The Arts in Psychotherapy 39 (2012) 456–464

Contents lists available at SciVerse ScienceDirect

The Arts in Psychotherapy

Music technology usage in music therapy: A survey of practice☆

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ARTICLE INFO

Keywords:
Music technology
Music therapy

ABSTRACT

The purpose of this study was to determine (a) how many music therapists use music technology in their clinical work, (b) trends regarding music technology usage related to gender, age, and/or geographical location, (c) how music therapists acquire knowledge and/or training in music technology, (d) barriers to using music technology in clinical work, (e) types of music technology music therapists currently use, and (f) why music therapists do or do not use music technology in their clinical practice. Participants ($N = 600$) completed a 27-question survey with a 95% completion rate. The return rates for participants by country were: (a) US 27%, (b) Australia 6%, (c) Canada 9%, and (d) UK 9%. Both quantitative and qualitative analyses of the data were conducted. A majority of the music therapists surveyed (71%, $n = 443$) reported using music technology in the clinical setting. Differences in technology usage were found according to age and gender of the participants. Most of the participants reported to be self-taught (61%, $n = 464$). Results of this study indicated that more training in music technology related to clinical practice is needed, with attention given to ways to make more technology accessible to a variety of learners.

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Over the past 30 years, we have seen music technology become digital (Leider, 2004), more robust (Holmes, 2008), and more compact (Hosken, 2011). Developments in computer technology, such as personal computers and the use of Musical Instrument Digital Interface (MIDI) (Huber, 2007; Williams & Webster, 2008), have made music technology portable and accessible in homes (Huber) and in clinical settings (Cevasco & Hong, 2011; Krout, 1994). The rapid growth in digital technology has had a variety of effects. On the one hand, this growth has meant that instead of being accessible to only "an elite few, [it is] now infused into many aspects of our contemporary society. . . . on our desks, laps, wrists, belts, and even in our pockets" (Nagler, 1998, p. 41). On the other hand, this rate of expansion means that digital technologies become obsolete soon after they hit the market. In order to understand the wide variety of ways that technology has been used in music therapy to date, we examined the music therapy literature in order to ascertain ways in which technology has been employed in music therapy clinical practice, research, and education. For the purpose of this article, music technology is defined as the activation, playing, creation, amplification, and/or transcription of music through electronic and/or digital means.

In music therapy clinical practice, digital technology has been used in assessment and evaluation, as well as in treatment. In the early 1980s, music therapists were using computers to collect and analyze behavioral interactions that were observed in clinical treatment (Hasselbring & Duffus, 1981). Music therapists were also using computer-assisted charting programs that were not developed by music therapists, such as SCRIBE, AIMSTAR and EMTEK (Crowe & Rio, 2004; Hasselbring & Duffus; Streeter, 2010). In the late 1980s and early 1990s, Lee (2000) utilized computer notation software in order to transcribe music therapy improvisations for the purpose of analyzing the musical elements of the client-therapist interactions. By the mid 1990s, CAMTAS, a computer aided music therapy analysis system that organizes data collected from audio and video recordings of music was developed to track the physical activity of clients engaged in musical improvisation over a selected time interval and then to compare progress over sessions (Hunt, Kirk, Abbotson, & Abbotson, 2000; Verity, 2003). At the turn of the century, Gallagher and Steele (2001) developed a computerized database to evaluate music therapy clinical treatment with 90 clients receiving palliative care. By 2010, there were several new software programs which were developed by music

☆ This research was supported by a faculty-student research grant through Slippery Rock University of Pennsylvania. The funding source had no role in the design, data collection, data analysis, interpretation, writing, or submission of this manuscript. The authors wish to thank Dr. Wendy Magee for her previous research on this topic and for allowing us to use and adapt her survey questions as the basis for this study as well as Dr. Robyn Cruz and Dr. Melody Schwantes for their assistance with statistical analysis.

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0197-4556/$ – see front matter © 2012 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.aip.2012.08.001

therapists: The Individual Music Therapy Assessment Profile (IMTAP), a software program designed to collect and manage data from music therapy assessments (Baxter et al., 2007); the Music Therapy Toolbox, an open-source software program designed to analyze MIDI recordings in music therapy (Erkkilä, 2007); the MAWii music therapy system, an open-source software program which analyzes data collected from virtual instruments accessed through the use of Wiimotes (Benveniste, Jouvelot, Lecourt, & Michel, 2009; Benveniste, Jouvelot, & Michel, 2009); the Music-therapy Analyzing Partitura (MAP), a software program designed to describe music therapy events qualitatively (Gilboa, 2007); and, the Music Therapy Logbook, a prototype developed with the purpose of collecting and storing data from recordings of acoustic and MIDI instruments in order to perform quantitative and qualitative analyses of this data (Streeter, 2010).

Within music therapy treatment, both musical technologies and medical technologies have been utilized. Since the 1930s, medical technology has been used by music therapists to measure physiological responses such as heart rate, respiration rate, galvanic skin response, oxygenation levels, and blood pressure (Crowe & Rio, 2004; Go, 2007; Standley & Whipple, 2003b). In the area of receptive music therapy methods, music technology has been utilized to aid song selection for a woman with Rett Syndrome (Miller, 2010), to stimulate non-nutritive sucking in premature infants (Standley & Whipple, 2003a), and in vibroacoustic therapy (Skille, 1989; Wigram, 1997). In order to play precomposed music, assistive devices such as switches and control devices have been utilized with people with physical disabilities (Benveniste, Jouvelot, Lecourt, et al., 2009; Benveniste, Jouvelot, & Michel, 2009; Corrêa, Ficheman, do Nascimento, & de Deus Lopes, 2009; Hunt & Kirk, 1997; Magee & Burland, 2008; Nagler, 1998). Music technology has also been utilized in order to promote movement and greater range of motion (Paul & Ramsey, 1998; Tam et al., 2007). In terms of composition, music technology has been utilized in creating rap (Hadley & Yancy, 2011; Lightstone, 2011; MacDonald & Viega, 2011), audio–visual biographies (Hadley & Miller, 2009), as well as using notation software such as Finale or Sibelius (Lee, 2000; Wosch & Wigram, 2007). For the purpose of improvisation, music therapists have mapped MIDI controllers to programs such as the MIDIGrid and Ableton Live (Hunt and Kirk; Miller).

In terms of music therapy research, digital technology has been used for information retrieval (Parker & Graham, 1972); quantitative analysis, e.g., the Statistical Package for the Social Sciences (SPSS) (Meadows, 2005); qualitative analysis, e.g., ATLAS.ti, HyperRESEARCH, and NVivo (Musumeci, Fidelibus, & Sorel, 2005), and musical analysis (Benveniste, Jouvelot, Lecourt, et al., 2009; Benveniste, Jouvelot, & Michel, 2009; Erkkilä, 2007; Gilboa, 2007; Hunt et al., 2000; Lee, 2000; Streeter, 2010).

In terms of music therapy education, little to date has been written on how to train music therapy students in the clinical use of music technology. Crowe and Rio (2004) stated that most music schools in the US now offer music and technology courses as part of their undergraduate degree requirements. These courses are designed to teach music composition, music arranging, MIDI applications, music recording, and computer-aided music instruction. Some music therapy educators do integrate music technology into the music therapy curriculum, but there is little in the literature about this. Crowe and Rio advocated that music therapy education should address seven areas of music technology: (a) adapted instruments; (b) recording technology; (c) electric/electronic instruments; (d) music technology software programs; (e) medical technology; (f) assistive technology for people with disabilities; and, (g) technology based music/sound healing practices. Furthermore, they encouraged music therapy supervisors and educators to provide greater consistency in terms of "what is taught and how music therapy students . . . acquire skills in these areas" (p. 305).

In 2006, Wendy Magee surveyed music therapists in the UK to determine their attitudes toward and experiences with music technology in their clinical work. Of the respondents, only 30% of music therapists said that they had used music technology in their clinical work at some point. Of this 30%, 47% ($n = 14$) of the respondents reported having discontinued using music technology. Magee found that the major barrier to using music technology was a lack of training on clinical uses of music technology. Other barriers were lack of access to music technology, cost, difficulties regarding portability, and time needed for setting up the equipment (Magee).

In 2011, Cevasco and Hong conducted a survey to determine music technology use in the music therapy clinical setting. They found that many music therapists, music therapy students, and music therapy interns had access to technologies such as computers, CD/mp3 players, recording devices, and software programs. However, they noted that while music therapy students and interns often have greater access to music technology, they do not necessarily know how to utilize these technologies in the clinical setting.

In order to gain a better understanding about the current attitudes toward and uses of music technology in music therapy, the researchers revised Magee's previous survey on music technology and sent it to music therapists in Australia, Canada, the United Kingdom, and the United States. The purpose of this study was to determine (a) how many music therapists use music technology in their clinical work, (b) trends regarding music technology usage related to gender, age, and/or geographical location, (c) how music therapists acquire knowledge and/or training in music technology, (d) barriers to using music technology in clinical work, (e) types of music technology music therapists currently use, and (f) why (if applicable) music therapists do or do not use music technology in their clinical practice.

Method

Participants

Music therapists from Australia, Canada, the United Kingdom, and the United States were recruited to participate in an electronic survey on music technology. A membership list of professional music therapists in the United States ($n = 1764$) was purchased in 2010 from the American Music Therapy Association (AMTA), however, membership lists for Australia, Canada, and the United Kingdom were not available as these organizations did not sell their mailing lists. An email link to the survey was forwarded to the professional music therapy organizations in the countries listed above, which was then sent to the prospective memberships. Estimates of the professional memberships of the international organizations were calculated based upon numbers provided by each country's professional association: UK membership 685 (U. Arvainth, personal communication, January 4, 2012); Canada membership 400 (L. Young, personal communication January 5, 2012); and, Australian membership 385 (A. Pearce, personal communication, January 4, 2012). A total of 630 music therapists took the survey. Of these participants, 600 music therapists completed the survey and were included in the data analysis. Of the participants, 78% ($n = 469$) lived in the United States, 10% ($n = 61$) lived in the United Kingdom, 6% ($n = 37$) lived in Canada, 4% ($n = 22$) lived in Australia, and 2% ($n = 11$) lived in other parts of the world (6 from Ireland, 1 from Bahrain, 1 from Germany, and 3 did not indicate country of residence). The return rate for participants living in the United States was 27% (469/1764). The response rate from countries outside of the United States was estimated at 6% for Australia (22/385), 9% for Canada (37/400), and 9% for the UK (61/685). It

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