Health Musicking Technology:

Using the iPad® as a Health Resource in Adolescent Mental Health Care

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Abstract

The purpose of this article is to contribute more knowledge about digital technology in music therapy and public health, focusing on portable tablet technology. The article presents the findings from a multiple case study in which four adolescent outpatients from a mental health institution for children and adolescents participated in an iPad-based music workshop. The empirical data is sourced from qualitative interviews and participatory observation conducted during the workshop. The analysis suggests that the activity of making music with an iPad establishes and develops social relations, promotes self-esteem, and develops identity, enhances subjective wellbeing, and aids in dealing with daily life problems. Furthermore, it is suggested that the activity has value in terms of affording co-creation, strengthening agency, and building self-efficacy. The discussion includes reflections and critique concerning health-affordance, health musicking, and identity, and it argues for the benefits of using digital music technology with adolescents in mental health care.

Keywords: music technology; iPad applications; mental health and wellbeing; health musicking; resource-oriented music therapy

Introduction

A range of new technologies is set to change health care in the 21st century. Artificial intelligence, robotics, virtual reality, and connected devices use the substantial amount of data available through databases and internet connections to create better and more efficient solutions to improve how we deal with different health challenges. The inventions are currently most prominent in somatic health care (Norwegian Centre for E-health Research, 2023; University of Agder, 2023; van Gemert-Pijnen et al., 2013; Zulman et al.,

2015); however, new technology is also being used in mental health care (Areán et al., 2016; Biagianti et al., 2017; Maulik et al., 2017). In music therapy, assistive technology devices (Crowe & Rio, 2004; Magee & Wosch, 2018) and music technology tools used in music production (Burland & Magee, 2014; Kirkland & Nesbitt, 2019; Viega, 2018) are valuable assets in dealing with health challenges, both in therapy and in public health.

In this article, I engage in a qualitative exploration of how adolescents interact with digital music technology to promote health and wellbeing. I argue that adolescents are particularly susceptible to technological tools because of their already strong relationship with technology as a result of growing up in the digital age. I present the iPad and various music applications as possible resourses and valuable tools for working with music in mental health care.[1] My focus is on adolescents' own experience as a valuable and important contribution to our knowledge about music-making, adolescents, and mental health.

Aim of this Study

The aim of this study was to describe how adolescents interact with the iPad as a music production tool, and how this creative activity was associated with mental health and wellbeing.

The article begins with a brief discussion of the term health-musicking. Part two contains a review of the most relevant literature. The methods used in the study are then described in part three, followed by a presentation of the findings in part four. Finally, the main conclusions and the strengths and limitations of the study are outlined in part five.

Health-Musicking

Health is a multifaceted and ambiguous term. For my purposes, I adopted the humanistic, resource, and empowerment-oriented health approach, which recognizes health not as the absence of illness (pathogenetic perspective), but as a holistic and salutogenic (Antonovsky, 1987, 1996) perspective that focuses on factors that promote both health and a state of health that balances the body, mind, and soul. In the humanistic health approach, health is an experience of wellbeing rather than a cure from illness (Blaxter, 2010, p. 19).

The emphasis on experience, which is found in the humanistic health approach, is also found in the concept of *musicking* (Small, 1998). Small emphasized that music must be understood as a practice and a process rather than as an object. Music is something we do. The experience of musicking together, as a social *doing* (Stensæth, 2014b, p. 100), positions the meaning of music outside the music itself; the meaning lies in the social experience of doing music.

In addition to the social implications, musicking has been recognized to have strong implications for the experience of health. The concept of musicking is linked to vitality, agency, empowerment, social capital, meaning, and coherence in life (Ruud, 2010, p. 11). Health musicking is consequently understood as a humanistic, health promoting music activity that is experienced both individually (as an interaction between the person and the music) and in a social context, as an interaction between the music and the agents[2] involved in the act of doing music together (Bonde, 2011; Stige, 2002; Stige & Aarø, 2012).

Previous Research on Music Technology in Music Therapy and Mental Health

Since the 1990s, music technology has become more digital, less expensive, more compact, and robust, and more user-friendly. The fact that small digital objects, such as smart phones and tablets, can contain numerous accessible recourses, readily available at a fair price, brings the technology closer to people. We know that many adolescents use their

portable devices as carriers of a musical soundtrack to life in general (Ruud, 2013) and that music is used as a resource and a deliberate strategy for coping with a host of psychosocial challenges (Beckmann, 2014; McFerran et al., 2019; Skånland, 2012). Digital technology consequently offers new possibilities, affording additional options that affect how we may work with music and health. However, research exploring the music therapy profession's engagement with technology has indicated many barriers for bringing technology into music therapy practice, emphasizing *access* and *knowledge* as the two main obstacles (Hahna et al., 2012; Magee, 2006). Nevertheless, during the last decade, the democratisation of music technology (Zagorski-Thomas, 2014) through the digital revolution has improved both access and knowledge (or at least practical skills) among the general population, including therapists and clients. Digital music technology is consequently both more accessible and easier to use than before, and it currently is a valuable resource in working with music and health.

Research on the role of technology in music therapy consists of studies with various methodological approaches. A literature review of the implications of technology in music therapy practice and research demonstrated that technology has been present in the literature since the 1970s, both as medical, assistive, computer-based technology and as musical instruments and recording technology (Crowe & Rio, 2004). Clinical music therapy studies have demonstrated how electronic music technology can address identity and relational issues (Burland & Magee, 2014; Street, 2014; Weissberger, 2014), promote self-awareness and self-confidence (Kirkland & Nesbitt, 2019), promote participation and inclusion (Stensæth, 2014a), and be a resource for creating and exploring cultural and personal narratives (Sadnovik, 2014; Viega, 2018). These studies demonstrate that music technology is valuable as a practice of musicking; as a health-promoting catalyst; and as a motivational tool for engaging and activating people to take part in creative, self-reflective processes that empower them and influence their wellbeing.

If we consider mobile music technology in music therapy and mental health, benefits such as portability, graphics, adaptability, range of possibilities, accessibility of apps, and user-friendliness were identified as valuable in therapeutic settings (Knight & Krout, 2017; Knight & LaGasse, 2012). Moreover, researchers have explored the touchscreen interface in combination with autism spectrum disorder (ASD) and highlighted the utility of the iPad's technology for promoting social skills and reducing stress and anxiety (Hillier et al., 2016).

Overall, there is a substantial body of evidence on the health benefits of the arts (Fancourt & Finn, 2019), and knowledge of how music affects the brain (and the body) is continually growing due to neuroscientific research and the development of new technology (Brean & Skeie, 2019). Moreover, there is increasing research on music therapy for mental health challenges (The Grieg Academy Music Therapy Research Centre, 2023). We also know from cultural and sociological studies that music plays an important role in people's everyday life, health, and wellbeing (Ansdell, 2014; DeNora, 2000, 2013; Stige et al., 2010). Although it is growing, the body of research on music, technology, and mental health is quite sparse. Apart from this, the methods and implementations differ substantially in the current research. The call for more methodically thorough and critical studies (raised by scholars such as Hillier et al., 2016; Kirkland & Nesbitt, 2019; Knight, 2013; Magee, 2014) further indicates that this field is in a premature state and that more research is needed on digital technology's position towards meeting therapeutic goals and wellbeing.

The holistic approach to health enables a variety of ways in which to work with music, technology, and health. Tablets and smartphones could be powerful tools as catalysts for music creation, personal and emotional expression, and consequently a healthy life. The following discussion aims to shed some light on what this might look like.

Adolescents' Mental Health

Norwegian children and adolescents are part of a multinational trend showing an increase in reports of mental health problems (World Health Organization, 2019). The Municipal Youth Surveys indicated that 15.2% of youth in secondary school and 21% in high school (30% of girls and 12% of boys) reported that they were severely troubled by depressive symptoms on a regular basis (Ungdata, 2019). Moreover, approximately 5% of children under 17 years old were diagnosed with a mental illness that requires treatment from a mental health care institution.

The most common treatment for these patients is psychotherapy. However, based on common outcome measures widely used in research, we know that for roughly 30–50%, psychotherapy does not produce the desired effect (Reynolds et al., 2012; Weisz et al., 2006). The reasons for non-response are inconclusive, but for patients to receive the benefits, other forms of therapy must be explored, either as a supplement or as a replacement. In this regard, music has been linked to adolescent mental health in several studies, and diverse literature explores this relationship. However, a critical interpretative synthesis of the literature (McFerran et al., 2016) revealed that research is characterized by simplistic dichotomies and inconsistencies in the research design, and more systematic and comprehensive research is needed.

The recovery tradition[3] argues that the process of recovering from mental health challenges requires time and must be situated in a much broader context, such as a person's everyday life context (Rolvsjord, 2013). People therefore need resources that are situated elsewhere, outside hospitals and treating institutions' limitations of time and place. Such resources can be referred to as "the everyday toolkit" (Deegan, 2001, p. 14). This term functions as a metaphor for the wide variety of tools and self-help strategies that a person needs to cope with a myriad of symptoms. In this article, I use this metaphor to position the iPad as a tool and a resource within this social context, as an everyday tool for coping with life. As such, the iPad's mobility and easy access offer a range of possibilities to avoid limitations of time and place. The iPad should also be a natural and familiar tool for young adults and adolescents, in the sense that this mobile technology is part of their culture and has the potential to be part of their mental health toolkit as well. It can even be the "primary vehicle" for recovery, as suggested by Viega (2018, p. 153).

Methodology

Personal Context

My connection to music technology is mainly through my experience as a musician and teacher. As a keyboard player, I include digital software and plug-ins in my palette of musical expressions. A laptop and multiple iPads are part of my gear, both in live and studio settings. Moreover, I teach music technology in college where we primarily use it as a songwriting and music production tool. Although electronic technology is considered crucial for how music is made and experienced, the understanding of its role must go beyond the development and use of artifacts. Consequently, I take a sociological approach that also includes discussions of technology in relation to the social world and as a social practice (Théberge, 2001).

Participants and Setting

Prior to data collection, the study received ethical approval from the Regional Committees for Medical and Health Research Ethics (REK),[4] and it was professionally approved by the research unit at Sørlandet Hospital. Three therapists (one female and two males) and four

adolescent participants (two boys and two girls) were recruited from the Department of Child and Adolescent Mental Health (ABUP) at Sørlandet Hospital in Kristiansand, Norway. Information about the project was delivered to all therapists working at the department, calling for therapists interested in the project and asking them to nominate relevant candidates. A conversational interview with the therapists and their nominated candidates was subsequently performed, seeking to reveal motivation and expectations as well as providing more thorough information to the participants concerning the project. Adolescent participants had to meet the following inclusion criteria: (1) be an outpatient, (2) be age 16–18, (3) be participating in individual therapy for a mental health challenge with a therapist at ABUP, (4) demonstrate motivation for participating in the project. Gender balance was endeavored, and participants with severe psychosis, strong social anxiety, or other forms of challenges that would likely not enable them to complete the project were excluded. Criteria for inclusion and exclusion were assessed by the therapists and me based on experience from therapy and information from the interviews. The four participants experienced different mental health challenges, ranging from moderate cognitive impairment to more complex diagnoses, such as depression and anxiety, that resulted in self-injury, drug-abuse, and suicidal thoughts. Although it was not a criterion for inclusion, all participants shared a strong interest in music, but they had vastly different experiences with it. Selection of participants was hence done purposively (Patton, 2015), choosing people who were expected to offer insight into the research aim. A letter of informed consent was signed by all participants, both patients and therapists. All four participants who were recruited finished the project by completing 8–12 individual music sessions over a four-month period and one semi-structured interview after concluding the sessions. The three therapists gathered for a group interview four months later.

The sessions offered to the participants in this study can be characterized as humanistic (Ruud, 2010), resource-oriented (Rolvsjord, 2010), and influenced by community music therapy (Pavlicevic & Ansdell, 2004; Stige & Aarø, 2012). The sessions were planned and organized according to the four phases of the "music workshop model" (Krüger & Strandbu, 2015), which divides the work into four parts: (1) a preparation phase, (2) a work phase, (3) a realization phase, and (4) an evaluation phase. Each participant was offered a weekly 45–60 min. individual session with me, along with an iPad equipped with a carefully selected music app library,[5] and the participants had the iPad at their disposal for the whole period. The purpose of the sessions was to work on an instrumental piece, which would eventually be a completed and well-produced piece of music that would somehow reflect each participant's own musical identity. Since we worked with transportable equipment, we were not restricted to special rooms. Therefore, the sessions were held in different therapy rooms and the library room at the ABUP outpatient clinic. My collaboration involved an introduction to and training with the iPad apps, as well as musical engagement in the music we made. Structured and improvised music-making, technological processing of samples, and arranging and mixing of the music were performed at various levels during the sessions. Moreover, the participants' preferences were an important part of what we did; the musical ideas originated from and were made and processed by them, assisted by me. The amount of help that I offered differed depending on their level of engagement and technological skills. Verbal conversations were also a natural part of all sessions, providing important information.

Data Collection

The data were collected via participatory observation (Fangen, 2010) during the music sessions and through qualitative, semi-structured interviews (Kvale & Brinkmann, 2015) with the participants and their therapists. From an anthropological perspective, the combination of fieldwork, participatory observation, and interviews is an expedient

method to gain both deep, personal knowledge of people's reality (involvement) and the outsider perspective (observation), which offers distance from the selective experiences of the individuals (Fangen, 2010, p. 15). Fieldnotes (organized as a session log) were used to collect information, observations, and reflections from my perspective. All sessions were recorded, and the sound files were implemented as part of the data material. The perspective of the participants is present through these sound recordings as thoughts and reflections recorded as verbal or musical expressions. In addition to the field recordings, the interview displays their thoughts and reflections on a more structured level, in a conversation with me, organized by an interview guide or schedule of open questions designed to provide insight into the research aim. Participants were interviewed individually by me in 35–50 min. durations, adjusted to their response and verbal skills. Finally, the three therapists, connected to the project through their patients' participation, were interviewed. This was organized as a group interview and lasted 45 min. All interviews were recorded and transcribed by me.

The interviews were transcribed word for word, including so-called "dead material" (Malterud, 2011, p. 78), and italics, bold, brackets with own comments, and other graphic tools were utilized to highlight sonic information such as cadences, laughter, or accentuations that seemed important for the interpretation of meaning in the recordings. Since my focus was on analyzing meaning and personal experience, the transcription was performed in a "slightly modified verbatim mode" (Malterud, 2011, p. 77) to make the language reader friendly and the quotes informative as samples of meaning. All names and personal information were either replaced by fictional names or otherwise de-identified. In this article, the four participants are named Lily, Karen, Daniel, and Marcus.

Analysis

The data was analyzed using an hermeneutic phenomenological approach. I used systematic text condensation, as outlined by Malterud (2011) and Johannessen et al. (2018), supplemented by perspectives from Grønmo (2004) and Jacobsen (2015). This method is developed to help organize and group data with important commonalities. The method consists of four main steps. As a preparational step, I read all the data several times, making notes and reflections on the material and identifying relevant parts. In the next step, coding was added to accentuate important points in the data material. This was a descriptive, open coding process (Jacobsen, 2015) with an inductive approach (Grønmo, 2004). After this empirically grounded close reading, several more readings were used to develop categories (Grønmo, 2004) for grouping important data with commonalities that had both internal and external consistency (Johannessen et al., 2018). I performed these readings several times and developed three different setups before deciding on the final categories. This last step was a more question-driven approach akin to the selective and deductive coding described by Jacobsen (2015). The goal was to emphasize categories that were relevant for my research aim. During this analytical interpretive process, the focus alternated constantly between various theoretical perspectives and the text, moving back and forth between details and wholeness, often referred to as the hermeneutic circle (Kvale & Brinkmann, 2015).

Self-Reflexivity

The phenomenological approach acknowledges the subjective point of view and values the subjective experience of or about an object (Kvale & Brinkmann, 2015, p. 45). However, the qualitative research design with participatory observation used in this project challenges the notion of preconception and interpretation due to the close relationship between me as a researcher and the research topic (Fangen, 2010). To recognize and

acknowledge my own values and preconceptions, I discussed my bias with peers both before and during the project, and I wrote reflection notes after every participant session that included my own experiences of the session. Together with the hermeneutic approach in the analytical interpretive process, this strategy both helped to mitigate the adverse effects of my presuppositions and enabled deeper levels of reflection.

Findings

Four superordinate themes were drawn from the analysis. They are presented in Table 1 and discussed in detail thereafter.

Table 1. Key Themes.

1. The activity established and developed social relations.
2. The activity promoted self-esteem and developed identity.
3. The activity promoted subjective wellbeing and aided in dealing with daily life problems.
4. The activity had value in itself.

1. The Activity Established and Developed Social Relations

Social relations between human beings are fundamental for experiencing optimum health and wellbeing. In this project, the establishing and developing of social relations emerged on two levels: The relationship between the participant and me and between the participant and others close to him or her (e.g., family and friends).

The relationship between the participant and I was a crucial condition for the project. Founded on resource-oriented music therapy, which holds strong connections to the philosophy of empowerment, the common-factors approach, and positive psychology (Rolvsjord, 2010), it was important for me to establish a safe environment, free from pressure resulting from too great expectations and open to any styles and forms of music that arise. Even though I was clear on this when introducing the project, several participants expressed feelings of stress, nervousness, and expected failure. Music technology was the medium we used to work with these issues. Lily was a shy and cautious girl who, early in the project, both looked and acted stressed and uncomfortable.

> In the beginning, I was truly nervous, because I did not know you, and I have often been a little shy with new people, especially when it is something arranged; like when it seems very formal, I get very stressed and nervous, sort of. But we had things to do, in a way … We were going to work on the music. So, it rapidly became sort of a little easier and I felt that I became more comfortable. (Lily)

All participants talked about how they used both our music and the iPad to establish and develop social relations. By showing the iPad apps to friends and family and including them in the process of making the music, the participants emphasized how the activity was beneficial and valuable to engage in social relations, such as discussions about the music, or social bonding. The fact that they were all proud of and expressed satisfaction with the music (both as a process and as a result) made this an important and explicit outcome of the project. All participants highlighted how the project had made their friends interested (and even envious) and how fun it was to be able to show them something unique that they did not know. Karen talked about how she felt closer to her musician friends after showing them the project:

> I remember […] if I have showed the iPad to some friends of mine, how surprised they got. How fun they thought it was[.] And that I felt very lucky to be part of it, because […] everyone wanted to be part of it. (Karen)

Daniel explained how he taught music production on the iPad to a friend of his and how that made him feel like an expert, having knowledge of something special that he could share with others. He also mentioned that only minutes after receiving the final mix of the song, he posted it on Soundcloud and social media, and he received much acceptance and credibility because of it.

2. The Activity Promoted Self-Esteem and Developed Identity

Given that all participants began with no prior experience with music-making on the iPad, their progress and level of mastery was impressive. By the end of the sessions, they could all record, edit, and arrange their songs, and Marcus, Lily, and Karen also created their own mix. When asked about what they felt was the utmost moment of mastery, Lily explicitly highlighted the mixing process:

> That was something new and different. But I handled it and made it work. So that was fun!
> (Lily)

From my observatory perspective, the progress of mastery of the iPad as a music-making tool paved the way for a process of building self-esteem and belief in one's own abilities. Early on, Daniel expressed to his therapist the opinion that music making on the iPad was too complicated for him to manage. At some point though, he progressed, and he later arrived at therapy appointments demonstrating the iPad apps to his therapist and sharing the knowledge with his friends.

> It seems as an expansion of his self-confidence. He handled the tools, and he was able to share it with his friends. (Daniel's therapist)

Daniel himself highlighted perseverance and patience as skills he had developed during the project:

> I do not give up as easily as I used to. It has made me "go another round" and try once more.
> (Daniel)

The multifaceted qualities of the iPad apps enabled us to take diverse approaches to music-making. By allowing the participants to make aesthetic decisions and shape the music according to their personal expression and identity, the project exemplified how music can be used to work with identity issues. On the one hand, they all agreed that the music could describe them as a person: Lily as a thoughtful and introverted acoustic pop singer; Daniel as a "mad" acid dance-music performer; and Marcus as a sound-oriented electronic dance music (EDM) producer who, according to his therapist, experienced a confirmation of identity that was important for his choice of school, his continuance of making music, and his discovery of a musical talent that he could continue to develop.

Perhaps the best example in this respect was Karen. According to her therapist, she was a shy, introverted, insecure girl who struggled with identity issues due to a demanding family situation. She was afraid of losing track of who she was, living in these difficult circumstances, and she expressed fear of trying new things. The identity issues and her lack of confidence were her main problems. Using music technology and the special affordance of the tablet interface, we worked on these challenges in three different ways: improvisation, movement, and *personal samples*.

First, we improvised. She explored possibilities on the iPad by open-mindedly experimenting with the apps. This unstructured and free introduction to the sonic world of the iPad revealed that she enjoyed the calm, atmospheric soundscapes from apps operated by touching and moving fingers on and around an open surface, free from buttons, faders, and keyboards.[6] She clearly identified with this sonic and expressive environment,

and we recorded long, improvised sections that we later edited and used to structure our musical piece.

> I was afraid I had to be good […] but it was very nice that it was so free[.] It is like that with dance as well. I am not very fond of technique. I think it is more fun with the free stuff. (Karen)

Second, we discovered a connection between the sounds and movement. By playing with these apps, she operated the touchscreen much like a dancer. Her fingers moved around on the surface the way a dancer moves across the floor. Karen was a dedicated and talented dancer, and now she was "dancing" on the iPad. She adopted her experience of movement from dance into our project of making music. This formed a connection between her already established identity as a dancer, and her new, developing identity as a musician.

> The project has challenged me[.] I have learned a lot from it. And it is kind of a different world from what I live in. I do not live in the music world, even though it is a big part of my world, sort of. But I have a lot of friends who are very into music. And they make music, play in a band, and so on. So, it is cool to sort of see what they are doing too. And be a part of that. And […] I do not have to be only a dancer. I can also make music and do other things. So that was cool. (Karen)

Third, we used the dance metaphor to incorporate other dance-related sounds into our music – sounds that she related to (personal samples) and that she recorded with the iPad. By doing this, we connected the music to her already existing identity as a dancer. Field recordings of dancing steps were edited and processed[7] before bringing them into the GarageBand project file containing our musical piece. By bringing her dance world into the music, identification was strengthened, and the personal samples expressed through the music became a statement: "This is who I am."

Her ownership of the music, the mood, the personal samples, and the overall sonic expression, as well as the way we built on her interest in dance to reinforce her identity, afforded her "a new color in life"; a new tool.

> Karen: I have learned that I feel better outside the comfort zone – gradually…. That makes me "bigger," sort of…. So, I will try to take chances like that more often…. I do not have to be only a dancer. I can also make music and do other things…. Because I restrict myself a little being just a dancer. And then I do nothing else. So, it is quite fun to do other things.
>
> Me: Right? It is like all the colors that [you earlier claim] enrich you?
>
> Karen: Yes.

Karen's therapist also recognized this change, from being a girl with low self-esteem who made strict demands of herself, to a girl who suddenly found her own expression and was working with emotions from deep within herself. She (re-)created her identity and found "a new color" in life. The multimodality of incorporating personal samples, dance and movement, visuals, and sounds for personal expression was crucial for her development and engagement in the project. At one point, she wanted to quit, but we managed to continue after a short break, and finished the piece.

> So, when that happened, when there was a match, then she understood that this was something outside herself that she could work with in terms of what she had on the inside. And the project regained power and direction. When it was not only a task – it became something recognizable. Visually and sonically. (Karen's therapist)

3. The Activity Promoted Subjective Wellbeing and Aided in Dealing With Daily Life Problems

The four participants each struggled with different mental health problems. Accordingly, they all had different experiences about how the activity affected them emotionally and how it was helpful and promoted wellbeing.

Aside from Lily, who felt somewhat nervous in the beginning, the participants described their feelings towards the project with mainly positive words. It was fun, and it created joy, curiosity, and positive feelings. Both Marcus and Daniel expressed positive sentiments specifically connected to the achievement of making music, stating that being productive brought them happiness, confidence, and pride:

> By doing it, you feel productive. And when it is finished, you feel so proud. It is like … I have made this! No one can take that away from me. (Daniel)

Pride was a feeling apparent in all participants. It became noticeable when they spoke with enthusiasm about how excited they felt about the music and how important it was for them to share the music with their family and friends.

For Lily, the session in which we recorded her voice was important because she did something she was comfortable doing (being a singer), and she expressed excitement after that session. Lily's therapist also highlighted spontaneity and the expression of joy as positive outcomes for her, where the sad, passive, apathetic, and indifferent attitude was replaced by a commitment to the project. Lily was originally deeply interested in music, but because of her mental state, she had put it on hold. This project demonstrated a new, joyful, and positive way back to music; it gave her energy, "woke her up," and "brightened" her day:

> Every time I was finished with a session, it was like: I came, I went out, and I was actually more creative. So, I went back to school feeling much more "ready." (Lily)

In addition to expressing feelings about the project itself, the participants used the project (and music in general) to process their emotions during the day: Marcus felt happier; Lily felt more creative and "ready;" and Karen felt connected to the various moods evoked by different music, talking about how these moods corresponded to her thoughts and helped her mind "float." Perhaps the strongest statement about the project's capability to process emotions came from Daniel. When he talked about his long history of complicated mental health problems (including depression, anxiety, aggression, anger management, and suicidal thoughts), he said,

> This can in fact help. If I am depressed, I can focus on music. If I am angry, I can make angry music. If anxiety hits me at school, and I go hide somewhere, instead of thinking, "I am not going back out there," you make music or listen to some songs you have made and use that to calm down. (Daniel)

This statement also highlights the way in which music-making can lead to symptom relief. Daniel explained how he processed negative emotions, such as depression, anger, or anxiety, by using the iPad to make music. Instead of hiding and repressing his feelings, he worked them out. The process calmed him down, the symptoms were relieved, and he could return to his everyday life at school.

Furthermore, one of the challenges for Karen was the fear of trying out new and unknown things. She was a quiet and shy person. At our first meeting, she did not make eye contact; she sat on the couch, leaning forward, looking tense, and she barely touched the iPad. She said,

> I thought it was quite scary in the beginning. But I feel I have learned a lot. And then – as it

often is – it is not as scary as it looks. I have learned a lot and become more comfortable to try out new things. (Karen)

She said that this project had given her "a new colour in life" – a way of saying that she felt "richer" than before. It was a new resource – a new tool – for, in her own words, "expressing emotions and expressing myself through sounds and music." This empowered her and gave her courage. The sonic qualities of the iPad apps[8] also calmed her down when she felt distressed. Even on a tough day, the iPad became a recourse for Karen:

> If I really felt bad one day, I went to the iPad, then … I just forgot about it. Or like … it did not make me happy in a way, but I forgot how I felt because I got so trapped about what was happening on the screen. (Karen)

Daniel experienced something similar when he, after an argument with his mother, went to his room to work on the iPad instead of being furious. That calmed him down.

For Lily, it was different. Suffering from anxiety, self-injurious behavior, and concentration problems, she used the project as a way of taking control. She concentrated on the task, and it gave her energy and focus, which she brought back into her daily life, such as in her schoolwork. This became especially noticeable when we worked on her singing performance, mentioned earlier. This resource-oriented approach made her feel in control, relaxed, and excited. As noted before, the project contributed to the recovery process for Lily; it put her "back on track," according to her therapist. She found her way back to music and is now a music high school student.

In general, music was important for all participants. The strongest statement came from Daniel:

> If there was no music, I would not be alive. When you feel shit, you put on a song and you focus on that song. And then, your mind goes somewhere else. So, music is in fact better than all anti-depressive, all medication … it works! (Daniel)

Moreover, he said that music helped him "turn of" his head. His therapist also mentioned this in the group interview:

> He [Daniel] also says that this [making music] is a very good way to self-regulate. When he gets [a negative] "mind-rush," he has downloaded different apps to his phone. And then, he steers the mind-rush out into the music. (Daniel's therapist)

For Daniel, music-making on the iPad seemed to be a powerful way in which to eliminate his mind-rush and enhance wellbeing and quality of life. He used it to gain symptom relief, providing the following example of how he used the iPad to gain control of negative and destructive thoughts by keeping his brain occupied with music-making instead:

> I was lying in bed until three in the morning. Could not sleep … was fed up. So, I thought I would rather do something. So, I turned to the iPad and worked on it until five in the morning.… When I engaged in this [music-making], the negative disappeared. And creativity came instead. (Daniel)

The therapists mentioned that the playfulness and the creativity involved in musicking and music-making could help patients in other areas of life. Since creativity and musicking are different from psychotherapy, something extraordinary and exciting was highlighted as an important effect of music in therapy: Patients can let go of their normal life and engage in processes that reveal other sides of themselves. In the future, this could be used in further talks and recovery processes; it could "shake loose" what is perhaps deadlocked or stuck as an obstacle in the recovery process.

4. The Activity had Value in Itself

Mental health challenges can often result in passiveness, apathy, and withdrawal from social life (van Reekum et al., 2005). To be engaged in a meaningful activity may therefore be of great importance in a recovery process. In the interview with the therapists, the very *act* of *doing something* was highlighted as an important quality of this project. It is not just a "pill" one takes for symptom relief; it is an activity afforded by the technology at hand, a co-agent (Jonassen, 2021), that enables one to co-create one's own improvement. It is something that builds self-efficacy. The activity and the co-creation process were thus valuable *as an activity*.

The therapists emphasized the lastingness and continuity of the project as important for the overall value of the activity. In addition to the importance of time, the benefits of having an expert to learn from and work with were considered valuable for a positive outcome. The participants' motivation consequently increased during the time of the project, along with their knowledge of music-making technology; finishing the piece and making it sound good became increasingly important for them.

The co-creation method, working together with an expert, was highlighted as important for this progress. Lily said,

> I came and was sort of afraid. Because it was sort of your project, right? And I just sat there.… I understood I was supposed to do things, but I did not dare just take the iPad and try this and that. So, I just sat there and … "ding-ding." Then later, I felt that it became more and more stuff that I brought into the song. And then, it became more like *our song*, with more of my stuff in the song. When we sat down to mix the song, I got everything in front of me, sort of. I could see everything. And I thought it was great fun to be able to make everything a little more perfect. (Lily)

All the participants expressed the value of the recorded music as important to them. For one thing, this was evident in the way they all proudly shared their music with others. Moreover, when reflecting on the recording during the interviews, factors such as personal music expression, the surprisingly high sound quality, and the satisfactory result were mentioned. Lily, when asked if she was happy with the result, responded as follows:

> Yes. It turned out to be much more than I expected it to be. I think it was good, it was fun, because I discovered that I could get a result that I could listen to. It is a complete song, and I am so satisfied, and there are spots where I think it is so fun, and I have contributed to making it. (Lily)

Discussion

The aim of this study was to describe how adolescents interact with the iPad as a music production tool and how this creative activity relates to mental health and wellbeing. The findings demonstrate that music-making led by a professional musician can serve as a personal and social resource for adolescents in mental health care. Although it was not the scope of the project to offer measurable health outcomes, the data points towards the potential value of music-making in mental health care and illustrates ways in which technology can facilitate mental health and wellbeing.

I argue that digital music technology can be a valuable resource and a beneficial component for adolescents' mental health and wellbeing. My analysis suggests that the iPad, with the music apps selected for this project, facilitated musical creativity, participation, engagement, and motivation by affording specialized, diverse, and often straightforward means of musical interaction that met each adolescent's individual needs. This flexibility was afforded without limitations of time and place; it could be accessed

wherever and whenever needed. The activity consequently empowered the adolescents, strengthened their agency, and promoted self-efficacy. Moreover, the iPad apps facilitated identity construction (Ruud, 1997, 2013) and offered ways to develop, express, perform, and share who we are with others. These activities can be health-promoting (Baker, 2015; Burland & Magee, 2014; Hence & McFerran, 2017; Saarikallio, 2019), and the technology affordances, by facilitating opportunities to musick, bring such beneficial appropriations closer to us, subsequently affording health musicking.

According to the literature discussed in this article, the benefits of health musicking are substantial. They relate to several conditions, including the state of our emotional life, our self-efficacy skills, our social relations, and our experience of meaning in life (Ruud, 2014). I observed how music technology triggered emotional responses, such as joy, pride, anger, and satisfaction, and provided symptom relief and control of mind-rush. In addition, I noticed how the technology developed self-efficacy skills by strengthening agency through engagement, commitment, and self-awareness, resulting in growing confidence and self-esteem. I also observed how music technology facilitated the development of social relations and positive social capital. Finally, I observed how it became a co-agent in adolescents' identity construction and their wish for experiencing meaning and coherence in life. This suggests that digital music technology can facilitate health and wellbeing and can potentially be a primary vehicle for recovery from mental health challenges.

This article highlights the potential health benefits of musicking, but acknowledges that these benefits are strongly influenced by the social structures and cultural contexts surrounding the activity. Community music therapy and resource-oriented music therapy view music making as a social process that invites participants as "equal partners in crafting musical experiences that reflect their own voices and lives" (Hadley & Thomas, 2018, p. 170). However, achieving this ideal relationship can be challenging due to various factors.

In the present study, my knowledge of the cultural and social structures of the participants was limited to what they told me and what I observed. To encourage a dialogical approach that invited participants in as equal partners, I shared some of my stories, hoping they would reciprocate. However, interpreting the social and cultural variables influencing the sessions was partly based on speculation and educated guesses.

Furthermore, the power differential between myself and the participants influenced the dynamics of the relationship and challenged the development of a client-oriented therapeutic setting. Despite my aim to practice mindfully and without jugdement (Hadley & Norris, 2016), the fact that I am a white, male adult with certain skills and privileges meant that my suggestions carried more weight. This may have limited participants' ability to make individual musical choices based on their background and taste.

For example, in the process of creating a musical piece with Daniel, my suggestions were the main driving force, and I ultimately made final decisions based on my musical preferences. While this approach can create a risk of disempowerment and limit individual ownership to the song (Hadley & Norris, 2016), in this case, Daniel was proud of the result and adopted the song as his own. Without my involvement, this may not have happened.

Most of the literature on music, technology, and mental health notes possible negative implications and continually discusses when to use and when not to use technology (Baker, 2015; Clements-Cortès, 2013; Crooke, 2018; Hahna et al., 2012; Kirkland & Nesbitt, 2019; Knight & Krout, 2017; Knight & LaGasse, 2012; Magee, 2014). In my study, no severe harmful or negative experiences were reported. Nevertheless, my findings reveal a few challenging experiences that nuance the overall positive impression. Three participants reported stress and anxiety connected to own expectations, insecurity, low self-esteem, and lack of prerequisite skills. Furthermore, my expectations regarding concentration, activity, and effort were also experienced as stressful. Two participants seriously considered terminating their participation halfway through the project. Nevertheless, all

participants completed the project and reported mastery, empowerment, an experience of flow, satisfaction, and joy in the end.

Moreover, all participants experienced technological challenges when engaging with the iPad. Some apps did not promote empowering experiences or feelings of mastery. To avoid the iPad becoming a tool that highlighted weaknesses or created unwanted barriers, the co-creation model became crucial in finding ways to work, as well as apps to use, that matched the participants' individual skills and challenged them to expand their knowledge and abilities to make music. The resource-oriented approach's focus on promoting their resources, encouraged, and inspired them to try new things, experiment, and expand their possibilities for expression. The iPad's multifaceted affordances facilitated this, being the co-creational music-making tool that connected us, becoming a co-agent in the recovery process towards mental health and wellbeing.

There are both methodological and epistemological limitations associated with this phenomenological, qualitative approach involving participatory observation and interviews with four participants and their therapists. The sample size was small, and the inclusion criteria were wide. Therefore, the findings are specific to my particular participants. Moreover, the close relationship between the researcher and the research topic creates bias issues that affect the construction of knowledge. These issues cannot be ignored, and they were consequently described and discussed to mitigate the potentially deleterious effects of any preconceptions.

A key strength of the study is its detailed examination of music technology and music-making as a nuanced social intervention in the adolescent mental health context. It offers a situated understanding of the meaning and potential of music technology interventions, as well as their challenges and limitations. The phenomenological approach and the qualitative research design offer a subjective perspective focusing on the individual experience of technology's potential to promote health and wellbeing. This approach consequently offers valuable knowledge on health musicking technology and the iPad as a health resource in adolescent mental health care.

About the Author

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[1] The iPad was chosen because it is the most used tablet for music-making due to the extensive range of music applications available for iOS through the App Store. However, the iPad functions as an example of how tablet technology in general can be a resource in mental health care, and the findings presented in this article are transferrable to other platforms and operating systems.

[2] In the humanistic approach to mental health care, the agents who are involved in the recovery of a patient include both professional therapists and other professions who work together to promote mental health and wellbeing. This approach is presented and discussed in general terms by Bøe and Thomassen (2017), and in terms of technology in music therapy by Jonassen (2021).

[3] The recovery perspective grew out of an increased focus on patient involvement. In the most widely used definition, Anthony (1993) describes recovery as "a deeply personal, unique process of changing one's attitudes, values, feelings, goals, skills, and/or roles. It is a way of living a satisfying, hopeful and contributing life even with limitations caused by illness. Recovery involves the development of new meaning and purpose in one's life as one grows beyond the catastrophic effects of mental illness" (p. 527). Further reading on recovery: Deegan, 1988, 1997; McCaffrey et al., 2018; Slade, 2009; and Solli, 2012, 2015.

[4] REK number 2016/644, approved September 20, 2016.

[5] The apps were selected after several rounds of review and testing by me and organized into five categories: (1) synthesizers, (2) groove sequencers, (3) samplers, (4) atmosphere and soundscapes, and (5) postproduction plugins and DAWs. Assessment parameters were sound quality, user friendliness, and creative use of the unique features of the tablet interface. Before the workshop, the apps were tested in a pilot study with one adolescent participant.

[6] Apps such as *Bloom*, *Trope*, *TC-11*, and *Thicket*.

[7] Recordings were made using *AudioShare* (a sample recording and filing app), and for processing, we used *Samplr* and *Borderlands*.

[8] Especially *Trope* and *Bloom.* Developed by Brian Eno and Peter Chilvers, these apps are designed to be soothing and relaxing, with ambient sonic moods and visual artworks developing into infinite compositions when one taps the screen.

[9] Correct spelling should be Sadovnik, Nir: Music Therapy Department Chair at Brooklyn Music School, NY. https://www.brooklynmusicschool.org/nir-sadovnik