

## Digital Technology Use in Art Therapy with Adults with Developmental Disabilities

### Abstract

*This phenomenological art-based study explored digital technology as a new art medium and clinical intervention tool in art therapy with adults with developmental disabilities. Eight adults with a developmental disability who were enrolled in a traditional community art program volunteered to partake in the study. Participants attended five one-hour individual art therapy sessions during which they created on a Lenovo Yoga 13.3-inch Windows 8 Convertible Ultrabook™ and a Samsung 7-inch Galaxy Tab 3 Android touch tablet. The results revealed the following six themes: a simple and mess-free digital canvas, independence, interplay of digital art and music, computer skills and cognitive development, voice and vision, and digital art directives. The three most favoured image-making applications among participants were: Fresh Paint, Coloring Mandalas, and Sand Draw while the two most preferred creative activity applications were: PuzzleTouch and Sticker Tales. Future research with individuals of all ages with developmental disabilities is recommended in order to continue exploring the opportunities and challenges of digital devices as image making and creative activity tools.*

In recent years a number of art therapists have been facilitating therapeutic sessions with children and adolescents with developmental disabilities, especially young clients with autism spectrum disorders (Betts, 2013; Brancheau, 2013; Epp, 2008; Gabriels, 2003; Martin, 2009) for the reasons that art therapy provides a multi-sensory setting for individuals to create, gain artistic mastery, establish self-awareness and develop communication, socialization and imagination thinking skills. (American Art Therapy Association, 2011; Betts, 2005). Most recently, art therapists have been reflecting upon the necessities of incorporating digital technology as relevant and contemporary art media and intervention tools in clinical sessions (Carlton, 2014; Choe, 2014; Malchiodi, 2009; Orr, 2012; Peterson, 2010). In the last decade, a handful of clinicians have taken the challenge in applying digital technology with their clients in art therapy (Alders, Beck, Allen & Mosinski, 2011; Austin, 2010; Malchiodi & Johnson, 2013; Mosinski, 2010) and more are developing related skills and interests each year.

A selection of individuals with developmental disabilities who dislike paint on their hands, especially those on the autism spectrum with touch, tactile, and olfactory sensitivity (Grandin & Panek, 2013) may interact more effectively with digital art applications than with traditional art materials (Alders et al., 2011). Researchers in the area of educational psychology have commenced examining the use of digital technology as communication devices with children and youth with autism spectrum disorders and other developmental

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disabilities (Campigotto, McEwen & Epp, 2013; Flores et al., 2012; Kagohara et al., 2013; Sigafos et al., 2013). Results from these studies have been mostly positive. However, these studies have been limited to children and youth with developmental disabilities. Furthermore, to date, no art therapy research has explored the use of digital technology as an expansive “creative palette” (Carlton, 2014) for adults with developmental disabilities. Thus, it is critical to investigate and evaluate how digital technology can be used as a viable creative and communicative art medium and cost-effective, accessible clinical intervention tool with this population.

## Method

This phenomenological art-based study attempted to explore digital technology as a new art medium and clinical intervention tool in art therapy sessions for adults with a developmental disability. Qualitative research truly captures individuals with disabilities experiences (O’Day & Kileen, 2002) while phenomenological research explicitly examines participants’ lived experiences, perspectives, reflections, and feelings (Giorgi & Giorgi, 2003; Kapitan, 2010; Quail & Peavy, 1994). The study explored the following two research questions:

- How do adults with developmental disabilities experience digital technology as an art medium and a clinical intervention tool in art therapy?
- Which image making and creative activity applications are most suited for adults with developmental disabilities?

Convenience sampling was utilized in this study. Participants were recruited from the Salvation Army Lawson Ministries Hamilton – Paparella Innovative Community Art Program located in the province of Ontario designed and implemented for adults with dual diagnosis including developmental disabilities and psychiatric issues. Within the sensorimotor enriched art program, individuals create art with a variety of traditional art materials such as acrylic paint, clay, fabrics, scented markers, and sand. Four male and four female adults ( $N = 8$ ) between the ages of 24 and 49 participated in the study. Participants were diagnosed with a variety of disabilities, including autism spectrum disorders ( $n = 4$ ), Down syndrome ( $n = 2$ ), and a developmental disability not otherwise specified ( $n = 2$ ). All participants

communicated verbally with the exception of one participant with an autism spectrum condition who communicated via pointing at images, objects, words, and symbols. At the time of the study, all participants were using computers or portable hand touch devices at home and in clinical settings as communication or recreational devices but not as art making devices.

Permission to proceed with this study was reviewed and granted by the community-based agency. Due to the nature of the sample, adults with developmental disabilities, participants completed the study consent form with the assistance of a family member or case manager. The informed consent underscored the purpose of the research, anticipated study benefits, emotional risks, and participants’ ability to terminate study participation at any time and removal of their digital drawings from the data set after data had been collected. Additionally, participants completed the demographic form requesting the following participant features: age, computer experience, diagnosis, ethnic group, gender, hobbies, living arrangement, volunteer and work experience. Participation in this study posed no potential risks to participants’ well-being beyond those normally encountered in everyday life. Prior to commencing the art therapy sessions, participants attended digital trial-run sessions in order for the researchers to assess if each adult felt comfortable operating the digital tablet devices, were interested in using creative digital applications and could apply gentle pressure with the stylus on the touchscreens.

All participants attended five one-hour individual art therapy sessions which were approximately one week apart in a quiet room at the community-based agency or at the agency’s assisted-living residence and facilitated by a graduate-level art therapy student. Sessions were geared towards each individual’s level of cognitive and physical ability and encompassed the following three segments: warm-up activity, art-based intervention, and closure activity. Each session commenced with a check-in feeling chart and closed with a check-out feeling chart. The following art-based interventions were introduced to participants: free drawing, scribble drawing, house-tree-person (H-T-P; Buck, 1948), mandala drawing, and a favourite kind of day (FKD; Manning, 1987). Grounding objects such as a slinky, squishy tube, and plastic animal figurines were available in the room for those participants who required intermittent senso-

ry breaks from digital art making. Participants had a choice to create digital art with or without music. At the end of each session, participants were asked the following questions: "What did you like about the image making and creative activity application used today? Were there any challenging qualities with today's applications? The questions allowed each participant to reflect upon and voice their lived experience using the devices and creative applications.

During the art therapy sessions, participants created art on a Lenovo Yoga 13.3-inch Windows 8 Convertible Ultrabook™ and a Samsung 7-inch Galaxy Tab 3 Android touch tablet. The Windows 8 touchscreen laptop was specifically chosen due to its large screen size, upright easel-like table positioning, instant printing feature, and password protection folder capabilities. The Android tablet was introduced because not all image making and

creative activity applications were compatible with the Windows 8 platform. Participants created art on the touchscreens with both round-tip and brush styluses. The following six image making applications (apps) were selected by the researchers based on their easy-to-use qualities: ArtRage, Crayola Art Studio, Fresh Paint, Coloring Mandalas, Sand Draw, and Zen Brush (see Table 1). The following four creative activity applications were introduced to participants during the warm-up and closing art therapy session segments: Sticker Tales, PuzzleTouch, Number Link, and GS Kids! Shapes N Colors. A printer was present in the study room for immediate digital artwork printing. To maintain confidentiality and participants' identities, all digital art created on the password protected laptop and tablet was saved with identification numbers. Artworks and participants direct session comments were the raw research data.

Table 1. Image Making and Creative Activity Applications

Application Name	App Category	Platform	Age Rating	Participants' Responses to Art Making/Creative Activity App
ArtRage	Image making	Android, iPad, iPhone, Windows 8	all ages	"It's fun to colour."
Fresh Paint	Image making	Windows 8	12+	"Easy. You just pick what colour you want and then just start."
Crayola Art Studio	Image making	Windows 8	n/a	"I love creating art on the computer."
Coloring Mandalas	Image making	Android, iPad, iPhone	2+	"With this one, you sort of colour inside the lines."
Sand Draw	Image making	Android, iPad, iPhone	all ages	"Drawing in the sand. Like a beach house."
ZenBrush	Image making	Android, iPad, iPhone	n/a	"Less colours."
Sticker Tales	Creative activity	Windows 8	3+	"I like talking about all the pictures."
PuzzleTouch	Creative activity	Windows 8	12+	"I liked learning how to do puzzles on the computer."
Number Link	Creative activity	Android, iPad, iPhone, Windows 8	12+	"Difficult but fun."
GS Kids! Shapes N Colors	Creative activity	Windows 8	3+	"I liked learning about the shapes."

Note. Age rating recommended by application developer

## Results

Upon in-depth examination by means of re-reading and bracketing the art therapy session notes, the following six themes emerged from the data:

### A Simple and Mess-Free Digital Canvas

All participants, especially those with olfactory and tactile sensitivity appreciated creating in a mess-free therapeutic environment on texture-free digital devices which offered easy-to-use image making applications. One participant exclaimed "I don't have to worry about getting too messy." Overall, participants preferred creating on the large 13.3-inch touchscreen laptop. One participant noted "A little bit easier to do it on the bigger screen."

### Independence

Due to the multimedia design of touchscreen devices and the proximity of the digital canvas right at one's fingertips, as sessions progressed, participants were able to independently choose their preferred art tools, blend their desired colours, and transfer images from the Internet onto digital collage work. The participants often require assistance with mixing colours and operating tools such as scissors when creating traditional art in the community art program. One participant during session two stated "This is fun. I can do this by myself!"

### Interplay of Digital Art and Music

Throughout the study sessions, participants were offered the choice to create on the digital devices with or without background music. With the exception of one participant with auditory-processing challenges, participants preferred creating art while listening, humming, or singing to music. The multimedia features of the digital devices permitted the session facilitator to upload participants preferred music and images of their favourite band or singer from the Internet such as One Direction and The Beatles. One participant asserted "I love doing digital art and listening to music at the same time. I love it. Jamming to music."

### Computer Skills and Cognitive Development

With the introduction of digital technology in the art therapy sessions, participants had the opportunity to enhance their computer faculties that of touch typing, saving documents, printing art, and navigating around the touch devices. One participant during session four while colouring his mandala and listening to the Beach Boys song titled "God Only Knows" stated "God only knows what I'd be without this computer course." Additionally, the creative activity applications such as PuzzleTouch and Number Link allowed participants to further develop their concentration, focus, memory, and problem-solving skills.

### Voice and Vision

Throughout the study, participants had the opportunity to express verbally and through the creative process their thoughts and feelings and reflect upon past and present life experiences with the art therapy session facilitator. One participant during session one acknowledged "I like talking about all the pictures." The art therapy sessions provided participants the opportunity for creative, social, and symbolic growth.

### Digital Art Directives

During the middle segment of each individual art therapy session, participants were directed to complete a traditional art directive on the digital devices. In session one, participants were directed to create a scribble drawing. Using the Fresh Paint application, 35-year-old Zenya (pseudonym) with an autism spectrum condition imagined and then developed her blue scribble into a black cat (see Figure 1). In session two, participants were instructed to create a house or a tree or a person (H-T-P; Buck, 1948) using basic shapes. With the Fresh Paint application, 24-year-old Max (pseudonym) with an autism spectrum condition drew a square house with a triangular roof and triangular windows (see Figure 2). In session three, participants chose to paint one of the patterned mandala templates from the Coloring Mandalas application. Using the paint-fill option, 26-year-old Cathy (pseudonym) with an autism spectrum condition filled one of the detailed pat-

tern mandalas with shades of blue, green, red, orange, and yellow (see Figure 3). In session four, participants were allowed to create a free drawing using the Sand Draw application. Forty-nine-year-old Rebecca (pseudonym), who enjoys horseback riding, drew a brown horse (see Figure 4). And finally, in session five, participants were directed to draw a favourite kind of day (FKD; Manning, 1987). Using the Fresh Paint application, 32-year-old Lucas (pseudonym), drew a brown breakfast egg coated with red ketchup and titled his image "IM SSOO EEGGGSIIITEED." Lucas' favourite day is when he starts his morning with a breakfast egg with plenty of ketchup (see Figure 5).

## Discussion

The primary research question for the study was: How do adults with developmental disabilities experience digital technology as an art medium and a clinical intervention tool in art therapy? Throughout the study, participants had the opportunity to create art on the digital touchscreen devices. In particular, participants with tactile sensitivity favoured creating art on the texture-free touchscreen devices because of its compact, mess-free therapeutic environment. Such results support Alder et al. (2011) and Peterson's (2010) assertions' that certain individuals may interact more effectively with low kinetic sensory or mess-free digital devices than with traditional messy art materials. While the art therapists in Choe's (2014) study considered the lack of texture, messiness, tactility and smell in art making applications a disadvantage in art therapy, participants in this study found the texture-free and mess-free applications an advantage and uncovered freedom in their art making. Furthermore, this study supports McNiff's (2000) belief that an all-in-one digital device has the potential to be a promising art making tool. As for digital devices as a clinical intervention tool, participants with a round-tip and brush stylus were able to complete the art-based interventions as the scribble drawing, house-tree-person, and favourite kind of day on the digital canvas with ease. The scribble drawing specifically allowed the researchers to determine participants' imaginative thinking abilities.

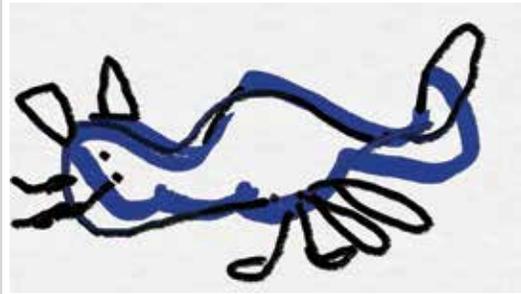


Figure 1. Zenya's cat

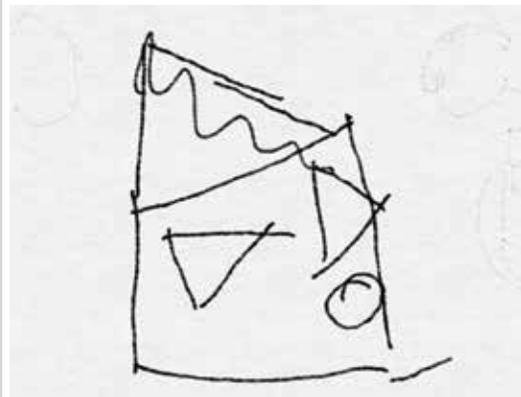


Figure 2. Max's house



Figure 3. Cathy's mandala

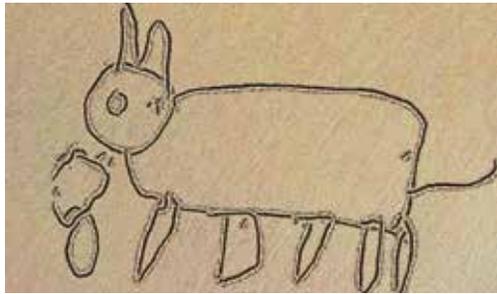


Figure 4. Rebecca's horse



Figure 5. Lucas' favourite kind of day – breakfast egg with ketchup

Additionally, the researchers explored which image making and creative activity applications were most suited for adults with developmental disabilities. The three most favoured image making applications among participants were: Fresh Paint, Coloring Mandalas, and Sand Draw. Participants preferred Fresh Paint, the Microsoft-published application, due to its simplicity, the variety of paintbrushes and colour palette available at their fingertips and the hidden upper drop-down art box that allowed them to create on the entire working digital surface. Participants favoured the Coloring Mandalas application due to the selection of multiple circular patterned templates which challenged them to draw within the lines. With the Sand Draw application, participants enjoyed choosing and applying large digital stickers to their sand-textured looking images and watching the ocean wave sweep away their drawing from the screen. The two most preferred creative activity applications which provided cognitive stimulation were: PuzzleTouch

and Sticker Tales. With PuzzleTouch, participants liked creating jigsaw puzzles with personal uploaded images and challenging themselves to complete more complicated larger puzzles. With Sticker Tales, participants were keen on selecting and then adding stickers to the multiple illustrated landscapes.

## Conclusion

This study allowed adults with developmental disabilities to independently engage in the arts using digital technology within a therapeutic setting. The participants enjoyed creating with simple image making and creative activity applications infused with colours, patterns, rhythm, and repetition. Through the creative process, participants gained a sense of empowerment and utilized their talents and imaginative thinking abilities. This study highlights the potential of digital technology expanding creative palettes and clinical intervention tools for therapeutic sessions. The benefits of digital technology in art therapy include portability, an all-in-one art studio at your fingertips, a multimedia communication platform to access photos and music from the Internet, large gigabyte storage capacity, multiple image printing capacities, and variety and directness of dissemination products. For example and regarding dissemination ease, one of the participant's father requested to have his son's digital art emailed to a print shop to be transferred onto a canvas to be displayed in an upcoming art gallery exhibit.

Though the initial price of digital devices is expensive, in the long-term, they may transform into creative cost-effective tools. As with other art materials, touchscreen devices have their distinct challenges. First, due to the fragility of the touch devices, the study was limited to adults who handled the devices with care and applied light stylus pressure on the touchscreens. Second, not all easy-to-use creative applications are suitable for all platforms or developed with age appropriate visual and auditory prompts for adults. Finding simple yet adult-oriented creative applications was a challenge. Third, while the Windows 8 touchscreen laptop allowed for instant printing and the creation of password protected computer folders, the Android tablet lacked direct printer communication ability and individual security folder features. Fourth, the round-tip and brush stylus prohibited partici-

pants to create with sharp details. And fifth, due to sensitivity of touchscreens, drawings can be easily deleted or otherwise altered accidentally. During the study, two participants inadvertently erased their drawings when their palms touched the screen causing some frustration. Other accidental alternations can often be fixed by choosing the undo buttons to return to previous steps in the creative process.

## Recommendations

In our current digital world, the researchers invite art therapists and other mental health professionals to replicate this study also with children, youth, and older adults in order to continue exploring the opportunities and challenges of individuals with developmental disabilities capacity to create art on digital devices. Through the creative process, individuals gain a sense of empowerment and solidify their cognitive, communication, fine motor, imagination, and visual skills. The researchers recommend clinicians to have their clients create with round, brush, and point styluses on large 19–23" all-in-one touchscreen computers with password-protected folders and instant printing features. In order for this study to transpire, the researchers engaged in independent digital technology learning. Therefore, similar to Orr (2012), the researchers call upon art therapy education programs to integrate digital technology training courses within their curriculum in order for future art therapists to enrich their digital proficiencies.

## Key Messages From This Article

**Persons with disabilities:** You are creative and imaginative individuals and have the right to actively engage in meaningful life activities which will further develop your unique talents.

**Professionals:** Design safe and creative therapeutic spaces for marginalized and vulnerable clients to verbally and non-verbally express their beliefs and feelings.

**Policymakers:** Minimize social and financial barriers which prevent individuals with developmental disabilities from accessing digital technologies that have the potential to sustain and foster individuals' creativity, learning and well-being.

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