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Integrating Digital App Technologies within Traditional Expressive Arts Therapy
for Children and Adolescents
Capstone Thesis
Lesley University

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Specialization: Expressive Arts Therapy

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Abstract

In recent years, technology in the form of digital applications (apps) has emerged as a fundamental aspect of everyday life as well as a practical, convenient, and inexpensive tool for artistic self-expression, most notably amongst children and adolescents. Ninety-eight percent of U.S. households currently possess some form of mobile device (Rideout, 2017), with an estimated 95% of U.S. teenagers ages 13 to 17 owning a Smartphone (Anderson & Jiang, 2018). As digital natives, children and adolescents are more likely to identify with and connect to these arts-based methods. Clinician perspective concerning digital integration varies across a wide spectrum. Through a critical review of the existing literature, this research investigated the current state of digital app technology within the field of Expressive Arts Therapies, as well as potential benefits and drawbacks to the integration of this artistic media. Expressive Arts Therapy is predicated on the multimodal nature of artistic forms. Modality-specific apps within art, music, and dance therapy disciplines have garnered encouraging findings; however, no authentic multimodal digital app currently exists. This research explored the intermodal possibilities of both singular modality apps as well as those quantitatively examined in other mental-health related fields. Additionally, recommendations and considerations are made surrounding future research and app development within an Expressive Arts Therapies framework.

Keywords: expressive arts therapies, digital app technology, app integration, adolescents

Integrating Digital App Technologies within Traditional Expressive Arts Therapy
for Children and Adolescents

Introduction

“As our human consciousness expands, therapists must be able to meet evolving challenges, and the concept of continuing to *meet the patient where they are* developmentally, as well as technologically, must be renegotiated” (Ehinger, 2017, p. 115). Over the last decade, digital technology – most notably applications (apps) specifically designed for the unique capabilities of smartphones (Android and iPhone), iPads, and tablets – have become accessible, convenient, and inexpensive tools for self-expression. According to the World Bank (2012), “over 30 billion downloads of apps took place in 2011” (as cited in Knight, 2013, p. 189). A 2018 Pew Center research study reported that “88 percent of all 18- to 29-year-olds report using some form of social media” (as cited in Meyers, 2018, p. 35). Additionally, there has been a marked increase in the development, promotion, and usage of mobile health (“mHealth”) apps, with 2017 estimates indicating the current availability of roughly 325,000 mHealth apps for download (Research2guidance, 2017; as cited in Neary & Schueller, 2018, p. 531). As practitioners of the Expressive Arts Therapies, we are increasingly immersed in a culture of technology, one in which digital media is being used to foster and define an individual’s identity, creativity, and self-esteem. “For the foreseeable future, it seems that digital media are here to stay and while apps are not the only way to create imagery, they are becoming ubiquitous for communication and expression” (Malchiodi, 2018c, p. 213).

Recent studies (Bakker, Kazantzis, Rickwood, & Rickard, 2018; Niendam et al., 2018; Schlosser et al., 2018; Stallard, Porter, & Grist, 2018; Whittaker et al., 2012) have illustrated increased trends towards successful integration of app technology within more traditional forms

of counseling and psychotherapy. A variety of smartphone features, including device portability and interconnectedness, convenience, and the potential for real-time tailored therapeutic interventions (Dennison, Morrison, Conway, & Yardley, 2013, para. 2) have proven beneficial in both enhancing and supplementing the client/therapist interaction. Mobile apps also have “the potential to reach underserved populations” (Proudfoot, 2012, p. 111); the promising aspects of this capability increase when considering the child and adolescent populations, with 90% of all 12- to 15-year-olds currently owning a smartphone (Stallard et al., 2018, para. 3).

As Expressive Arts Therapists, we are concerned with the integration of different artistic modalities for the greatest potential benefit of our clients. “Practitioners are trained to be sensitive to the unique properties within each art form, to be attentive to the creative process as a method of inquiry” (Estrella, 2005, p. 183). Inviting client creativity and imagination to foster a deeper connection to the artistic process and its relationship to self are essential to our work. It has long been this author’s feeling that when a client presents with a piece of artwork generated on a technologically-based device, if said artwork is eschewed in favor of more traditional artistic media (e.g., oil pastel, water color, pencil and paper), the therapeutic encounter has not been honored. Meeting clients where they are is essential to building a person-centered, attuned, and empathetic rapport; at times, this meeting may find its source in the digital realm.

Two central tenets of the Expressive Arts Therapies are the processes of intermodal transfer and intermodal superimposition. Knill’s “theory of polyaesthetics is the idea that all of the sensory and communicative modalities exist within each art form.... Each art form contains within it the seeds of the other arts through aesthetics and sensory perception” (Estrella, 2005, p. 193). Digital app technologies have the potential to enhance these intermodal transfers “shifting from one art form to another” (Knill et al., 1995, as cited in Estrella, 2005, p. 194) or intermodal

superimpositions: the addition of art forms so as to “amplify the imagination” (Knill et al., 1995, as cited in Estrella, 2005, p. 194). Clinician discretion, client attunement, and comfortability with the chosen artistic medium ultimately influence this choice. Some clinicians view technology’s usage in the arts as perpetuating children and adolescent’s tendencies to withdraw into the media (Klorer, 2007). Reliance on digital technology removes tactile sensation between hand and traditional artistic materials, potentially leading to lack of authenticity and dulling of human scale (Austin, 2009). Other researchers (Smahel, Wright, & Cernikova, 2015) have pointed to negative health-related outcomes of technology use in children and adolescents (e.g., eye problems, headaches, tiredness, poor eating habits, sleeping problems, and aggressive tendencies).

While promising trial data and the exponential growth of apps-based treatment possibilities exists in other mental health related fields, limited research presently exists within the Creative Arts Therapies. Contemporary arts-based studies and qualitative assessments involving digital app technology (Darewych, Carlton, & Farrugie, 2015; Diggs, Lubas, & De Leo, 2015; Dunphy & Hens, 2018; Dunphy, Mullane, & Allen, 2016; Hughes, 2017; Kruger & Swanepoel, 2017; Mattson, 2015) have highlighted promising advances towards integrating this media in a modality specific fashion (i.e., art therapy, dance therapy, music therapy). However, at present, no intermodal Expressive Arts-based app exists, and clinicians remain deeply divided as to technology’s place within the creative arts therapies (Asawa, 2009; Burland & Magee, 2014; Choe, 2014; Hanha, Hadley, Miller, & Bonaventura, 2012; Knight, 2013). Through a critical review of 16 articles from the existing literature, this Capstone thesis investigated the digital app technology phenomenon as it pertains to specific arts modalities and other related health disciplines. Significant gaps within the field of Expressive Arts Therapies, as well as

potential benefits and drawbacks to digital app integration within traditional artistic media are discussed. Recommendations are also made for future research and exploration.

Literature Review

Digital media is rapidly changing our societal landscape, evolving “at what often seems a speed-of-light pace” (Malchiodi, 2018a, p. 35). According to the Common Sense Census (Rideout, 2017), which measured current media usage trends of children ages zero to eight, 98% of households in the United States contain some type of mobile device: 95% use Smartphones, 78% have tablets, with 59% of children ages five to eight laying claim to their own personal tablet (p. 23). The Pew Research Center has estimated that 95% of U.S. teenagers (ages 13 to 17) own a Smartphone, with 45% perpetually online while counterintuitively under the impression that technology has no discernable impact on their lives (Anderson & Jiang, 2018). Given technology’s omnipresence in the lives of children and adolescents, these digital natives appear poised to navigate the waters of artistic innovation with ease. For those practitioners unfamiliar, inexperienced, or uncomfortable with these burgeoning forms of expression, this ongoing shift can be a daunting – and potentially risky – proposition.

“Some art therapists might believe that a choice can be made about whether or not to engage with computer technology” (Carlton, 2014, p. 42). As mobile phones and tablets have emerged as fundamental aspects of our client’s environment, those in the field of Expressive Arts Therapies have remained at varying ends of the technological spectrum. When brought face-to-face with artistic innovations, transformation and adjustment take time and mindful consideration. Prochaska & Velicer (1997) have outlined the construct of change as a process containing six distinct stages: (1) *Precontemplation*, where individuals have no intention or desire for change; (2) *Contemplation*, in which pros and cons are weighed and balanced, at times

leading to “behavioral procrastination” (Prochaska & Velicer, 1997, p. 39); (3) *Preparation*, with intentions and plans for action beginning to take shape; (4) *Action*, the stage containing observable, measurable changes in behavior; (5) *Maintenance*; and (6) *Termination*. By evaluating the research on digital app technology integration within traditional Expressive Arts Therapies from the lens of this transtheoretical framework, a pattern begins to emerge. A plethora of books, essays, and peer-reviewed journals (Asawa, 2009; Carlton, 2014; Evans, 2012; Garner, 2017; Malchiodi, 2018b; Moon, 2010a; Orr, 2006; Orr, 2012) appear to fall within the Contemplation stage: advocating and exploring why technology’s use within Expressive Arts practice might prove affective or detrimental, supplying singular specific case examples where applicable. While offering valuable historical groundwork in the topic, these materials merely provide practitioner opinions, considerations, and potential applicability rather than concrete empirical data. More recent endeavors into digital territory have indicated progression towards the Preparation stage: enumeration and assessment of resources (Choe, 2014; Clements-Cortès, 2014; Knight, 2013; Mattson, 2015), along with app development particular to the field of Dance Movement Therapy (Dunphy et al., 2016; Dunphy & Hens, 2018). At present, however, there is little to no movement towards a definitive Action Stage – putting the pieces together, taking further steps towards creating Expressive Arts apps, performing quantitative studies, and integrating them into more traditional practice – in comparison to other mental health related fields.

Digital Technology and the Expressive Arts Therapist (Precontemplation/Contemplation)

“For art therapists to understand clients, they must appreciate the contexts of clients’ everyday lives. The everyday lives of clients increasingly involve digital media and its creation of a visual culture” (Orr, 2010, p. 95). When experientials are introduced in session, our clients

may have visceral reactions (i.e., fear, anxiety, disgust, confusion, ambivalence) to specific materials. As practitioners, it is important to form authentic empathetic understandings of our personal reactions towards various artistic media in order to better assist our clients. This includes contemplating those in the ever-expanding technological realm.

Through a qualitative study of three focus groups (N=13) of students and alumni from Loyola Marymount University in Los Angeles, CA, Asawa (2009) sought “to explore art therapists’ reactions to educational and presentation technology” (p. 60). The study’s sample ranged in age from 22 to 52 and provided a representative ethnic demographic of the arts therapy field (i.e., Caucasian Females). Participants were asked to select from a variety of traditional art materials and, without utilizing technology in the art-making process, to “recall a time or times when they had a reaction to technology” (Asawa, 2009, p. 60). Mindful transcription of post-artwork discussions and phenomenological data interpretation revealed numerous emotional states, the most prevalent being anger and fear. “A significant pattern was that fear and anxiety presented prior to engaging with technology, whereas frustration and anger were felt after engaging the technology” (Asawa, 2009, p. 63). Eight additional themes emerged from the data analysis, most notably a feeling of the *unknown* – “a sense of vulnerability” (Asawa, 2009, p. 63) – and the concept of *duality* – “the desire to promote art therapy and engage in technology while remaining loyal to art therapy’s origins in traditional methods of communication and art media” (Asawa, 2009, p. 63).

Asawa’s (2009) study presented with major limitations, most notably the use of small sample size comprised of a singular racial and gender demographic, thereby restricting applicability and validity across a wider population. Every therapeutic encounter within the Expressive Arts Therapies assumes the form of a tripartite relationship – one between creator

(client), active witness to the artistic process (observer/helper/clinician), and the artistic product (Goren-Bar, 1997; Estrella, 2005; Kossak, 2009). While the importance of practitioner vulnerability, fear, anger, and anxiety towards technology as an artistic medium cannot be overlooked, adequate considerations must be made in regard to the remaining aspects of the triad.

Despite an “intuitive understanding that something different but similar is happening when a client works with digital media” (Orr, 2012, p. 236), reticence to integrate digital media in therapeutic practice has remained. In both 2004 and 2011 comparison surveys of 250 students and practicing art therapists, Orr (2006, 2012) found that while approximately 97% of practitioners utilized technology to manage their business (i.e., word processing, e-mails, treatment planning software), only 58% used some form of digital art media with their clients (Orr, 2012, p. 235). Although an increase was seen in overall technology use by art therapists across the seven-year period, as of 2011 only 37% of those surveyed were keeping pace with the general population and “rapidly adopting the use of digital art media” (Orr, 2012, p. 235). A myriad of reasons were given for the minimal use of and resistance towards digital art integration including technological overwhelm, lack of adequate training, as well as concerns surrounding confidentiality, privacy, and ethics. The most salient judgment centered around digital media’s authenticity as an art material, given its lack of conventional sensory input. Clinician opinion was that utilizing technology as an artistic medium had the potential to leave clients “disconnected from art-making materials, disconnected from their own bodies due to lack of tactile qualities, and using technology in avoidance of social interactions” (Orr, 2012, p. 236).

Although indications have suggested a higher percentage of technology usage within clinical settings in the field of music therapy, comparable clinician attitudes surrounding its

incorporation exist. Hanha, Hadley, Miller, & Bonaventura (2012) conducted a 27-question cross-sectional electronic survey of 600 music therapists from the United States, Canada, Australia, and the United Kingdom. Approximately 71% (n=443) of participants reported using music technology within a clinical setting, most frequently employing it in their work with adolescents and those with developmental disabilities (Hanha et al., 2012, p. 458). The demographic most inclined to make use of digital tools within practice were male music therapists between the ages of 21 to 30 (Hanha et al., 2012). Training in the use of musical technology in clinical milieu was most often found to take place outside universities or educational settings, with 61% of the study's participants identifying as self-taught and 51% turning to their peers for in-depth assistance (Hanha et al., 2012, p. 459). "Some music therapists see digital music as a lesser form of music, or as 'not' music at all" (Hanha et al., 2012, p. 462). Many clinicians have categorized digital music as synthetic and artificial. Eschewing acoustic instruments in favor of technology has the potential to remove auditory idiosyncrasies while simultaneously detract from the integral relationship between client, practitioner, and creation (Hanha et al., 2012, p. 462). Lack of funding, training and time, challenges surrounding material portability, facility limitations, and potential unsuitability for certain client populations round out identified drawbacks to music technology's implementation (Hanha et al., 2012).

"The impacts of technology can be both positive and negative" (Smahel et al., 2015, p. 132). Both art and music therapists understand the need for mindful technology use in practice, creating space for shortcomings and benefits. There has been increased recognition of digital media's capacity to "lower client resistance to therapy and art making, and... improve(d) therapeutic rapport" (Orr, 2012, p. 236), particularly for clients aged 40 and under. Client needs,

presentation, specific goals, and treatment plans must remain the most salient factors guiding therapeutic digital app implementation, rather than personal preference or using technology for the sake of technology (Hanha et al., 2012; Knight, 2013). As advances in the digital realm continue, clinicians have begun to realize the often-analogous relationship between insufficient knowledge of traditional expressive arts media (e.g., musical instruments, dance, song, painting, drawing, sculpture) and a lack of technological expertise. How can digital apps be recognized as artistic tools, allowing for deeper insight and facilitating change in a nonverbal manner?

Exploring the Possibilities (Preparation)

“If we overcome our initial discomfort with change, we will be able to explore and *play* with new ways to integrate technologies that our clients, especially children and adolescents, have most likely already learned and utilize on a daily basis” (Wolf, 2014, p. 181-182). Exploration, imagination, and play are cornerstones of the Expressive Arts Therapies. As practitioners, whenever we invite clients to engage in an artistic process, we must know and understand the medium’s qualities. Is it rigid or fluid? Does it allow for containment or expansion? Can it be considered practical? Cumbersome? Constricting? Can the requisite material be considered sturdy, safe, affordable, functional, and developmentally appropriate (Moon, 2010b)? “Art materials become an extension of the holding environment for the client” (Choe, 2014, p. 145). Since digital app technology has become one of the primary means of expression for children and adolescents, thorough and informed assessment of these tools is likewise essential. What might an effective Expressive Arts app look like? How could it embrace an intuitive, client-centered multimodal artistic approach? How do we begin laying the groundwork, preparing ourselves for change?

The Expressive Arts Therapy field has its roots in an “integrative approach ... founded

upon an opening up of possibilities of expression, not a delimiting of experience” (Estrella, 2005, p. 192). Utilizing apps within the music therapy process reflects potential augmentation, amplification, and enhancement of the client’s established treatment plan. “A lack of mastery of the iPad and the apps you plan to use could be considered akin to a lack of mastery on the musical instruments our profession uses most often” (Knight, 2013, p. 191). Comparable to an Expressive Arts Therapist’s process when gathering appropriate supplies for a population-specific directive, both Knight (2013) and Clements-Cortès (2014) have identified music-based apps which best align with a myriad of therapeutic goals. Clements-Cortès (2014) utilized each of the ten explored apps in personal practice, basing efficacy on technical capabilities, quality (determined by ratings and reviews), and ease of use. Potential client benefits associated with app usage included identification of problem solving skills and sequencing [TNR-i-US app], increased attention span and advancement of gross motor skills [Beatwave app], development of fine motor skills [Singing Fingers], as well as improvements in self-esteem, resilience, and personal empowerment [GarageBand] (Clements-Cortès, 2014, p. 36). Similar to Hanha et al. (2012) and Orr (2012), a major disadvantage to app usage was the lack of vibrational quality found in digital instruments, “a notable and therapeutic characteristic” (Clements-Cortès, 2014, p. 36).

Through the identification of four major categories – (1) Instruments; (2) Music Playback, Manipulation and Songwriting; (3) Audio Recording; and (4) Documentation – Knight (2013) examined the benefits and drawbacks of more than 40 music-based iPad apps. Reinforcing the need for clinicians to begin diving into the technological realm, Knight (2013) asserted “there are many possible combinations and tools and approaches for clinicians to use in making in-the-moment clinical decisions” (p. 193). Four major methods of music therapy

(Recreation, Improvisation, Reception, and Composition) have the potential to be highlighted using iPad apps, provided “an iPad app helped create a unique experience that could not have otherwise happened” (Knight, 2013, p. 194). The comparable lens of the Creation Axis processes within Expressive Arts Therapy (Goren-Bar, 1997) provides six distinct stages – Contact, Organization, Improvisation, Central Theme, Elaboration, and Preservation – through which prospective apps can assist “the therapist’s understanding of the unfolding creative process displayed in session (p. 411). Both Knight (2013) and Clements-Cortès (2014) have advised clinicians to be clear regarding intention for app selection in order to ensure client goals and objectives remain paramount. “We should think less of ‘using’ the iPad than ‘integrating’ the iPad into a therapeutic music experience” (Knight, 2013, p. 195). While digital app integration within music therapies has begun taking place, most notably with those individuals diagnosed with autism spectrum disorder (Clements-Cortès, 2014), insufficient research exists surrounding the creation of an app exclusively geared towards music therapy. What might a modality-specific app look like?

Choe’s (2014) exploration of digital app possibilities within the field of art therapy has emerged as one of the most impactful and consistently cited articles surrounding this highly debated topic. Using a participatory design approach, this qualitative study investigated “the qualifying features and qualities of an art app for art therapy” (Choe, 2014, p. 146). Participant numbers, while small (N=15; 14 females, 1 male), were representative of the current body of practicing art therapists and students at Loyola Marymount University. This study consisted of four distinct stages: Stage One, in which current digital media use was assessed via questionnaire, and Stages Two through Four, discovery process stages where art apps were explored, assessed, evaluated, and reflected upon (Choe, 2014, p. 146-147). Each group member

was provided with a stylus pen and preloaded iPad2 containing nine image-making apps (e.g., ArtRage, Art Set, Auryn Ink, Brushes, Drawing Pad, Mixel, PaperDesk, Penultimate, and Zen Brush). Apps were selected based on “ease of use, ability to facilitate an art directive, unique feature(s), and multiple capabilities” (Choe, 2014, p. 148). While participant artwork generated from the directives was saved, image analyzation did not take place.

Thorough recording and analysis of the data uncovered three necessary qualities of a valuable art app: (1) ease of use and intuitive nature; (2) powerful, yet uncomplicated simplicity; and (3) responsivity to “sensorial input” (Choe, 2014, p. 151). Additionally, participants identified six concrete art therapy app features: (1) “therapist’s control over options and tools” (Choe, 2014, p. 152); (2) portfolio feature, to allow for the storage of individual client artwork; (3) visual recording feature, to provide playback and analysis of a client’s art process (i.e., posture, speech, gaze, interaction, engagement) (Choe, 2014, p. 152); (4) ability to integrate multiple forms of media; (5) tools “useful for art-based clinical assessment and quantitative research” (Choe, 2014, p. 152); and (6) strong privacy and security features. Questionnaire results established populations for whom digital art media can “advance therapeutic encounters” (Choe, 2014, p. 149). These include children, teenagers, young adults, clients who resist using traditional art materials, and those who have experienced tactile trauma and those with development disorders (Choe, 2014, p. 149). Furthermore, key advantages (e.g., contained size, interactivity, potential to easily establish therapeutic alliance with younger clients, integration potential with both real life and other therapeutic approaches) and disadvantages (e.g., lack of tactile and sensory stimuli, limited canvas size, inability to work in an aggressive or messy manner) to digital art making via iPad app technology were identified (Choe, 2014, p. 148).

Despite the seminal nature of this study within the field and its prevalent citations in subsequent articles, notable limitations still presented. As with Asawa (2009), cultural biases cannot be discounted, given the predominance of female participants within the system of higher education. Since this time period in which this study was performed, “more advanced formats of software programs and hardware devices” (Choe, 2014, p. 153) have been created. “As media formats and technology change in rapid and profound ways” (Choe, 2014, p. 152), the ephemeral nature of the findings cannot be dismissed. How do we continue to build upon these fundamental precepts while embracing inevitable technological evolution?

Inspired by the results of Choe’s (2014) study, Mattson (2015) created the prototype for an app entitled, *Art Therapy Draw!* Comprised of a simple drawing area, color palette, and linear tool layout with various brush and eraser sizes (Mattson, 2015, p. 2), the design also contained two distinctive app design features from Choe’s (2014) study: a portfolio feature and augmented security. *Art Therapy Draw!* allowed users to create photo galleries with customizable folders and a Save feature. Additionally, 14-character passwords and an *ArtLocker* function increased client safety and confidentiality (Mattson, 2015, p. 2). Five volunteers (three females, two males; ages 31 – 35) were selected to evaluate the app via informal interview as well as through answers to ten questions on the System Usability Scale. Although participants reported confidence in using app features along with an appreciation for the app’s overall ease of use, major concerns included lack of key sophisticated features, such as mixed media options, tool control, app speed, “shape templates and spray can patterns” (Mattson, 2015, p. 4), as well as an inability to envision *ArtTherapy Draw!*’s integration into real-time clinical practice.

Unlike the visual art and music modalities, dance-movement therapists have taken an alternative approach to digital app technology, electing to explore potential integration within the

assessment and treatment planning process. Dunphy, Mullane, & Allen (2016) launched pilot trials of an iPad app entitled *Making the Moves* in two locations: (1) an educational setting in Melbourne, Australia (two classes of ten students, ages six to eleven, with moderate intellectual disabilities), and (2) a community-based rehabilitation institute in Chicago, Illinois (one group, ages six to sixteen, diagnosed with cerebral palsy, developmental and/or learning disabilities) (p. 58). Researchers recognized the dichotomous nature of a previously designed 12-page paper-based assessment in everyday practice: the necessity of comprehensive data gathered for each client over five therapeutic domains (Expressive/Aesthetic, Physical, Emotional, Interpersonal, and Cognitive) for holistic treatment plan creation and goal setting juxtaposed with unrealistic post-session time expectations (Dunphy et al., 2016). Through the integration of extensive assessment content with a Filemaker Pro™ interface, *Making the Moves* was created with the intention of helping “dance movement therapists to articulate, qualify and quantify therapeutic outcomes for clients with disability in DMT, and to articulate those outcomes” (Dunphy et al., 2016, p. 61).

Ten participants (eight from Australia, two from the United States) with a range of expertise in the fields of dance movement therapy, special education, and assessment conducted the app trials (Dunphy et al., 2016, p. 58). No participant had previous experience conducting assessments using tablets or apps (Dunphy et al., 2016, p. 58). Data was recorded by the clinician through a series of taps on the tablet’s screen (indicating observed behavior) across different therapeutic domains; this could be immediately translated into a visual graph format, allowing for “instantaneous visual feedback of client progress” (Dunphy et al., 2016, p. 56). This iPad app prototype also contained video and photographic recording options, along with the

unique ability to retain written notes and visual art responses, which granted clinicians the capability to “augment quantitative observations” (Dunphy et al., 2016, p. 56).

During trial sessions, the *Making the Moves* app was evaluated in regard to its prospective capabilities to generate, manage, and assess large amounts of data within session, as well as for functionality and facility of use. Participants found the app “much less confusing” (Dunphy et al., 2016, p. 60) than the original paper-based assessment, having reported a marked increase in the amount of session data able to be recorded and organized post-session “requiring no further investment of time” (Dunphy et al., 2016, p. 60). A major advantage to the *Making the Moves* app was its singular display of “assessment data and/or process required for a specific moment” (Dunphy et al., 2016, p. 60), which afforded improvements in clinician focus and attunement. Furthermore, this singular data display allowed for observational skill development, effectively “guiding their eyes” (Dunphy et al., 2016, p. 60). Participants recommended future app incarnations include a timestamp for recorded observations, as well as opportunities for clients to become involved in their assessment, creating a “sense of ownership of the therapeutic experience and ... becoming vital and engaged participants” (Stephen & Alex, 2006; as cited in Dunphy et al., 2016, p. 61). Despite the encouraging possibilities, no further studies have been performed to date. With “the current priority for all health professionals to be using evidence-based approaches” (Dunphy et al., 2016, p. 61), can digital app technology help move the Expressive Arts Therapies into this emerging realm?

Practical App-lications (Action Stage)

“Although the capacity to create narrative is vital to mental health, the ability to change preexisting narratives may be even more important” (Jamerson, 2013, p. 185). With influences deeply rooted in DJ culture, established mental health frameworks, narrative therapy, and

expressive arts therapy, Jamerson (2013) developed a multimodal therapeutic approach for children and adolescents entitled Expressive Remix Therapy. Weekly Expressive Remix Groups (ERG's) met over a 13-week period; time was divided into four "creative excursions" each lasting three weeks and culminated in a final "creative showcase theatre" exhibit of participant artwork. Youth from the Los Angeles area at risk for neighborhood gang involvement participated in the ERG's. Sample size, group member ages, and demographics were not specified. Facilitators established participant narratives through a series of questions, posed both informally and through formal detailed worksheets (Jamerson, 2013, p. 185). Once a participant's story was established, they were "encouraged to remix the narratives using digital media tools (iPads, laptops, smart phones, etc.) in the same way that a DJ remixes a song" (Jamerson, 2013, p. 185). The act of remixing allowed clients to assemble existing objects in distinct and innovative ways (Jamerson, 2013). Through digital storytelling, physical mask making, computer-generated collage, and the creation of a virtual world, clients progressed intermodally towards the goal of externally voicing identified internal challenges. Using digital app technology in tandem with traditional artistic media offered participants opportunities for authentic engagement and expression through familiar devices, unique perspective, and deeper insight.

In their qualitative study, Burland & Magee (2014) conducted interviews with six music therapists (four females, two males) who utilized electronic music technologies [EMTs] in current practice with clients. Participants discussed 16 distinct cases, 13 of which were children (ages 12 and under) or adolescents (ages 13 – 17). All clients presented with complex symptomology, including physical and sensory disabilities, as well as challenges with cognition and communication skills (Burland & Magee, 2014, p. 181). Particular focus was given in this

study to the integration and use of EMTs in identity construction and formation. Oftentimes, individuals with physical and mental disabilities feel disconnected, disoriented, isolated, and unable to interact and effectively commune with the world. “Individuals with disabilities are often ‘locked into a body they can’t control’” (Burland & Magee, 2014, p. 183). Participants reported that clients who interfaced with EMTs within a music therapy session were empowered to explore sound, becoming connected with “a previous healthy or positive identity which may serve a vital role in helping the process of adapting to disability” (Burland & Magee, 2014, p. 184). Electronic music technologies allowed those clients with limited verbal and movement skills the opportunity to experience effective and successful communication.

The opportunity to feel equal, have an equal voice in group exchanges and feel *the same* as others is important for individuals’ identities: they are provided with an empowered sense of self – with feelings of agency over their environments and an opportunity to communicate with others (Burland & Magee, 2014, p. 183).

Electronic music technologies have the potential to offer clients possibilities for expression that traditional musical instruments cannot provide. Participants reported deeper client engagement, an augmented sense of achievement and belonging, along with insight into personal identity characteristics (Burland & Magee, 2014). “Using music technology enables young clients to create music which speaks *how they are*” (Burland & Magee, 2014, p. 185). As with many forms of digital technology, EMTs can adapt to each unique client presentation, thereby allowing each client to participate in their own time and best interest. Creating sounds and music via electronic music technology offers children and adolescents with physical, mental, and cognitive impairments a “temporary release from their disabilities and awareness of all that they *cannot* do” (Burland & Magee, 2014, 184). As Expressive Arts Therapists, we strive to provide

interventions attuned to a client's individual needs, regardless of perceived barriers; we meet clients where they are. Through the digital arts, we have the opportunity to extend possibilities for health not only for those with physical, mental, and cognitive impairments, but also to "those often left out because of economic and social inequalities" (Hughes, 2017, p. 103).

Utilizing an integrated arts-based curriculum, Hughes (2017) conducted an ethnographic case study to explore "how adolescents' digital literacy skills develop over time while immersed in a media rich setting; and how adolescents' identities are shaped and performed, as they use new media tools and affordances to present themselves to the world" (p. 105). The participants were seven "high risk" students of a Canadian alternative school (3 females, 4 males) who resided in an area of Ontario, Canada with "the lowest average household income and lowest proportion of owner-occupied dwellings" (Hughes, 2017, p. 103). Students varied widely in access to, experience and proficiency with technology, as well as being identified with various emotional, cognitive, behavioral and developmental disabilities; specific details were not provided (Hughes, 2017). In individualized two-hour sessions over the course of twelve weeks, students designed and created an eight-page "All About Me" book. Each page depicted an artistic reflection based on a distinct prompt through the incorporation of a particular app or technological tool. The questions and apps investigated during this study were:

- (1) What is your favorite season? Why? (PicCollage).
- (2) What is your favorite spot to play/watch? (Lino).
- (3) What is your favorite color? How does it make you feel? (Chibitronics).
- (4) If you could go anywhere, where would you go? Why and with whom? (WordSwag).
- (5) If you could have dinner with a famous person, who would it be? What you would talk about? (Popplet/Piktochart).

(6) Ask someone to define your greatest strength. What is it? Do you agree? Why or why not? (MangaMaker).

(7) What advice would you give to your future self? (tool of their own choice) (Hughes, 2017, p. 106).

The book's purpose was to "provide students with the opportunity to make discoveries about themselves, their likes and dislikes, and to uncover who they are, explore what they feel, what they think, and to express these answers through a variety of activities and technologies" (Hughes, 2017, p. 106). Utilizing app technology in a multimodal artistic manner afforded participants experiences of increased intrapersonal and communication skills, the ability to self-guide the learning process, development of perseverance and confidence, as well as feelings of validation (Hughes, 2017). Combining each goal-directed inquiry with an appropriate artistic digital tool allowed for depth of expression, insight, imagination, play, and client participation through an intermodal transfer. While small sample size and the absence of information regarding participant age, grade range, and ethnicity make it difficult to extrapolate meaning across a larger population, the integrative Expressive Arts possibilities outlined in the study cannot be discounted, making it a beneficial foundation for future research.

When the process of culling various research databases for references to the use of digital metaphoric imagery as trauma treatment garnered zero results, Kruger and Swanepoel (2017) decided to engage in their own arts-based study. Having coined "the term 'digital art trauma therapy' to consolidate the frameworks of CBT trauma treatment, art therapy, and technology" (Kruger & Swanepoel, 2017, p. 93), the researchers sought to "provide an in-depth analysis of how digital metaphoric imagery facilitated the construction of meaning when integrated into a cognitive-behavioral trauma treatment" (Kruger & Swanepoel, 2017, p. 95). The study's

participants were four adolescent females (ages 13 to 15) mandated by court order to reside in a “house of safekeeping for abused girls” (Kruger & Swanepoel, 2017, p. 95); location of the study was not provided. Participants attended ten weekly individual sessions, which ranged in length from 45 – 60 minutes. Through the use of a laptop, printer/scanner, and two computer software programs selected for their wide range of artistic tools (i.e., Windows Paint and ArtRage), participants created digital artwork based on four phases of metaphor:

- (1) The client-generated metaphor as a starting point for cognitive processing – “The instruction is: ‘Think back of your past and what happened to you. Change yourself into anything that will be express how you feel when you think of your past’” (Kruger & Swanepoel, 2017, p. 94);
- (2) Building a “bridge to the trauma narrative” (Kruger & Swanepoel, 2017, p. 94), through a monster metaphor;
- (3) Transforming the monster “to promote mastery of the trauma reminders and to improve coping skills” (Kruger & Swanepoel, 2017, p. 94); and
- (4) Creating artwork depicting current feelings or visions for the future.

Work with digital artistic media allowed these adolescents to create narratives – attaching meaning to traumatic memories – as well as to incorporate “their trauma narratives into contextual aspects of their autobiographical memories” (Kruger & Swanepoel, 2017, p. 102).

While the study’s findings indicated successful integration of digital arts technology within an existing therapeutic framework, future studies should include a) larger sample size; b) participant demographic representative of the full adolescent spectrum (e.g., male, LGBTQIA+, various ethnicities and SES, 16 – 19-year-olds); and c) Expressive Arts modalities other than visual arts.

Related studies and information from other health-related fields (Action Stage)

Depressive disorder, with its roots often forming during adolescence, has been predicted to “be the second most important cause of lost healthy life-years globally by 2020” (Murray & Lopez, 1996; as cited in Whittaker et al., 2012, para. 1). Over an approximate two-year period (June 2009 – April 2011), Whittaker et al. (2012) performed “the first study to deliver a CBT-based intervention to prevent depression in adolescents via mobile phone text and video messages” (para. 27). Eight hundred fifty-five students ages 13 – 17 from 15 high schools in Auckland City, New Zealand participated. Ethnic (58.6% New Zealand Europeans, 24.3% Asian, 10% Maori) and gender (68.3% female, 31.7% male) breakdowns were representative of the overall school student body (Whittaker et al., 2012, para. 22). Participants were randomly placed in either the intervention group (n=426) or the control group (n=429). Regardless of group assignment, students were sent two messages via phone per day for a total of nine weeks through the mobile phone intervention, MEMO. Messages were presented in a variety of formats, from simple text messages to videos containing cartoons and celebrities (Whittaker et al., 2012, para. 18). For the intervention group, prompts were based on one of 15 affirmation-based cognitive behavioral therapy (CBT) messages; these included “You can take control of this.... Do fun stuff. Don’t procrastinate.... It’s not what happens; it’s what you think about it that affects feelings” (Whittaker et al., 2012, Textbox 1). Messages offered to the control group “focused on healthy eating, sustainability of the environment, and safe practices for using the Internet and mobile phone (cybersafety)” (Whittaker et al., 2012, para. 18). When interviewed, 82.4% of students reported finding MEMO useful, as it allowed “them to be more positive, to get rid of negative thoughts, to relax, to solve problems, to have fun, and to deal with issues in school” (Whittaker et al., 2012, para. 24).

The encouraging results of this early study have far-reaching implications. With the global use of smart phones having reached 1.82 billion in 2014 (Cisco & C. Cisco, 2014; as cited in Stoyanov et al., 2015, para. 1), app technology has the potential to assist underserved populations, bringing much needed mental health care to remote areas worldwide. According to Whittaker et al. (2012), “using strategies of this kind has significant potential to address global disparities in the burden of adolescent depression” (para. 29). Although MEMO’s efficacy was predicated on an established therapeutic modality (CBT), there remained a lack of practitioner involvement. Engaging solely with digital technology, there is the profound absence of human interaction centered around active witnessing, empathy, unconditional positive regard, and the supportive holding of therapeutic space (Kossak, 2009; Rogers, 2000). Can utilizing apps in this fashion be considered part of the therapeutic realm if no clinician is present and processing merely includes self-reflection? Given the essential nature of the clinician in the digital-therapeutic equation, how can we best tailor mental health apps to the unique needs of children and adolescents?

“Adolescents’ experiences of mental health difficulties are different from adults” (Kenny, Dooley, & Fitzgerald, 2016, p. 266). As we have seen within the field of Expressive Arts Therapies, the majority of perspectives regarding efficacy and usefulness of app-based technology have come from adults, scholars, and clinicians (Asawa, 2009; Choe, 2014; Hanha et al., 2012; Mattson, 2015; Orr, 2012). When working with a specific population, it is necessary to consider their distinctive developmental needs. Kenny et al. (2016) conducted five single-sex focus groups (three males, two females) between March and April 2013 with 34 students, ages 15 and 16, in Dublin, Ireland. Lasting between 30 – 40 minutes, each focus group was shown image content for a prototype app entitled *CopeSmart*, as well as questioned about their

requirements for mental health-based app technology. Students identified eight essentials: (1) *Safety* – ensuring information remains confidential, protected from stigma and cyber-bullying (Kenny et al., 2016, p. 269); (2) *Engagement* – app should be fun, interactive, with “something new or different to make them stand out so that teenagers will download and use them” (Kenny et al., 2016, p. 270); (3) *Functionality*; (4) *Social Interaction* – the ability to share experiences and issues with peers and offer advice; (5) *Promoting Awareness*; (6) *Accessibility* – an app must utilize developmentally appropriate language, provide easy access, and be free to use because “if there is a charge for these apps, young people won’t use them” (Kenny et al., 2016, p. 272); (7) *Gender*; and (8) *Young people in control*. As with previous digital app studies, small sample size restricted the ability to generalize results across diverse populations (i.e., SES, geographic location, ethnicity). Despite these drawbacks, with a deeper understanding of the parameters and prerequisites adolescents look for in effective therapeutic digital technology, what might implementation entail?

In an open uncontrolled trial study of 44 adolescents in the United Kingdom, Stallard, Porter, and Grist (2018) endeavored to “explore the safety, acceptability, feasibility, and usability” (para. 5) of BlueIce: an app coproduced by academics, developers, and “young people with a lived experience of self-harm” (para. 6). The BlueIce app provided users with tailored CBT and DBT approaches designed to be utilized concurrently with traditional therapy. Over the twelve-week app trial period, participants reported “statistically significant reductions in symptoms of depression and anxiety” (Stallard et al., 2018, para. 36), along with decreased frequency of self-harm acts (58%) and prevention of an estimated 308 potential self-harm occurrences (Stallard et al., 2018, para. 34). Research findings supported BlueIce’s accessibility and safety in combination with conventional therapeutic care in cases of adolescent self-harm.

Despite these encouraging findings, the study presented with several noticeable limitations. These include a) small, predominantly female sample size (N=44; Male: 4, Female: 40); b) absence of pertinent demographic information (e.g., race/ethnicity, SES); c) willing participant consent to trial the BlueIce app, an indication that participants may “have been more motivated and prepared to address their self-harm” (Stallard et al., 2018, para. 40); d) lack of comparison group and inability to accurately determine causality; and e) assessment of participant self-harm “through retrospective self-reports, which may be subject to recall bias” (Stallard et al., 2018, para. 41).

“Implementation in adolescent and young adult populations in the early stages of psychotic illness is critical” (Niendam et al., 2018, p. 239). Niendam et al. (2018) conducted a twenty-three-month longitudinal within-person study to evaluate the practicality of established smartphone app (Ginger.io) employment in tandem with a traditional therapy program. Daily and weekly survey data was collected from 76 adolescents and young adults diagnosed with or at clinical high-risk for early psychosis via smartphone for defined positive, negative, and cognitive symptoms. Additionally, “participants completed monthly symptom assessments using the Brief Psychiatric Rating Scale (BPRS)” (Niendam et al., 2018, p. 241). High participant satisfaction was reported, with 83% of participants “open to continue using the app as part of their treatment services, if the app was available” (Niendam et al., 2018, p. 243). Symptom self-report via smartphone app was found comparable to the BPRS, “a gold-standard clinician administered interview” (Niendam et al., 2018, p. 244), indicative of validity in the digital method of patient monitoring. Major limitations of this study included a) small, predominantly male Caucasian sample size (N=76; 66% male, 54% Caucasian); b) lack of control group, limiting determination

of causality; and c) inability to assess potential bias due to monetary compensation of the participants.

“The onset of schizophrenia occurs during a period critical for development of social relationships and functional independence” (Schlosser et al., 2018, p. 1010). Having recognized the potential efficacy of digital technology in engagement of the “process of reward processing, known to be disrupted in psychosis spectrum disorders” (Schlosser et al., 2018, p. 1011), Schlosser et al. (2018) performed a twelve-week randomized control trial of the PRIME (Personalized Real-Time Intervention for Motivational Enhancement) app. Forty-three participants (60% male, 50% Caucasian) ages 16 to 36 residing in 13 different states evaluated the “mobile app intervention that includes a peer community, goal and achievement tracking, and cognitive behavioral therapy (CBT) based coaching” (Schlosser et al., 2018, p. 1011). All participants met the DSM-IV TR criteria for a schizophrenia spectrum disorder and were within the first five years of diagnosis.

During the initial set-up phase, participants selected one of 36 long-term goals; from this, shorter detailed, customized challenges were suggested to enhance goal progress and achievement (Schlosser et al., 2018, p. 1012). Additionally, PRIME paired users with clinicians well-versed in a variety of therapeutic techniques “to help participants overcome the daily obstacles that hinder goal progress and improve health outcomes” (Schlosser et al., 2018, p. 1012). Although participants were only required to log in to the PRIME app once per day, over the course of the twelve weeks, participants averaged four daily logons with 5152 direct messages sent (Schlosser et al., 2012, p. 1016). PRIME was found to have a positive impact on instances of “depression, defeatist beliefs, self-efficacy and several important components of motivation, such as reward learning, anticipated pleasure, and effort expenditure” (Schlosser et

al., 2016, p. 1018). Two major shortcomings of this study are possible underrepresentation of the full spectrum of those diagnosed with schizophrenia due to limited sample size, as well as lack of information regarding the longitudinal effects of app integration (given the singular, brief three-month follow-up conducted by the authors). While changes in diagnostic criteria do not proceed as swiftly as technological ones, distinct differences between DSM-IV TR and current DSM-V specifics for schizophrenia must also be considered, given their potential to impact PRIME's future reliability and validity.

Discussion

As Expressive Arts Therapists, we are concerned with the interrelated nature of the wide-ranging spectrum of artistic media, how to best introduce, incorporate and facilitate creative expression for the client's highest benefit. "While there are many paths to authentic expression, each of us must take one path at a time, and to be helpful our guide must know the way" (Johnson, 1985, p. 237). Digital app technology is fast becoming the standard choice amongst young people for myriad forms of communication, including artistic endeavors. In order to best serve our clients, as clinicians "we need to use our creativity, curiosity, and desire for innovation – in other words, *our ability to play with new technology* – in order to remain current" (Wolf, 2014, p. 181). Every method of artistic expression has virtues and shortcomings, identifiable characteristics to keep in our awareness when working with unique populations and specific diagnostic criteria.

Using "digital media does not replace traditional art forms but rather adds to the list of media available for artmaking" (Orr, 2006, p. 195). Accessibility, flexibility, and general acceptance of digital app technology as a facet of everyday life in present-day society imbue these artistic tools with the unique opportunity to support and facilitate healing for heretofore

inaccessible and underrepresented segments of the population. Instead of viewing app integration as a potential hinderance to or distraction from traditional Expressive Arts modalities, how can we begin inviting them to become part of the pantheon? Attuning to our client's identified goals and objectives, as Expressive Arts Therapists, can we allow digital app technology to be recognized for its intermodal capabilities, opportunities for enhancement, amplification and reframing? With therapeutic emphasis on process over product, for those adept at and comfortable with its usage, "technology may be less intimidating than traditional modalities" (Evans, 2012, p. 52). For children and adolescents, arts-based computer programs and apps may be their first window into creative expression. Might the intermodal transfer find its progression from the digital universe to the physical realm or vice versa?

Meeting clients where they are, attuning to their unique needs and challenges, as well as providing a safe empathic container for mindful creative expression are essential parts of the therapeutic relationship. "Nowadays technology is deeply embedded in children's lives" (Smahel et al., 2015, p. 131). Considering the ever-expanding realm of digital app technology, from a clinical perspective, it is essential to cultivate awareness of both the benefits and drawbacks of integrating this medium into our Expressive Arts therapy practice. One major consideration is the potential for technology fatigue. Despite the potential for therapeutic engagement and establishing faster rapport with children and adolescent populations (Choe, 2014), "computers and cell phones allow a child the opportunity to disappear and to withdraw further" (Klorer, 2009, p. 82). Additionally, various health challenges linked to technology use – eye problems (i.e., eye strain, need for glasses), headaches, tiredness, poor eating habits, sleep problems and aggressive tendencies towards objects – have been reported for children ages nine through sixteen (Smahel et al., 2015). Mindful and gentle guidance of young clients away

from the lure of the electronic screen allows for increased diversity of artistic encounters, something out of the ordinary.

For many clinicians (Choe, 2014; Hanha et al., 2012; Orr, 2012), a major limitation of digital app technology is the perceived loss of and detachment from the myriad tactile and kinesthetic qualities inherent in traditional artistic media (e.g., clay, watercolor, colored pencil, oil pastel, chalk, musical instruments). “Authentic craftwork requires a dialogue between hand and material” (Austin, 2009, p. 84). Creative expression through the use of digital app technology occurs within a confined space. As many technology-based tools are correlated with significant monetary expense, clients may not feel as free to explore “rhythm, action, movement, and the release of energy” (Hinz, 2009, p. 42) out of anxiety or fear.

Considerations for Future Research

“To be more than just observers of techno-digital culture, we need to not only broaden our technological skills but also to deepen our understanding of the consciousness, ecological impacts, and cultural forces taking shape” (Carlton, 2014, p. 45). As evidenced in the critical literature review, the field of creative arts therapies has only just begun to scratch the surface in terms of evidence-based studies surrounding digital app integration into more traditional practice. Effective single-modality apps have been identified (Clements-Cortès, 2014; Knight, 2013), devised (Choe, 2014), and tested (Dunphy et al., 2016; Mattson, 2015). Incorporation of digital tools has proven effective for adolescent populations in therapeutic settings, offering young clients the ability to more accurately voice internal narratives and challenges (Burland & Magee, 2014; Jamerson, 2013), increased communication skills, confidence and resilience (Hughes, 2017), as well as the potential to gain insight into and begin to transform traumatic experiences (Kruger & Swanepoel, 2017). Despite the promising outcomes of these studies,

there remains a dearth of information surrounding the use of creative arts apps in an ever-expanding digital universe. “Excluding digital culture from art therapy marginalizes the lived experience of clients born within its context” (Carlton, 2014, p. 43). Future qualitative and quantitative studies would benefit from larger sample sizes representative of the breadth and demographic diversity of child and adolescent populations across the globe. Additionally, as the majority of past and current digital app studies have focused on adolescent populations over the age of twelve, further data is needed surrounding younger “digital natives,” ages ten and younger, due to their unique developmental needs.

While digital app technology has been utilized therapeutically in an intermodal fashion (Hughes, 2017; Jamerson, 2013), no authentic Expressive Arts Therapy app presently exists. Opportunities for research exist surrounding further exploration of the link between single modality apps and both the intermodal transfer and intermodal superimposition. Where might the sensory and kinesthetic levels of the Expressive Therapies Continuum (Hinz, 2009) find themselves? As three-dimensional printing capabilities, advances in authentic avatar movement, virtual reality, and improvements in stylus flexibility continue to expand, how might they impact and participate in the digital Expressive Arts app discussion?

Ethical considerations must also be made in terms of future app creation and development, as well as during the decision-making process when introducing digital app technology to clientele in practice. “The work of aligning ethical guidelines with practice is ongoing; much work is needed to fully understand how technology is being used, with attention to possible misuses and client vulnerabilities” (Alders, Beck, Allen, & Mosinski, 2011, p. 167). Creating a therapeutic environment in which client privacy, safety, and confidentiality exist is paramount. When utilizing digital app technology, boundaries and limits must be delineated and

specific precautions instituted (e.g., firewalls, secure data storage, consent and guidelines surrounding social media platforms). As the digital landscape rapidly expands, regrettably, the Code of Ethics for Registered Expressive Arts Therapists (IEATA, 2017) has been unable to keep pace. Although provisions are made concerning clinician competence and scope of practice as well as client welfare, privacy, and confidentiality, references to specific technological use remain vague. “When innovative techniques are used for which there are no established standards, Expressive Arts Therapists must take whatever precautions necessary to protect the welfare of their clients” (IEATA, 2017, p. 1). Furthermore, ensuring the use of evidence-based, valid, and reliable digital apps is essential to competent, ethical practice; “just because an app is recommended by a professional does not mean it is ‘good’” (Neary & Schueller, 2018, p. 532). As clinicians, it is necessary to thoroughly educate ourselves and utilize sound, reasonable judgment while mindfully considering potential bias and reactionary countertransference towards digital app technology. The highest good of our client must always be our primary focus.

Whichever side of the spectrum we find ourselves on when considering digital app technology integration in clinical practice, we need always remember, on the other side of the artwork is a human being, the client we are charged with assisting on the journey of health and well-being. “Will we limit ourselves to our valuable yet circumscribed role as critical observers in clinical settings, or will we actively contribute to exciting technological innovation that is altering the creative landscape?” (Austin, 2009, p. 85). Adoption of digital app technology tailored to facilitate and enhance identified therapeutic goals and objectives can only occur through increased clinical understanding of this expressive form (Malchiodi, 2018b). All artistic media contain inherent advantages and drawbacks, potentials for expansion, restriction, flooding, regression and mindful development. Digital app technology predicated on an intermodal

Expressive Arts Therapies framework contain avenues of expression we have yet to envision, restorative and therapeutic potential beyond our current capacity to imagine. It is this author's hope that dedicated research will expand our technological boundaries, bringing forth an increased capacity to engage in the Expressive Arts process.

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In the judgment of the following signatory, this thesis meets the academic standards that have been established for the above degree.

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