sessions (62.4%), self-study (54.6%), and non-music therapy or other continuing education programs (53.7%), followed by in-services (42%), conference or online CMTE Training (28.8%), and formal training (i.e., credentialed or certified) (18%) (e.g., *NMT Fellow, NRMT, DIRFloortime*™ *Practitioner, LCSW*).

About ASD

At the time of the study, *DSM-IV-TR*™ was still in effect. Most of the 286 respondents correctly identified the three core characteristic of ASD: Qualitative impairment in social interaction (83.6%), qualitative impairment in communication (82.5%), and restrictive repetitive and stereotypic pattern of behaviors, interest, and activities (68.2%). A few chose qualitative impairments in sensory processing (25.5%) and qualitative impairments in emotional skills (10.1%); 10.8% indicated "I don't know."

The proposed changes in the DSM-5™ were less evident to the study participants. Of the 283 respondents, 43.5% indicated not knowing specific details. However, 37.1% identified "substituting PDD with a single ASD classification," 26.1% "collapsing the three ASD domains to two," 21.9% "changing the onset to early childhood," and 15.2% "including the severity level of ASD" as major changes.

Most of the 286 respondents (61.5%) accurately identified 1 in 88 as the current (i.e., 2012) prevalence rate of ASD in the United States. Some chose the previous prevalence rates of 1 in 110 (18.2%) and 1 in 150 (5.9%), or indicated that they did not know (14.3%).

Regarding the theories on causes of ASD, the majority of the 285 respondents accurately identified both "Refrigerator Mothers" (Bettelheim, 1967) (68.8%) and "Immunization" (Wakefield et al., 1998) (69.5%) as misconceptions. A few respondents also mistakenly noted that the following theories had already been disproven (research was not conclusive as of November, 2012): the "Male Brain" theory (Baron-Cohen et al., 2005) (22.8%), Neural Connectivity (Just et al., 2007) (2.8%), Environmental Factors (Hallmeyer et al., 2011) (2.6%), and Genetics (Abrahams & Geschwind, 2008) (2.5%); 22.8% indicated that they did not know the answer.

Most of the 283 respondents indicated that they did not know (45.2%) how music therapy is categorized under the evidence-based practice levels identified in the *National Standards Report* (NAC, 2009). However, almost an equal number of respondents (38.5%) identified the correct category "Emerging Practice." Only 4.2% chose "Unestablished Practice," and 0.4% indicated Ineffective/Harmful Practice.

Asking participants about their thoughts on striving to be an evidence-based practitioner resulted in 121 narrative responses. In general, respondents described their current practices and definitions of EBP. Practices included reviewing available research literature both in music therapy and in related fields, collecting data to report client responses and progress in therapy, and focusing on the client's individual strengths and needs. Respondents also identified the importance of working towards EBP to support the overall development of the field of music therapy; increase credibility of music therapy to consumers, related professionals, and administrators; improve the quality of services to clients; and increase funding for music therapy services. Furthermore, respondents identified the following challenges to EBP: Lack of time, an unsupportive work environment, limited access to research, disconnect between research and clinical practice, and an absence of administrative support. A few respondents commented on "feeling isolated" as practitioners working in private practice. Overall, ideas about what music therapists want to see happen in the future ranged from confusion about how to start to develop EBP to being very aware and having clear recognition of the needs for certain types of research.

Of the 287 respondents, 50.5% indicted that they felt "quite confident in providing effective music therapy services to individuals with ASD. Similar numbers chose "Extremely Confident" (23.3%) or "Moderately Confident" (23%). Only 3.1% indicated "Not Confident."

Several topics emerged from 129 respondents to an open-ended question pertaining to additional information or training on ASD. Respondents suggested that the following would be beneficial to them: Best practices/general interventions/EBP (21.7%); ABA/behavioral techniques/behavior management (10.9%), working with adolescents/adults with ASD (7.8%), Sensory Processing

(6.2%), Brain/Neurologic Development (5.4%), collaboration with other professionals (5.4%), current trends in ASD (5.4%), music therapy specific interventions (4.7%), and assessment (3.9%). Other topics identified by individuals reflected items addressed in the survey (i.e., general practice, documentation, focus, differentiation, functional levels, SEMTAP, SCERTS, DSM-5™, communication, AAC, PECS, technology, socialization, TEACCH, DIR/Floortime™, Pivotal Response Treatment, Peer Training, Joint Attention, NRMT, NMT, incorrect/harmful practices, searching for research, longitudinal study, new clinician training, working with parents, early childhood special education, ASD and psychiatry, daily activities and routines, music elements, and teaching music skills).

Out of the 278 respondents, 87.1% indicated they would like to obtain additional training on ASD through CMTE Courses (conference or online learning). Other respondents indicated that additional training should be provided through conference general sessions (68%). Several desired self-study (47.8%), formal training (i.e., credentialed or certified) (39.2%), non-music therapy or other continuing education programs (34.2%), and in-services (31.3%).

Most of the 78 respondents shared an optimistic outlook about the future of music therapy services for individuals with ASD. The increased prevalence of ASD was interpreted as leading to additional needs and new opportunities for music therapists. Respondents also addressed the necessity for advanced training in ASD, collaborations with major players in ASD, and additional research. They expressed concerns about future funding and the diversity within the discipline. One respondent commented that "A clear music therapy voice to the larger community is important."

Discussion

The professional practices and services reported by AMTA music therapists reflect the many changes seen in ASD. Compared with findings from a similar survey on ASD music therapy practice (Chandler, 2004), results from this survey suggest that a number of music therapists are seeing a slightly increased number of individuals with ASD on their caseloads. While a decade ago 36.3% of AMTA professional music therapists reported that

50–100% of their entire caseload had an ASD diagnosis (Chandler, 2004), today 43.8% of the music therapists indicated that more than half of their clients are on the autism spectrum. This tendency might be partially explained by the increased prevalence rate of ASD and could change again with the implementation of the new diagnostic criteria described in the DSM-5™ (APA, 2013).

Similar to findings from Chandler (2004), music therapists still serve clients with ASD primarily in public schools (K-12). However, there appears to be a trend toward providing music therapy services in a variety of community settings beyond private practice. In this survey, only 29.2% of clients were seen in private practice settings, which is much lower than the 40.7% reported by Chandler (2004). Additionally, clients are frequently being seen in their family home, which was rarely noted in the previous survey.

Music therapists reported providing more family-centered services in the clients' natural and perhaps inclusive environments, which is consistent with the principles of practice guidelines for individuals with ASD (NRC, 2001). In the current survey, the foremost age range of individuals with ASD seen in music therapy sessions was 12–20 years and older; however, music therapists also reported seeing more infants and young children (58.6%) which is higher than the 38.4% reported by Chandler (2004). This increase in older clients is not surprising as children diagnosed a decade ago continue to mature, and may be contributing to this observed difference in practice reports. Awareness of ASD as well as the impact of early childhood interventions may also be contributing to an increase in service delivery (Lord & Bishop, 2010) that may include music therapy.

Consistent with Register's (2002) study on general music therapy collaboration practices, results of this survey also indicated a high frequency of collaboration with other professionals and/or families. In fact, in the current study overall collaboration rates appear to be even higher (95.9% vs. 87.5%), especially with parents/caregivers/families (78% vs. 55.8%), educators (61.5% vs. 41.4%), and speech-language therapists (53.7% vs. 44.6%). This might be because of the practice setting where music therapy services are mostly provided. In addition, the complexity of ASD requires great collaborations with various

others to address the individual needs of each person with ASD. Similarly, music therapists working with individuals with ASD seem to provide more consultative services (79.3%) to families and various other professionals than those evaluated for consultative services across populations in previous years (44%) (Register, 2002). Music therapists partially adapted their practices in terms of the service delivery models, frequency and length of interventions to the recommended practice guidelines for individuals with ASD (NRC, 2001).

In school-based settings, group activities (64.5%) seem to be provided within the clients' natural environment. Yet, most music therapists reported still pulling out their clients for individual sessions (60.5%) instead of providing individual music therapy services within the client's daily activities and routines (16.9%). Contemporary service delivery should be based on an integrated therapy model, meaning specialized services should be embedded in the client's daily life (NRC, 2001; McWilliam, 1996).

Based on these data, most music therapists provided individual and group sessions once per week. Less than 15% offer individual sessions (14.7%) and group sessions (13.4%) five or more times per week, which might indicate that services are provided within a comprehensive treatment model (e.g., *TEACCH* or *Lovaas*). Further research is needed to determine if a higher frequency of sessions per week is more efficient in achieving set intervention goals within the recommended 3-month time frame (NRC, 2001) instead of the 4–6 months indicated by most (36.1%) of the music therapists in this survey.

The average duration of seeing clients in music therapy for 1–3 years (36.4%) was similar to responses obtained in Chandler's (2004) study wherein 34.8% of respondents indicated a 1–3 year treatment duration. While music therapy respondents indicated that services are currently reimbursed mainly by private pay (55.1%) and various other sources, several music therapists expressed concerns about future funding. Music therapists and professional organizations should continue advocating to make music therapy more recognizable as a related service under IDEA (Simpson, 2011), working towards establishing music therapy as a "research-based practice" and providing cost effectiveness measures to increase reimbursement by governmental funds, health insurance agencies, and third party providers.

Based on the results of this survey, music therapists demonstrated a strong assessment practice, which complies with recommended practices for individuals with ASD (NRC, 2001). Yet, most of the assessment tools indicated are currently not validated or ASD-specific (Walworth, 2007). However, several tools (e.g., the Four-Steps Assessment Model, MT-*MRB, SCERTS® Model, MTCSI,* and *IMCAP-ND®*) specific to assessing clients with ASD in music therapy practice seem to be emerging (Martin, Snell, Walworth, & Humpal, 2012). As the profession explores Master's degree entry levels and licensures, music therapists also may become more engaged in ASD screening and diagnostic evaluation teams.

The most frequent goal areas indicated in this study target two core characteristics of ASD—communication and social skills. Interestingly, 43.1% of music therapists reported also focusing on emotional skills or emotional regulation (Walworth, Register, & Engel, 2009), which was rarely reported a decade ago (Chandler, 2004). It remains to be seen how the newly defined characteristics of ASD under the proposed DSM-5™ will affect the goals targeted in music therapy interventions. In terms of clinical approaches, music therapist respondents clearly indicated that they most often apply a behavioral approach to music therapy (54.2%). Behavioral interventions have been identified as "established practices," meaning sufficient scientific evidence is available to determine that the interventions result in favorable outcomes (NAC, 2009). This also is reflected in how many music therapists reported structuring sessions with individuals on the autism spectrum (i.e., moderately to highly). Fewer music therapists reported using Nordoff-Robbins Music Therapy, music improvisation, and an open session structure with this population than a decade ago (Chandler, 2004), but there seems to be a tendency to combine Nordoff-Robbins Music Therapy with a behavioral approach to music therapy. Music therapists report high usage of techniques such as singing and vocalization, instrument play, and movement and dance. Additionally, computer-based music activities (e.g., making music videos or use of apps) emerged as a new music therapy technique used with this population.

The outcomes of the evidence-based practice section of this survey are particularly interesting. Although music therapy falls under "emerging practice" (NAC, 2009), music therapists

reported incorporating more or less all of the eleven identified evidence-based practices in their music therapy sessions. Therefore, should music therapy as a discipline be rated as evidence-based practice? "It remains unclear if evidence about the effectiveness of music therapy interventions can be measured on the discipline" (Humpal & Kern, 2012, p. 43). Normally, evidence is measured on focused interventions, not on the discipline (e.g., prompting, not special education). When working with clients with ASD, music therapists should communicate to families and professionals that many of the evidence-based interventions are incorporated in music therapy sessions. Based on these findings, music therapists appear to be implementing all the guiding principles of practice (NAC, 2009) on a very high level, except for serving clients in natural and inclusive environments. Perhaps the embedded service delivery models (e.g., one-on-one in classroom and individual treatment during routines) are not readily understood by music therapists or supported by their work place. This principle of delivering services in the child's natural environment also has been noted in a recent systematic review related to music therapy inclusion studies by Brown and Jellison (2012). However, inclusive services have been mandated in the United States since 1975 (Public Law 94-42, The Education of All Handicapped Children Act). More than half of the music therapists received training in some of the identified evidence-based practices, which was obtained mainly by education programs outside the field of music therapy, self-study, and conference general sessions. As for the principles of practices, more music therapists indicated receiving training in a similar manner. Most likely, music therapists seek training at other educational institutes or organizations due to a lack of ASD-specific ongoing education and training courses in the field of music therapy. Comments such as "This has opened my eyes and I want to pursue additional training," as well as "I would definitely like to gain more knowledge to support my practice" suggest a need to provide additional education specific to music therapy and ASD beyond conference-based sessions.

Overall, music therapists participating in this study had a good understanding of ASD and felt confident in providing effective music therapy services. Most music therapists accurately identified the core characteristics of ASD, the current prevalence rate,

theories about the causes, and the key elements and impact of EBP. They were less familiar with more recent developments, such as the proposed shifts in diagnosis of ASD as well as the "emerging practice" level of the music therapy profession as designated by NAC (2009).

Music therapist identified training needs in the following areas: (a) implementation of evidence-based practices, (b) behavioral, sensory, and neurologic approaches to ASD, (c) services for adolescents and young adults with ASD, and (d) recent research outcomes related to ASD and music therapy. Therefore, recommendations for professional development include offering specific training units (e.g., online CMTE courses), mentoring (e.g., via Skype), and improved dissemination of research outcomes (e.g., online newsletter/magazine). Looking into innovative online formats does allow music therapists to obtain training at any time, to be in contact with advanced music therapists worldwide, and to access new information instantly (Vega & Keith, 2012).

This study has several limitations; for example a response rate could not be reported as the study invitation was extended to social media. However, the use of social media resulted in more participation of professional members of AMTA than listed on the available AMTA online database. As music therapists seem to use social media more often than a decade ago (and perhaps email communication less), researchers should consider this vehicle as a new tool for recruiting study participants and examine what it means for the sampling and generalization of results to the target population. In this study, the Research Ethics Committee approved the extension to social media recruiting. Nevertheless, this might have caused a response bias as mainly professionals under 40 years of age (65.3%) responded to this survey. It is very unlikely, but possible, that more seasoned music therapists do not have access to or do not use email, social media, or the Internet. In general, survey studies are based on participants' self-reported information, which may cause accuracy issues (Creswell, 2012).

In summary, these survey findings suggest music therapists are well immersed in serving clients with ASD. Most of the practices utilized by professional music therapists are aligned with the recommend practices for ASD and many of the evidence-based interventions recognized by the National Autism Center (2009)

are incorporated in music therapy sessions. Music therapists have a solid understanding of ASD; however, advanced training courses for implementing evidence-based practices and specific approaches to various age groups are recommended. An informational dissemination system and specific products for music therapists are suggested to respond to rapidly advancing knowledge about ASD and evidence-based practices. As the profession continues to provide scientific evidence about the effectiveness of music therapy interventions and its social validity, it is hoped that music therapy will be recognized as an evidence-based and viable intervention option for individuals with ASD and funded accordingly.

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