The Acceptability and Efficacy of Using iPads in Music Therapy to Support Wellbeing with Older Adults: A Pilot Study

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Abstract

Portable technology has the potential to help support the wellbeing of older adults living in the community, particularly when targeting the health risk factors of social isolation and low self-esteem. This mixed-method feasibility study investigated the acceptability and efficacy of using iPads1 compared to traditional music instruments (TMI) with older adults living privately in the community. Five women, 71 – 96 years old, were recruited from a community-based day respite centre in Brisbane. Participants were randomly assigned to either the TMI or iPad group, and engaged in five sessions of activity-based music therapy. Participants completed journal entries following each session to detail their experiences, and were assessed for levels of perceived social isolation and global self-esteem pre- and post-intervention. Five themes were found for acceptability of iPads: learning was inherent to all sessions, differences in mood outcomes, differences in emotional communications, playing on an iPad resulted in greater creativity and freedom, and the importance of the environmental and structural considerations. There were no significant differences on scores of social isolation or self-esteem either between (TMI vs. iPad) or within (pre- vs. post-test) the treatment groups, however themes of developing social cohesion, group identity, and enhanced positive self-concepts suggest both iPads and TMIs contributed towards factors of

1 iPad is a trademark of Apple Inc.
wellbeing for the participants. Collectively, the encouraging findings present an entry point in illustrating that technology can be an acceptable and potentially successful tool for use in music therapy with older people living in the community.

**Keywords:** older adults, iPads, technology, wellbeing

The changing digital landscape has seen an increase in the availability and use of technology in healthcare, leading to innovations in practice, reporting and evaluation. With 94% of older people (65 and over) currently choosing to remain in their own homes (Australian Institute of Health and Welfare, 2012) there is growing demand for community-based services to meet the needs of older adults, a context where the use of new technology shows huge potential (Sixsmith, 2013). Technology is being developed to support older people to stay socially connected, achieve independence in activities of daily living, and physical and mobility maintenance (Mihailidis, Boger, Craig & Hoey, 2008; Pedell, Vetere, Kulik, Ozanne & Gruner, 2010). While music therapists from around the world report using a range of technology for the health and wellbeing of paediatric, young adult, disability and adult populations (Hanha, Hadley, Miller & Bonaventure, 2012), research on technology in music therapy with older adults has been notably missing.

Wellbeing is a multifaceted and complex concept, however, both social connectedness and positive self-esteem are key factors when considering adults living in the community (Cornwell & Waite, 2009; Cummins, Lau, Mellor & Stokes, 2008; Ryff, 1989). In the broader debate about whether technology and internet use has an impact on the wellbeing of older adults, studies have found they produced significant decreases in perceived isolation and loneliness (Cotten, Anderson & McCullough, 2013; Dickinson & Gregor, 2006; Oliver, Demiris & Hensel, 2006), rates of depression (Cotten, Ford, Ford & Hale, 2012), and increased perceived life satisfaction (Karavidas, Lim & Katsikas, 2005). In a recent survey of 11,000 European older adults, Lelkes (2013) found that regular internet use augmented face-to-face contact and thereby significantly reduced social isolation, regardless of income, marital status, gender or health. In contrast, Slegers, Boxtel and Jolles (2008) found no improvements in measures of wellbeing or cognitive function following one year of computer use. Likewise, barriers for older adults using technology include no previous experience with computers, memory function decline, high associated costs, computers being too complex to use and learn, and participants dislike towards computers (Lee, Chen & Hewitt, 2011). Despite the potential challenges, older adults still retain the
potential, and often desire, to learn new information and skills for using technology (Hooyman & Kiyak, 2008). Learning can provide an increase in confidence and mastery, which can contribute to feelings of self-esteem and wellbeing (Perkins & Williamon, 2013).

Magee and Burland (2008) suggested that a major difference between traditional and technological methods of music therapy was the technical stages that are required before intervention in order to maximise efficacy and treatment outcomes, while Street (2013) recognised the differing roles played by the RMT when using music technology, including that of a therapist, technology operator, musician and sound engineer. Others promote benefits such as unlimited access to music making applications (apps), suitability of fine motor movements (Whitehead-Pleaux, Clark & Spall, 2011; Headlee, 2011), and enhanced portability and increased palette of musical sounds (Knight, 2013; Nagler, 2011). Crucially for vulnerable older adults, software apps using complex musical theory produce sounds that have no wrong notes, giving an immediate sense of achievement and success, and potentially overcoming traditional barriers to music therapy participation (Nagler, 2011).

Emerging research has argued that employing new methods of music making could enhance the therapeutic outcomes of music therapy for those living in the community (Magee et al., 2011; Perkins & Williamon, 2013). Music is reported to be an important factor in the lives of older adults (Cohen, Bailey & Nilsson, 2012), and portable technology could play a pivotal role in increasing access to preferred music and experiences with technology. Tablet computers such as iPads offer an additional and complimentary tool for music therapists and their clients to draw on along side traditional instruments (Knight, 2013). Boulay, Benveniste, Jouvelot and Rigaud (2011) showed that older adults with dementia were able to learn to use a music therapy game (on a Wii device) regardless of cognitive impairment, with participants demonstrating pleasure and expressed a desire to continue playing. Likewise, Favilla & Pedell (2013) provided a model for engaging older adults with dementia in an iPad group ensemble. The model articulates introductory learning tasks (e.g. through game play), critical appraisal of apps including constraints of visual and auditory limits (e.g. keys too small, volume too low), the collaborative and reward aspects of apps (movements producing rich soundscapes as motivation to engage) and design features to maintain attention resulting in responsive and reciprocal musical interaction (Favilla & Pedell, 2013). While this research begins to highlight the potential application of music technology with older adults, there is a need for acceptability and pilot testing to further understand and establish the suitability, potential for success, and outcomes of using iPads to achieve the health and wellbeing needs of older adults (Bowen et al., 2009; Robb, 2013; Shoemark, 2013).
Therefore, a feasibility approach with a small group of participants was used in this study to demonstrate how older adults may use and respond to technology in music therapy prior to expensive large-scale trials (Bowen et al., 2009). The research questions were:

1) How effective are music therapy methods on iPads compared to traditional music instruments for improving constructs of perceived wellbeing for older adults?

2) What is the acceptability and practicality of using iPads in music therapy with older adults?

Method

Design

Mixed methods were used to gather initial data on the practicality, implementation, and acceptability of using iPads to improve the wellbeing of older adults in music therapy (Bowen et al., 2009). Ethics clearance was granted by the University of Queensland.

Participants

Participants were English speakers, aged 65 years and over, who did not identify as a Torres Strait islander or Indigenous Australian. A maximum of 6 participants were to be recruited at a Brisbane day respite centre that provides support to older people and people with disabilities in the local community. Centre attendees with significant visual or hearing impairments were excluded because of likely difficulties using the audio and visual aspects of the iPad. Magee & Burland (2008) also highlighted the need for participants to understand cause and effect in order to successfully use technology in a therapeutic manner, therefore, participants with a known cognitive impairment were excluded. All potential participants were provided with a participant information sheet and signed consent forms prior to being randomly assigned into either the iPad or TMI groups.

Research materials

The mixed methodology was selected to provide a detailed portrait of the experiences, observations, and clinical outcomes of using technology versus traditional musical instruments in a small-scale study.

After each intervention session participants completed a researcher-developed journal entry page that included instructions and suggestions on suitable information for each entry. For example, “write about what activities you enjoyed or did not enjoy and why, or what musical instruments or “apps” you liked the most or least and why”. To promote openness
their responses participants placed journal entries into an envelope and returned them to the researcher. Journal entries immediately post intervention have been authenticated as a suitable data collection method for older adults, helpful in overcoming potential constraints such as fatigue, recall issues and influence by others (Jacelon & Imperio, 2005). The researcher’s field notes and session reflections were documented after each session and used as data in the analysis. The journal entries were coded to identify relevant thematic content for social isolation, self-esteem, and the acceptability and experiences of the mode of music making (TMI or iPad; Saldana, 2009). First cycle coding included In Vivo and descriptive coding, followed by second cycle pattern coding, and examining specific experiences through frequency counting (LeCompte & Schensul, 1999; Saldana, 2009).

The Friendship Scale (Hawthorne, 2006) and Rosenberg Self-esteem Scale (Rosenberg, 1965) were administered by the primary author pre- and post-intervention. The Friendship Scale (used with permission of the creator) was developed for use with older Australians and includes six items (for example, “It has been easy to relate to others”) using a 5-point Likert scale that reflects the accuracy of each item, ranging from 4 (“almost always”) to 0 (“not at all”), with three items reverse-scored. The internal reliability is high (Cronbachs α = 0.83), and it has achieved high discrimination with other validated measures of social isolation (Hawthorne, 2006). Scores may be classified into one of five categories: very socially isolated (scores of 1 – 11), socially isolated/low level support (12 – 15), some social support (16 – 18), socially connected (19 – 21) and very socially connected (22 – 24; Hawthorne, 2006). Distributions of the Friendship Scale scores will be skewed, with the majority of older adult populations being classified in the higher score categories (Hawthorne, 2006).

The Rosenberg Self-esteem Scale (1965) was originally developed for use with adolescents, and is validated for use with all populations, including older adults (Classen, Velozo & Mann, 2007). The measure includes 10 items (For example, “On the whole I am satisfied with myself”) that use a 4-point Likert scale ranging from “Strongly Agree” (a score of 3) to “Strongly Disagree” (a score of 0), with five items reverse-scored. This scale measures the self-rated level of global self-esteem, and has been positively related to other constructs such as self-worth, confidence and social acceptance (Blascovich & Tomaka, 1991). Scoring on the Rosenberg Self-esteem scale means the higher the score achieved, the higher the degree of self-esteem (Rosenberg, 1965). The use of standardized measure with the small number of participants was not expected to yield statistically useful results, but
rather to indicate initial outcomes and the usefulness of these tools in measuring the intended effect.

**Procedure**

Both groups participated in five 60-minute sessions (one per week across five weeks). In both groups, the activity-based interventions were musical improvisation and play, therapeutic singing, lyric analysis, song-writing, music sharing/life review, and musical interaction games (Belgrave, Darrow, Walworth & Wlodarczyk, 2011). TMI participants used a range of hand-held percussion instruments, while the iPad group members each used an iPad (4th generation) loaded with a selection music making applications (see Appendix A). Introduction of the activities was staggered to first promote literacy in accessing instruments and iPads (training and free play in session 1), followed by exploring music and developing skills through music sharing, games and instrument play (session 2). Continued group instrument play, singing and music sharing activities were used in the remainder of all sessions to give a variety of musical experiences to all participants, while the introduction of song writing in session 3 was focused on deciding on a parody or original composition, listening and analyzing similar songs, and discussing and brainstorming possible themes related to social connection and self-image (Ahmadi, 2011; Baker & Ballantyne, 2012). Song writing tasks were then completed during session 4 and 5 in order to facilitate group collaboration and achieve a shared goal. Closure of the program was structured by performing the completed song together with the group, and providing printed lyric sheets and a recording of the song to each member of the group.

The iPad apps were selected because of the similarities of the musical sounds they produce compared to the traditional music instruments, and they were free, electronic versions of the real life instrument (for example, the drums, guitar and piano apps; see Appendix A). Other apps were selected because they provided similar information, or provided a unique musical experience that could not be obtained through traditional means (e.g. Soundprism²). Music production apps were selected because they enabled and echoed the process of traditional song writing and production methods.

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² Audanika (2010) available on the iTunes app store
Results

Participants

The TMI group consisted of three female participants aged 71 to 86 years (mean = 79.66, SD = 7.76) who accessed the day program for particular social events such as fortnightly library groups. The iPad group had two female participants aged 83 and 97 years old (mean = 90, SD = 9.89), who regularly attended the day centre for support services. Following the initial recruitment a third participant in the iPad group withdrew from the study due to ill health and was excluded from the analysis.

Acceptability of using iPads in music therapy with older adults

Five themes were identified from participant journal entries and researcher field notes that detailed the acceptability of using iPads with older adults.

1. Learning inherent to experiences, regardless of mode of music making.

All five participants identified that the program was a learning experience. The TMI group noted that they engaged in learning that focused on the content of the music. In her final entry, Clara commented that, “being encouraged to write words for a composition taught me the deeper meaning of other composers, be it modern day or old fashioned.” Similarly, Daisy (Session 5) identified that she had “…learned a lot about constructing a tune and lyrics….we have a better understanding of what ‘makes’ music.” While the iPad group also identified themes of learning, the focus was on skill acquisition. Elizabeth (session 2) commented that it was “…(great fun) learning a different part of using iPads”. This was echoed within her final reflection, as she noted that she “…looked forward to learning new skills and working together”.

2. TMI group reported “feeling better”.

Members of the TMI group reported several instances of “feeling better” following the traditional instrument intervention. Participants not only showed improvements in mood following sessions, but also were aware of the improvement (researcher field notes). Agnes (session 2) noted that she “will go home feeling much better after my depressing morning”. Following the final session, Daisy noted that she experienced “…better feelings of being happy”, and Agnes noted, “I usually go home feeling much better – an improvement on the

3 All participants were assigned a pseudonym to protect privacy and confidentiality.
way I felt before attending. Now – I feel good”. There was no evidence reported from the iPad group participants that they experienced any change in mood following the sessions.

3. **Music communicated emotions**

Participants in both groups reported music as the expression of feelings, though there were subtle differences. The TMI respondents described music as expression of their own feelings, as Clara “enjoyed trying out different sounds – they can express your moods from sad to happy”, and “found it stimulating – being able to find expression in a variety of instruments etc.” In contrast, the iPad group participants detailed the emotional content of the music. Elizabeth noted that they “played different types of music: happy, peaceful and joyful.” These subtle differences in responses suggested a variation in the emotional content and affective experience of using iPads versus TMI in music therapy. Further emotional coding analysis of the diaries showed differences in the depth of personal revelation that was expressed. The TMI group showed evidence of personal insight and emotional awareness, as Agnes stated in her final reflection:

> I usually go home feeling much better - an improvement on the way I felt before attending - it has been hectic the last few days! and that put me off coming, but now - the time has not been wasted - I feel good. (Agnes, session 5)

In comparison the iPad group members Elizabeth and Mabel offered descriptive information of their enjoyment of what they did within the sessions. For example, Elizabeth stated “I really enjoyed all lessons but found it hard to write (the) song otherwise really excellent program... I looked forward to learning new skills and working together.”

4. **IPad group showed greater creativity and freedom in music made while instrument group focused on playing “in time” and “in tune”**

TMI group responses focused on the musical elements such as pitch quality and what constitutes music. Agnes made several references within her journal entries to the concept of playing or singing “in tune”. She noted that “we ‘sang’ a few songs (the others were in tune)” after session 1, and “we made a noise, fun and interesting – not in tune” after session 3. Clara commented to the researcher that she had “a terrible voice.” While Elizabeth (iPad group) also stated that she had a “terrible voice”, there is no other evidence of musical expectations in relation to the iPads. The researcher noted that:

> The playing (of the iPad group) was initially free of all musical parameters, with no discernable rhythm or pulse, melody or theme to the music. The participants were not focusing on the music of the sounds they were creating, they were simply playing to create, express and interact. Perhaps because of the freedom
that using an app allows (e.g. no wrong notes), it allows the users to transcend the preconceived ideas and bounds of music (Researcher, post session 2 notes).

5. Environmental and structural considerations

The researcher noted several environmental factors that influenced the interactions when using iPads in a group context. Initially, group members were seated facing each other, each with an iPad in front of them. As the use of iPads requires the client to be focused down onto the screen, the researcher noted that there was little interaction between the participants. For the next session, participants were seated side by side so that they could see what other people were doing, and improvisation activities began with structured turn taking to encourage collaboration and reciprocation in the music. In this way, both the physical set-up and the structure of the activities influenced the social dynamics and interactions that occurred in the group.

Regardless of treatment group, all participants verbally expressed to the researcher a desire to experience music making on the iPads. Following the completion of the project, members of the TMI group accepted the opportunity to play on the iPads and created music as a group together.

Improving wellbeing: Social isolation & self-esteem

The concepts of self-esteem and social isolation are related, and therefore reported together. Outcomes for the scales are detailed in Table 1. Due to the small sample size and skewed distribution of scores, non-parametric statistical tests were used for quantitative data analysis. Scores of isolation and self-esteem were treated as continuous during analysis in order to compare groups.

Table 1.
Total scores for each participant on the social isolation and self-esteem measures at pre- and post- evaluation times for both TMI and iPad treatment groups.

<table>
<thead>
<tr>
<th>Group/Participant</th>
<th>Friendship scale pre-test</th>
<th>Friendship scale post-test</th>
<th>Self-esteem pre-test</th>
<th>Self-esteem post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMI 1</td>
<td>20.50 *</td>
<td>24</td>
<td>21</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>17</td>
<td>21</td>
<td>20</td>
</tr>
</tbody>
</table>
Social isolation

The Friendship Scale obtained a very high Cronbach alpha coefficient of 0.90, indicating a high level of internal consistency. Statistical analysis of the Friendship scores was conducted using Mann-Whitney-U tests, which revealed that no significant difference existed between the distributions of the TMI and iPad groups at either pre- or post-intervention (See Table 2). Wilcoxon Signed Rank tests revealed no significant differences for ratings of social isolation between pre- and post-test assessment within either treatment group (see Table 2). At pre-test assessment, all participants were rated as socially connected or higher. Trends over the duration of the study showed one participant in each group improved their social rating score up one classification (from socially supported to very socially supported, see Table 1). One participant in the TMI group also showed a decrease in their level of social support over the program (from socially connected to low-level social support).

Table 2.
Results of Wilcoxon-Signed Rank and Mann-Whitney-U tests comparing scores of social isolation.

<table>
<thead>
<tr>
<th>Between group comparison</th>
<th>Median</th>
<th>Mann-Whitney-U test result</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMI</td>
<td>20</td>
<td>$U = 3.00$, $p = 1.00$</td>
<td>$r = -2.23$</td>
</tr>
<tr>
<td>iPad</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMI</td>
<td>17</td>
<td>$U = 2.50$, $p = .767$</td>
<td>$r = -0.132$</td>
</tr>
<tr>
<td>iPad</td>
<td>19.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre- and post test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>comparison</td>
<td>Median</td>
<td>Wilcoxon- signed rank test</td>
<td>Effect size</td>
</tr>
<tr>
<td></td>
<td></td>
<td>result</td>
<td></td>
</tr>
</tbody>
</table>
**Self-esteem**

Visual trends showed that all participants in the TMI group exhibited a decrease in their overall score of self-esteem, with two participants showing a decrease of three and seven respectively (see Table 1), while one participant in the iPad group showed a decrease in self-esteem score of two. Results of Mann-Whitney-U tests revealed no significant differences between the distributions of the total self-esteem scores between the two treatment groups (see Table 3). Using a Wilcoxon Signed Rank test, no significant differences were found for pre-post self-esteem scores for either treatment group.

### Table 3.

Results of Wilcoxon-Signed Rank and Mann-Whitney-U tests comparing scores of self-esteem.

<table>
<thead>
<tr>
<th>Between group comparison</th>
<th>Median</th>
<th>Mann-Whitney-U test result</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test TMI</td>
<td>21</td>
<td>$U = 3.00, p = 1.00$</td>
<td>$r = -2.23$</td>
</tr>
<tr>
<td>iPad</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test TMI</td>
<td>18</td>
<td>$U = 2.00, p = .564$</td>
<td>$r = -0.258$</td>
</tr>
<tr>
<td>iPad</td>
<td>19.37</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-post test comparison</th>
<th>Median</th>
<th>Wilcoxon-signed rank test result</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMI</td>
<td>Pre-test</td>
<td>21</td>
<td>$z = -1.604, p = .109$</td>
</tr>
<tr>
<td>Post-test</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iPad</td>
<td>Pre-test</td>
<td>20</td>
<td>$z = -0.447, p = .655$</td>
</tr>
<tr>
<td>Post-test</td>
<td>19.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Two themes relating to wellbeing outcomes were established from the journal entry data, namely: 1) that music developed a sense of cohesion and group identity, and 2) increased confidence, mastery, a sense of achievement were developed.

**Social isolation: Developing group identity and cohesion**

Participants in both groups reported the development of group identity and cohesion over the duration of the study. The TMI group journal entries showed that the group members created a shared musical identity, and a distancing from the people ‘outside of the room’. After session 1, Clara stated that “I did enjoy being a group of three, found that we all had the same taste in music, covering oldies tunes to the Beatles”, while Agnes (session 2) noted that “We all took a turn with various instruments – may have sounded strange to people outside of the room – but we thought (well I did) that we made a good percussion band!” New experiences, and discoveries about each other such as similarities in musical tastes, served as the stimulus for enhanced group cohesion and belonging. The therapist’s focus on exploring the elements of music and different sounds was evident in participant descriptions of the process of group music making, such as “trying out” (Agnes, session 1, and Clara, session 2) or a desire to “experiment” (Clara, session 1) with the instruments. Daisy noted that it was “very interesting to perform with the instruments, to hear how different tempos can make a very different sound”.

In contrast, the group cohesion and interaction for the iPad group was associated with working and playing collaboratively, with common themes of “togetherness”. Mabel (session 4) reported that she “loved the music we made in a group. (I) enjoyed it as a group venture”, while Elizabeth noted she “enjoyed working together with help from each other…”.

**Self-esteem: Increases in confidence, skill mastery and achievement**

While no overt references to self-esteem were found within the iPad group responses, aspects of self-concept were noted, with gains in confidence and mastery common themes in responses. Within the TMI group, Clara (session 3) made reference to an increase in her self-confidence stating that the music making “Definitely brings your self out and creates even more self-confidence.” In her final journal entry, she also reflected that, “I feel more confident in myself”.

Similarly, themes of increased sense of achievement were identified within the responses across both groups in the last two sessions. Daisy (TMI) reflected that “I have never thought I could do such a thing as we have just achieved”, a sentiment echoed by Elizabeth (iPad group), who reported “I enjoyed working together with help from each other,
ending with a song of kinds...I have done something I didn’t think I could have done”. Mabel (iPad) also recognised the achievement she gained completing the program, saying it was “another (feather) in my cap”.

**Discussion**

**Acceptability of iPads for older adults**

All participants viewed this project as a learning experience, and displayed motivation for learning to use new technology. It is likely that the familiar framework of learning was used to assimilate the new experience of music therapy, while the potentially unfamiliar concept of ‘therapy’ was ignored and therefore not reported in responses (Baron, 2001). This confirmed that, regardless of the methods or medium used, the inherent experience of learning may be an acceptable premise for music therapy. It also suggests that older adults are successful and invested learners who possess the abilities, skills and desire to learn to use technology, thus providing insight into the practicalities and suitability of employing this medium (Hooyman & Kiyak, 2008). All participants in the study showed a desire to use iPads, therefore further informing the potential demand and desire for older adults who are living in the community to engage with new devices, and dispelling the wider community’s stigma that older adults are fearful of new technology.

It is worth noting that those using iPads did have a longer learning curve and a more involved therapeutic process to enable the client as a musician and maximising the client’s independence (Favilla & Pedell, 2013; Magee & Burland, 2008). When applied to a clinical context for older adults, a lengthier and more detailed implementation period may be required focusing on skill development (Headlee, 2011; Nagler, 2011). Also, just as for TMI use, conscious attention was needed when setting up the therapeutic space and structuring elements such as volume, particularly in the early stages of introducing new technology.

Consistent with previous findings (McDermott, Crellin, Ridder & Orrell, 2013), the members of the TMI group identified ‘feeling better’ at the end of sessions. While the iPad respondents described enjoyment in their experiences, there was no statement related to elevated mood within their responses. Similarly, the clear differences in the emotional content expressed by the treatment groups (TMI self-focused; iPad music/others focused) could be attributed to differing levels of emotional awareness and responses to music made on iPads versus TMI. This emotional disconnect while using iPads could be due to the lack
of the tactile feedback that comes from simply touching an iPad screen versus the multisensory experience and emotional release that can occur when playing on a TMI. This is supported by research that shows physically creating music using TMIs uses visual, auditory and motor cortices in the brain across both hemispheres and enhances emotional processing (Koelsch, 2010; Levitin, 2008). This finding raises concerns on the value of tablet technology in eliciting emotional responses and elevating mood, and begins to inform us on its appropriate uses within a therapy context.

Perhaps in counter-balance to the emotional discrepancy, one of the most notable findings was the marked difference in the music expectations and creativity between the TMI and iPad conditions. The preconceived notion of good musicianship can be detrimental to the creativity and freedom in a therapy context (Tillman, 2008). Aligned with the perspectives of Magee & Burland (2009) and Nagler (2011), the iPad participants in this study felt free from traditional musical structures and parameters (e.g. pitch). This is perhaps the greatest gain in our understanding of the suitability and practicality of employing iPads in music therapy with older adults, as it demonstrates a clear advantage over traditional methods in enabling and empowering clients to participate freely.

Efficacy of using iPads to improve wellbeing

As expected, the quantitative findings showed no significant differences on scores of social isolation and self-esteem between or within the iPad or TMI groups at pre- or post-intervention. The value of using non-parametric statistical tests with a small sample is to provide a small-scale demonstration to compare the assessment practices and outcomes for older adults and when comparing iPads versus TMI. None of the participants enrolled in the study were classified as socially isolated or with low self-esteem in the pre-test, and it is therefore possible that the gains for the participants were minimal. However, qualitative analyses provided clear themes in domains commonly linked to self-esteem (e.g. confidence or skill mastery), which show evidence of development during the study. This is aligned with the understanding that self-esteem is a multi-dimensional construct, informed by factors such as confidence, mastery, perceptions of self-worth and social acceptance (Blascovich & Tomaka, 1991; Rosenberg, Schooler, Schoenbach & Rosenberg, 1995).

The iPad group’s focus on music making was on collaboration within the newly-formed group, thus the music was used to foster communication in order to establish group inclusion and identity (Wheelan, 1994). This contrasted with the already socially familiar
TMI group’s major theme of exploring the musical elements and different sounds. It is clear that the groups were in different stages of group development, with differing social roles and objectives (Schutz, 1973; Wheelan, 1994). Despite these disparities, it is clear that music making on both TMI and iPads performed a social function within a music therapy context (Creech, Hallam, McQueen, & Varvargou, 2013).

Given that social development and positive self-concept domains occurred equally for both groups, it is likely that the non-significant findings are due to limitations of the pilot study, such as short program duration and small sample size. This informs us that while TMI and iPads may be equally effective in facilitating and supporting the wellbeing needs of older people in music therapy, further research is needed to quantify if any differences in efficacy truly exist.

**Limitations and recommendations**

Given that the qualitative data showed positive gains in domains related to wellbeing, the unexpected drop in the Friendship Scale and Rosenberg Self-esteem Scale post-intervention scores may indicate that participants were susceptible to social desirability bias during initial assessment, in which participants wish to maintain the appearance of wellbeing or high performance on measures (Fastame & Penna, 2012). It may be that following the five-week program, participants felt more comfortable in accurately reporting their wellbeing. Alternatively, completing the therapy program may have allowed participants to explore and develop greater insights into their own psychological and social wellbeing. Similarly, it became apparent that participants in both treatment groups struggled with the Likert response scale and responding positively to negatively worded items, and this may have resulted in incorrect responses. The changing meaning of the response scale is designed to eliminate response biases, however, this is perhaps unsuited to the needs of older people (Fastame & Penna, 2012; Howell, 2002).

While piloting research allows for acceptability testing, the small sample size, age and health disparities between treatment groups, and short program duration were limitations that reduced the effect size and power to determine any changes of significance. Despite these limitations, this study had a strong grounding in psychological and social theory, and using varied data sources has provided insights into the demand and willingness of older people to engage with iPad technology, the perceptions of learning in therapy, and begins to illustrate the potential experiences and wellbeing outcomes of using iPads in music therapy with older adults.
The journal entry data did not specifically investigate the acceptability of iPads for particular intervention (e.g. in song writing), but rather provides a starting point into the topic. Similarly, by chance, only female participants were included in the study. Future large-scale research using semi-structured interviews will provide more diverse insights into the specific experiences and responses when using iPads with older adults. Furthermore, a more detailed investigation into the musical differences and emotional responses when using iPads and TMIs would offer a greater understanding of the appropriate selection of tools (e.g. iPads versus TMI) to meet particular needs and goals for clients. Practically, RMTs using iPads with older adults need to be aware of the physical space and structure of activities, and need to provide support to clients through the ongoing learning stages.

Conclusion

While further research is warranted, these encouraging results present an entry point into exploring the role and value of using iPads in music therapy to improve the health and wellbeing of older adults living in the community. This feasibility study contributes further insights about the desirability, practicality and potential for success to the current debate regarding the use of music technology with older adults. When considered within the constructs of social isolation and self-esteem, emerging themes for wellbeing and group music making were comparable across iPad and TMI use. However, questions were also raised about the suitability of iPads when addressing emotional needs and facilitating sensory responses in this context. The greater freedom and creativity of iPad apps for music making provides a promising foundation for tapping into the inherent desire and motivation of older adults to use iPads and to generate learning through music. It seems inevitable that technology will be incorporated into music therapy sessions alongside traditional methods, thus mindful development will ensure the safety and success for our older adults.

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References


Appendix A: List of iPad applications and TMI equivalent used across the five-week program.

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Name of iPad Application</th>
<th>Developer</th>
<th>TMI equivalent used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bongos</td>
<td>Skunk Brothers GmbH, 2011.</td>
<td></td>
</tr>
<tr>
<td>Instrument - other</td>
<td>Seline Lite</td>
<td>Amidio Inc, n.d.</td>
<td></td>
</tr>
<tr>
<td>song writing/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lyrical composition</td>
<td>SongWriter Lite</td>
<td>Simonsapps, n.d.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poetreat</td>
<td>Ryan Nystrom, n.d.</td>
<td></td>
</tr>
<tr>
<td>Music listening</td>
<td>YouTube</td>
<td>Google Inc., 2014.</td>
<td>CDs and songbooks</td>
</tr>
<tr>
<td>Information - lyrics</td>
<td>MetroLyrics</td>
<td>CBS Interactive, 2004.</td>
<td>Printed lyric sheets, Song books</td>
</tr>
</tbody>
</table>

Note. All applications purchased through the iTunes app store.