



The Future of Technology in Music Therapy: Towards Collaborative Models of Practice

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There is a growing interest in the field of music therapy and the use of technologies. The books, *Music Technology in Therapeutic and Health settings* (Magee, 2013), and *Music, Health, Technology and Design* (Stensæth, 2014) are recent examples of this. They reveal that music therapy is rapidly moving into new areas where the use and understanding of – as well as the need for – technology in clinical practice, assessment, theory and research collaboration is explored. In these publications, there are examples of how (computer) technology is becoming an efficient way to analyze improvisations in sessions (Erkkilä, Ala-Ruona & Lartillot, 2014), and how interdisciplinary research collaboration between music therapists and technology professionals use music therapy theory as a backdrop to explore how musical and interactive media can be developed to promote health and well-being among people with special needs (Cappelen & Andersson, 2011a, b, 2014 ; Stensæth, Holone & Herstad, 2014; Stensæth & Ruud, 2014). Historically, published accounts of using technology in music therapy relate to the adoption of music technology within clinical practice to support and understand the ways in which clients express themselves. In the following sections this particular history is further described. In the last part of this chapter we will present an ongoing, interdisciplinary research collaboration project to exemplify one of many potential models for the future of technology in music therapy.

A History of Music Technology in Music Therapy

The use of music technology within clinical music therapy is not new, with the earliest research exploring its use in organizing and analyzing behaviors observed in clinical treatment (Hasselbring & Drufus, 1981). Other pioneering research on the topic examined using “microcomputers” with adolescents with behavioral disorders in school settings (Krout & Mason 1988), with children in crisis (Nagler, 1993) and with adults with complex neurological conditions (Nagler & Lee, 1987, 1988). Yet, it is perhaps surprising that music technology arrived in the field of music therapy rather late given the ubiquity of music in everyday technology and social media, as well as the historical dominance of

Musical Instrument Digital Interface (MIDI) technology, which made it possible as long ago as 1982 for digital musical instruments to ‘talk’ to one another and to interact with small computers.

However, the applications of music technology in therapy have developed exponentially in recent years, reflecting the development of digital technologies more widely in society (Hadley, Hahna, Miller & Bonaventura, 2013; Stensæth, 2015). While the early works on technology in therapy were research driven, the 1990’s saw the emergence of a published column for clinicians in *Music Therapy Perspectives* that provided a wealth of guidance for clinicians that remains relevant to this day (c.f. Krout, 1990).

The first generation iPod was released only in November, 2001. Although this did not herald the invention of digital music or of portable “on-the-go” music listening per se, devices such as the iPod have enabled us to carry music around as a personal accessory in more convenient and compact ways than previous forms of hardware technology. Hindsight allows us to see that this specific device has revolutionized individualized access to music in our everyday lives and also for our clients (Stensæth, 2015). Soon thereafter, clients would bring their favorite songs and playlists on their iPods and mp3 players with them to therapy. Norwegian music therapists have described, for example, how this technology has been used as a door opener for identity work and mood regulation among youngsters with mental health challenges (Skarpeid, 2009; Stene, 2009).

In July 2002, a presentation was given at the World Congress of Music Therapy in Oxford, UK, where the British music therapy profession was charged with being slow to engage with technology when compared to other professionals (Swingler, 2002). It was suggested that the profession was choosing not to incorporate electronic technologies, because it shifted the power balance within a therapeutic interaction and enabled clients to find a voice within therapeutic interactions. The same tendencies were found in Scandinavian music therapy, but here the inertia was explained as a lack of interest in technology that stemmed from the field’s origins in the humanities and the social sciences (Ruud, 2010), where people, not technology, were thought to dictate the relevant aspects (and impacts) of the future connection between music therapy and technology. Later on Stensæth, et al. (2014, p. 164) suggested that, this conviction did not “necessarily prohibit an interest in computers or ICT [Information and Communications Technology]”; rather it did nevertheless “privilege philosophical practices that clarify and deepen our understanding of these ‘things’ [sic.] as refracted through our human engagement with them.”

Prompted by the charge made at the World Congress in 2002, a survey was undertaken of the Association of Professional Music Therapists in the U.K. that sought to explore to what extent music therapists were incorporating electronic music technologies into their clinical work, as well as the barriers that prevented them from using technology (Magee, 2006). At a similar time in the USA, another survey was undertaken of American Music Therapy Association approved universities and clinical training directors to review the current use of technology in music therapy research and practice in various settings for the purpose of providing information relevant to music therapy educators and

clinicians (Crowe & Rio, 2004). These two surveys provided an historical snapshot of how the profession was engaging with technology across the UK and the USA. Although the latter identified a range of technologies used in current practice, they also determined a need to identify the technologies that were most relevant to clinical practice and called for an “all-encompassing clinical survey” of its use in practice (Crowe & Rio, 2004, p. 283). Magee (2006) established that the main barriers for music therapists engaging with music technologies were a lack of training at the entry level in how to incorporate such tools clinically, and skills development at a more advanced level of training. In particular, therapists indicated that guidance was needed for incorporating electronic music technologies appropriately within the therapeutic context to meet client needs, and for which populations were most suited to technology. Crowe & Rio (2004) also recommended incorporating technology applications into entry-level training and professional practice competencies.

A subsequent exploratory study sought to define music therapy practice incorporating technology within U.K. practice (Magee & Burland, 2007). This established that the client’s awareness of cause and effect was an important step in the therapeutic applications of technology when using it within improvisational work and that interdisciplinary practice could assist with providing the knowledge and expertise required in using technology with complex populations.

In mid- 2007, the first generation iPhone was released, with the iPad released in April, 2010. In between, a major piece of research and series of events funded by the Leverhulme Trust drew together interdisciplinary, international collaborators practicing with music technology in health, educational and community settings. The intent of these events was to explore the design and application of a range of music technologies with populations across the life span by professionals that included electronic sound production designers, computer music scientists, music educators, assistive technologists, occupational therapists, composers, performers and music therapists (see Magee, 2011, 2013b).

The Current Status of Music Technology in Music Therapy

Music therapists employ a wide range of technology resources for music-making opportunities in clinical practice (Krout, 2013) as well as for purposes of assessment, evaluation, and research (Hadley, et al., 2013). However, a survey with an international sample of music therapy professionals established that the concerns from the previous surveys of the profession conducted by Crowe and Rio (2004) and Magee (2006) remain (Hahna, Hadley, Miller & Bonaventura, 2012). In particular, adequate and appropriate training in music technology related to clinical practice continues to be a need that remains unmet, with attention required for making technology accessible to a variety of learners.

Age and gender are two particular factors that affect how willing and skilled professionals are to engage with technology in music therapy (Hadley, et al., 2013). The demographic of music therapists who are more likely to say “yes” to using music technology are male and born between 1970 and 1989 (Hahna, et al., 2012). In a profession that is predominantly female and where many of its

educators are older than this demographic, the mismatch between clinical knowledge and comfort with technology demands collaborations that are intergenerational and inter-professional (Magee, 2013b, 2014).

Collaboration is at the center of best clinical practice when designing and applying digital music technologies and assistive devices that trigger music (Magee, 2013a). Music therapists can complement their own skills through creative collaborative practices in which they learn from other professionals with alternative skill sets and knowledge (i.e., Stensæth, et al., 2014; Stensæth & Ruud, 2014). This can help music therapists broaden their scope of skills and gain confidence using technology in clinical settings.

But what roles do such diverse players have in a collaborative model? A number of authors have suggested that, when using technology in music therapy, the therapist might serve as a witness (Whitehead-Pleaux & Spall, 2013), a sound engineer (Zigo, 2013; Street, 2013), a producer (Street, 2013; Sadovnik, 2013; Weissberger, 2013), or sometimes even a co-creator equal to the musical and technological media (Stensæth, 2013). Certainly the therapist needs to demonstrate flexibility and a willingness to be the “unskilled” partner in the therapeutic alliance, where the technology provides the common ground between therapist and client (Magee, 2013a).

The studio model proposes a relationship between producer, artist and engineer where each is an actor, positioning the client as the ‘artist’ and central to the process. The therapist brings a number of skills to the therapeutic alliance, but central to these is an understanding of the client’s needs and having clear therapeutic goals in mind. Any one of a number of roles might be adopted by the therapist, depending on the particular music-making activity ranging from facilitator, teacher, co-creator, operator to producer. The ultimate goal is to enable the client to become an active voice in music-making as, through music-making, non-musical goals in a number of domains are addressed.

Complementing the many studies on music therapy and technology, we have also witnessed an extended interest in the field of musicology and music and health, in particular in the Scandinavian countries, wherein technologies are used as health promoters in everyday life (e.g., Beckman, 2014; Skånland, 2013). The ‘need’ to *share* music on social media, like Facebook and Twitter, is also becoming an important identity marker in the modern lifestyle. These phenomena create new challenges as well as new possibilities for the discipline and practice of music therapy, which we will only mention here, but not discuss at length. One question is: How can we maintain ethical standards when using from computer-mediated music therapy and social media? Bates (2015) discusses these ethical issues by exploring the benefits and risks of technology, along with guidelines that promote ethical thinking and problem-solving. Another question is: How can we maintain and develop our professional integrity among the growing number of health technology workers? This matter was part of a roundtable discussion at the Nordic Music Therapy Conference in Oslo, in August 2015. A third and final question is: How can we help our clients (and especially the most vulnerable ones) avoid exclusion from the digital world, and instead, help them participate in it? The RHYME project discussed in the next section deals with such questions.

The RHYME project: Illustrating a Model of Research Collaboration among Music Therapists and Various Technology Professionals

The large Norwegian interdisciplinary research project called RHYME (2010-2015) (www.rhyme.no), which is funded by the Norwegian Research Council and is in its final round at the time of this publication, provides a model of exemplary interdisciplinary practice in that it has explored a new model of research collaboration among fields, such as interaction design, tangible interaction, industrial design, universal design, music and health, and music therapy. The overall goal in RHYME is political: to reduce potential isolation and passivity and to promote health and well-being for families with children with severe disabilities by engaging them in musical communication, collaboration and co-creation in their everyday lives using customized, interactive and musical tangibles shaped like familiar home objects, such as furniture (e.g., pillows) or toys. The RHYME objects in this respect exceed manual musical instruments and traditional toys with regard to the potential for interactivity. As musical artefacts, the co-creative tangibles in RHYME operate more as technical and musical actors, and even as improvisers. In contrast to traditional sensory stimulation programs where the people are passively stimulated, the RHYME tangibles require active responding from the users. The designers therefore talk of the tangibles as ‘co-actors’ (Cappelen & Andersson, 2011a, b). Another RHYME objective is to produce theory, practical knowledge and understanding for the profiling and influence of future designers and developers of technological and musical media.

Among the many results of the RHYME projects, the aspects relevant to music therapy are summarized in the following four points:

- 1) Because there seems to be a correlation between the severity of a child’s disability and her social isolation in everyday life, music therapists need to work in clients’ homes, and not only in clinical settings. By preventing the child with disabilities from becoming even more isolated in her playing, and by helping her family from feeling inadequate in addressing her needs, the music therapist with the use of interactive and musical media designed and programmed for the home can contribute to promoting the family’s health. Eide (2014) and Eide & Stensæth (2015) argue that rather than talking of music *as* therapy or music *in* therapy (Bruscia, 1998), the RHYME technology demonstrates that music in the future can be *one of many possible media* in music therapy. Our (interactive and musical) surrounding can act to promote health too.

- 2) Because there is economic interest in media, such as those developed in RHYME, it is just a matter of time before it appears on the market. Music therapists therefore need to participate in ensuring that its development matches the varying needs of a diverse society, especially those who have difficulty participating in digital innovation. The programming of the media to include many needs and subjective requests therefore should be

flexible. Music therapists can show the designers how a more individualized approach may ensure more transparency, better directions and more predictable structures.

3) RHYME shows that the health potentials deriving from the use of such media depend on the degree to which the interaction between the users and the media leads to vitalization: When the media engages the users creatively and aesthetically to explore through their basic senses like hearing, sight, tactile sense, kinesthetic sense, proprioceptive sense, and vestibular sense, they are aroused both bodily and mentally. This is basic, and from this, their sense of agency is often strengthened too. At its best, it may enhance users' feelings of bonding and belonging. The design of such media, in that it entails sensory stimulation, represents something promising for clinical practice in music therapy compared to more traditional musical instruments.

4) Music therapists need to collaborate with many professionals to develop interactive and musical technology for the benefit of people's health and well-being. Multidisciplinary discussions and insight from other disciplines and paradigms along with close dialogues with the users has been essential in RHYME to create a common ground of understanding among the researchers. In the discussions, there has been, for example, a tendency for technology researchers to focus more on the interaction between humans and the information systems (and the construction of computer interfaces), whereas music therapy researchers have tended to focus much less on technology and computers and much more on the relationship between humans.

Summary

This chapter shows that there are both challenges and potentials in the future of technology in music therapy. We think that the potential models for the future of technology in music therapy need to take into account the following:

- In clinical practice, age and/or gender together with ethnicity, cultural background and socio-economic wealth are aspects that need careful attention due to the inequalities in cultures and countries.
- Technology needs to be included as a mandatory subject in many music therapy programs and curricula to secure that music therapists get sufficient training in the use of it.
- The field needs more theory building concerning the use of technology. Theory depends on research activity in the area, and here we are witnessing increasing interest. Because future music therapists are part of the digital generation, we think that much more research is likely to be

developed in the years to come. Topics should include interdisciplinary collaborations on development of prototypes and testing these for their clinical applications.

- Music therapy researchers need to collaborate in interdisciplinary research to gain a deeper understanding of technological development and to be able to more actively contribute to the system design of interactive and musical media (like those in RHYME). This could provide the field a better understanding of the potential use of the technology in the artefacts surrounding us daily and to allow other ways of engaging users regarding health promoting music making. Music therapists and music therapy knowledge are also sought after in interdisciplinary collaboration, not just to speak about the value of being together in music, but also to secure the programming of the technology to include subjective, intersubjective and relational aspects – and to empower the resources in our future clients, in particular the most vulnerable users' needs and interests.

Interdisciplinary collaboration can be challenging, but is nevertheless necessary for music therapy and technology to develop happily together. As music therapists, we should note the value of the close connection between humans and musical, interactive objects and how this relationship too can be potentially health promoting for them.

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