

# Step into my (virtual) world: An exploration of virtual reality drawing applications for arts therapy

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## Abstract

This article explores the feasibility and potential of virtual reality (VR) in the context of arts therapy. Although technology advances at an ever-increasing rate, arts therapists have been slow and hesitant in taking up computers and software. Here the authors provide a brief overview of research to date into reasons for this apparent lack of adoption, and list the requirements of technology used in the context of therapy, followed by the introduction of VR applications for arts therapy. Employing art-based and practice-led research, they document their findings, which emerged in three phases: free exploration of the VR drawing application (open studio approach, transitional objects); use of the narrative therapy framework; and introduction to ANZATA symposium attendees in Christchurch in 2016. Based on these findings, the article highlights the benefits and limitations of using VR drawing applications in arts therapy.

## Keywords

Virtual reality, three-dimensional, drawing, digital technology, multi-modal, arts-based practice-led research.

## Introduction

In 1999, Shaun McNiff (as cited in Malchiodi, 2000) stated:

Civilization does advance through new technologies and art therapy needs to move with it. ...advances in computer multimedia are perfectly suited for our particular ways of integrating artistic creation and perception with other forms of communication such as voice, text, touch, and movement. Art therapy, perhaps more than any other therapeutic modality, is perfectly suited to these new technologies. We simply need the imagination and creative resources to seize the opportunity. (p.98)<sup>1</sup>

Even though the philosophical groundwork had been laid, very little happened in the area of arts therapy and technology for a number of years. More recently, Thong (2007) and Evans (2012) revisited the need for technological tools, and

argued that, specifically, clients who have grown up in a technological world – the ‘digital natives’ (Prensky, 2001) – as well as clients who are reluctant to use more traditional methods, might benefit from advances into the technological realm.

Therapists of any profession rely on their clients’ ability to explain their world, primarily using words. Arts therapists have opened the door to visual art, movement and other media, adding creative ‘languages’ to traditional talk therapy. In arts therapy, “art materials and media” (Choe, 2014, p.145) facilitate a pathway through which the client can elicit meaning, due to the fact that “they are intermediaries between private ideas, thoughts, feelings, and concepts, and their external manifestations in tangible, sensual form” (Moon, 2010, p.xv). Although this encourages non-verbal communication of feelings, thoughts and world views, the therapist still sits outside the client’s world: together, client and therapist might explore images, make sense of a dance,

or use symbols or poems to convey meaning or story. Yet the ability to be 'inside' people's minds, experiencing what their world looks and possibly even feels like, is limited, even when using these creative approaches.

Virtual reality (VR) technology has the potential to bridge this chasm, with its ability to create any imaginable type of immersive, three-dimensional, virtual world, and to allow the user full freedom of interaction within that world. As early as 1999, following the first major wave of VR research, McLeod (1999) realised its potential:

The Star-Trek Holodeck, with realistic, actual dimensional interactive characters and scenes, is not far away. Therapists and clients of the future could meet and interact inside the client's creative vision. Imagine interacting with a client's phobias or perceiving reality from inside your client's mind! (p.204)

With the recent renaissance of VR and accompanying art-making software,<sup>2</sup> there comes a possibility of creating a new form of arts therapy that has additional advantages over conventional arts therapy – for both practitioner and client. Clients can visually express themselves to the scale that they feel they require, positioned anywhere around them on a three-dimensional canvas. This allows for some interesting juxtapositions, and gives the therapist an opportunity to walk inside and experience their client's world, simply by putting on a head-mounted display (HMD). This may create a stronger relationship of trust between therapist and client, as the shared VR experience provides a more insightful (and potentially more accurate) view of the client's world. VR art applications, such as the one presented in this article or others such as Gravity Sketch (Gravity Sketch, 2017), provide an additional benefit of transforming what is drawn – through 3D printing – into a tangible artefact.

Although conventional methods used in arts therapy allow for an experience that is tactile and, if needed, messy, most VR technologies and applications lack this quality, thus introducing the risk of being perceived as clinical or sterile. However, not everyone enjoys being messy or taking part in traditional arts or movement approaches. We argue that VR arts therapy can

function as a bridge between talking therapy and arts therapy, introducing creative expression in a more contained manner. Further, because a majority of the general population owns several technology devices on which they spend a large amount of their time, the need to cater to a new generation of clients is pertinent (Peterson, 2010).

## Related work

### Technology in arts therapy

Malchiodi (2009) observes the slow rate at which the arts therapy profession is adapting to, and adopting, new technologies, with therapists being "hesitant to even recognize photography as an important medium in treatment and intervention; ... tend[ing] to remain loyal to traditions, even when those traditions are not proven to be best practices" (para. 6).

Carlton (2014) explores reasons for this "remarkably slow digital media adoption process for art therapists in comparison to the general population's use" (p.42) and points to three main issues:

1. Therapists still hold the innate belief that traditional art media are more conducive to the therapeutic process;
2. Technology tends to provoke an "emotional reaction" (p.42);
3. There is a great divide between those who have access to information, and those who do not, due to different levels of "ability and economic" standing (p.42).

Orr (2012) notes three additional issues hindering the uptake of digital technologies:

1. Ethics (client confidentiality and privacy);
2. The lack of training available for therapists in digital technologies;
3. The overall opinion that making art through digital media is not making art at all.

In contrast, a growing school of thought is pursuing the acceptance of technology in arts therapy. This school believes that, in this day and age, clients are being seen "whose most emotional experiences are influenced by interactive, networked, and virtual social worlds where they live" (Kapitan, 2007, p.51). This has presented a new challenge to arts therapists to actively seek new ways in which they can connect with clients whose consciousness has been 'wired' differently, due to the constant

exposure to technology (Austin, 2009; Gussak & Nyce, 1999). Kapitan (2007) argues that “if art therapy ignores or fails to adapt to the generation of art therapists and clients who live in this reality, the profession will become increasingly anachronistic” (p.50).

As well as harbouring an initial fear of entering the technological realm, arts therapists must also consider that adapting to new technologies can be ethically challenging (Alders, Beck, Allen & Mosinski, 2011; Peterson, 2010). While new technologies present a world of possibilities, they also open up a world of privacy and security concerns, potentially leaving clients vulnerable (Alders et al., 2011) or frustrated by technological barriers and problems (Asawa, 2009). However, through appropriate and ongoing training in the use of technologies for arts therapy, “ethical considerations and increasingly rigorous documentation standards can be developed” (Alders et al., 2011, p.169).

The advent of technology, and with it myriad cost-effective, easily accessed applications and devices, means that if arts therapy were to embrace a digital culture, more clients could be reached, specifically those for whom traditional forms present difficulties (Malchiodi, 2009; Mihailidis et al., 2010). Technology can provide clients “with more frequent access to therapeutic entertainment in their own free time, giving them a greater feeling of independence and

satisfaction” (Mihailidis et al., 2010, p.299). Over time, and with training, arts therapists could become confident exploring online and digital worlds, which, just like in traditional arts therapy media, represent “realms of fantasy, projection, symbol, metaphor, and unconscious content” (Austin, 2009, p.85).

A study conducted by Choe (2014) on the suitability of iPad art applications for art therapy purposes found that no existing application fulfilled “the needs of all art therapists and potential clients” (p.145). This aligns with the person-centred perspective: that therapeutic interventions need to be adjusted to suit the individual person, family or group – there is no single perfect approach. However, Choe (2014) found “three distinct qualities... of an “ideal” art application for art therapy” (p.145):

1. “easy and intuitive”
2. “simplistic but with powerful uncomplicated features”
3. “responsive to sensorial input such as speed and pressure” (p.151).

Having examined nine existing applications, Choe (2014) summarised the advantages and disadvantages of a digital approach to art therapy (Table 1).

Further study into art(s) therapy applications was undertaken by Mattson (2015), who developed his own application, Art Therapy Draw! This application implemented some of

Advantages	Disadvantages
Can undo or redo actions without limits	A deprivation of tactility due to lack of tangible object (exception: printout)
Low threshold of skills needed to use the applications creatively	Loss of experience of working with a messy medium
Potential to make interactive works	Risk of technical difficulties (cancelling or interrupting sessions)
No need to clean up art materials or physically store artworks	Risk of addictive quality of digital media
Can combine with other therapies	Light of computer screen can irritate the eyes
Applications are inexpensive (available at lower cost than art materials)	Removal of a sensory experience (e.g., tactioception and olfactoception)
Can put down ideas with speed and ease	Constraints of canvas size
Can have a stronger connection with younger generations	Removal of the ability for clients to express aggression (possible damage to device)
Potential for relaxation and distraction	Works can be “easily erased or deleted by a client”

Table 1. Advantages and disadvantages of digital tools in art therapy. Source: Choe (2014), p.148.

the most pertinent features cited by Choe (2014), added the ability to create multiple secure portfolios, was easy to use and understand without prior technical knowledge, and focused on accessibility so that clients of all physical and cognitive abilities were able to participate.

Arts therapists evaluating Mattson's (2015) application reported that those core features were well received. Yet the evaluators still viewed digital technology with reserve, stating that they would be unlikely to adopt it in their practice. Other negative aspects of the application itself were centred around the lack of features and options, such as "a timestamp, title input, zoom, or sort feature, ...a visual recording option, mixed-media capability, or the capability to analyse artwork" (Choe, as cited in Mattson, 2015, p.4). Direct feedback from the evaluators also highlighted the Art Therapy Draw! application's lack of coveted features "such as control, speed, and smoothness" (Mattson, 2015, p.4). While this study provided food for thought, the very small sample size of evaluators (five therapists), and the very early stage of this area of research suggests that significantly more work is required in the development and analysis of digital art(s) therapy applications. Arts therapists who have adopted digital media are using different technologies, such as digital tablets, smartphone photography, painting and animation applications, augmented reality, and video (Carlton, 2014). These digital technologies, while being increasingly used as creative media, still have a long way to go before being readily and naturally accepted into arts therapy.

### Virtual reality

The basic idea of the Star Trek holodeck to which McLeod refers (McLeod, 1999, p.204) goes back to 1965, when computer graphics pioneer Ivan Sutherland envisioned the 'ultimate display', a "room within which the computer can control the existence of matter" (Sutherland, 1965). Although technologically this vision is still in the far future – if not impossible to implement at all – Sutherland's research nevertheless laid the foundation for a technology that has recently undergone such rapid development that it might soon be considered a mainstream technology: virtual reality.

VR can be defined in several different ways, but the main recurrent theme is that of simulating a synthetic environment in the computer and using suitable output and input technologies to immerse the user in this environment (Mazuryk & Gervautz, 1996). Essential concepts are interactivity and immersion. The simulated environment can mirror a real physical environment (for example, for training purposes such as flight simulators), or it can be purely artificial (for instance, a futuristic computer game). Output technologies usually involve dynamic, three-dimensional imagery that is presented to the user through an HMD or on the surrounding walls of the room (Cruz-Neira, Sandin & DeFanti, 1993). Sound, touch and other sensory inputs can also be part of a VR setup. Input technologies range from joysticks, data gloves over speech input, to motion and gesture tracking. A more intuitive input method and response by the simulation usually leads to a more natural interaction with the environment and therefore to a better sense of immersion and presence.

Ivan Sutherland (1968) and Myron Krueger (1977) can be considered pioneers of VR technology and what became of it towards the 1990s (Mazuryk & Gervautz, 1996). However, because the technology had not yet reached an acceptable technical standard (low-resolution displays, low computing power, a lack of suitable applications), the VR movement peaked before the year 2000 and then vanished from the consumer market. In the military, science, and industry fields, the technology and software were still continually developed, but at a slower pace.

In 2012, Oculus VR founder Palmer Luckey announced the Oculus Rift, a cost-effective version of an HMD that suddenly re-ignited the development of VR technology and applications for the average consumer (Oculus VR, 2016). Now, in 2017, in addition to the Oculus Rift, several other consumer VR devices exist on the market, such as HTC Vive (HTC Corporation, 2016) or Gear VR (Samsung Electronics Co. Ltd., 2016). Most importantly, these devices come with a large selection of applications that render them attractive for the consumer market. Games form a large part of these applications, but – increasingly – short stories, experiences and creative applications such as three-dimensional drawing

and modelling programs are starting to appear, for example Google Tilt Brush (Google Inc., 2016), Quill (Oculus Story Studio, 2016), Project Dali (Adobe Systems Incorporated, 2016), and Gravity Sketch (Gravity Sketch, 2017).

## Methodology

### Virtual reality application

Gussak and Nyce (1999) pose the question: “[how] can computer technology support and provide that transactional space – the space between the client and the clinician – which is at the heart of art therapy?” (p.195). They point out the significant risk of developers and technology applications dictating therapy through digital means, as they standardise programs to suit their processes of working, rather than building programs flexible enough to be customised for each client.

Once again, this is why therapists are reluctant to take up technologies as a mode of therapeutic expression, as “getting clients involved with the materials may be rewarding as well as necessary” (Gussak & Nyce, 1999, p.194). Gussak and Nyce (1999), as well as Asawa (2009), suggest that the way forward is to forge a relationship between developers and arts therapists so that “developers and designers” (p.195) understand the complex needs of the arts therapy community, with the goal being to create applications that satisfy those needs. We hypothesise that the VR arts therapy application presented and evaluated in this article has the potential to do this, offering freedom and flexibility in an intuitive manner.

The application offers three-dimensional drawing plus the features and requirements listed by Choe (2014). Most specifically, we concentrated on ease of use by providing limited but intuitive functionality. The commercial applications listed in the previous section target mostly amateurs and professionals and therefore provide a large variety of functions and features (see Figure 1, top row and bottom left). In the case of Tilt Brush (Google Inc., 2016), we found that this functionality overload is detrimental to the process. The user is initially spending a large proportion of time exploring the complex controls and features, instead of focusing on drawing.

We therefore decided to provide a simple drawing function, with choices limited to the

colour and size of the brush stroke (see Figure 1, bottom right). We expected this limitation to allow users to begin drawing immediately, without much need for an introduction.

Additional features of our application include:

1. Undo the last stroke(s);
2. A ‘teleport’ function that lets the user move through a larger virtual space than physically available;
3. Saving the three-dimensional drawing in an open file format that allows for:
  - easy storage and archiving of the drawing;
  - easy creation of other representations of the drawing at a later stage;
  - statistical analysis of the drawing process.

### Arts-based, practice-led research design

To evaluate the advantages and disadvantages of a VR drawing application for arts therapy, we approached its potential use with clients from an art-based (Kapitan, 2010; McNiff, 1998), (auto) ethnographic framework (Jones, Adams & Ellis, 2013; Muncey, 2010) in three phases. These are explained and evaluated in detail below.

Phase one had the strongest focus on allowing the VR art medium to lead, with the intention of assessing its possibilities and getting familiar with the medium. In phase two, the research became more focused and structured, with a narrative therapy framework exploring the medium’s value. Finally, phase three applied an open studio approach, by introducing the VR application at a workshop at the 2016 ANZATA symposium in Christchurch.

### Facility/technology

For the first two phases of the study, we used our immersive VR research facility, Sentience Lab (see Figure 2), which comprises the following major components:

1. A wide-area motion-capture suite;
2. Wireless HMDs and interaction devices;
3. Several types of render engines.

The commercial motion-capture system uses 24 special infra-red cameras, which look for reflective markers attached to any object that needs to be tracked with respect to its position and orientation. The system is installed in a dedicated room that allows for a capture area of 4m × 4m, but can be configured differently to cover larger areas if necessary.

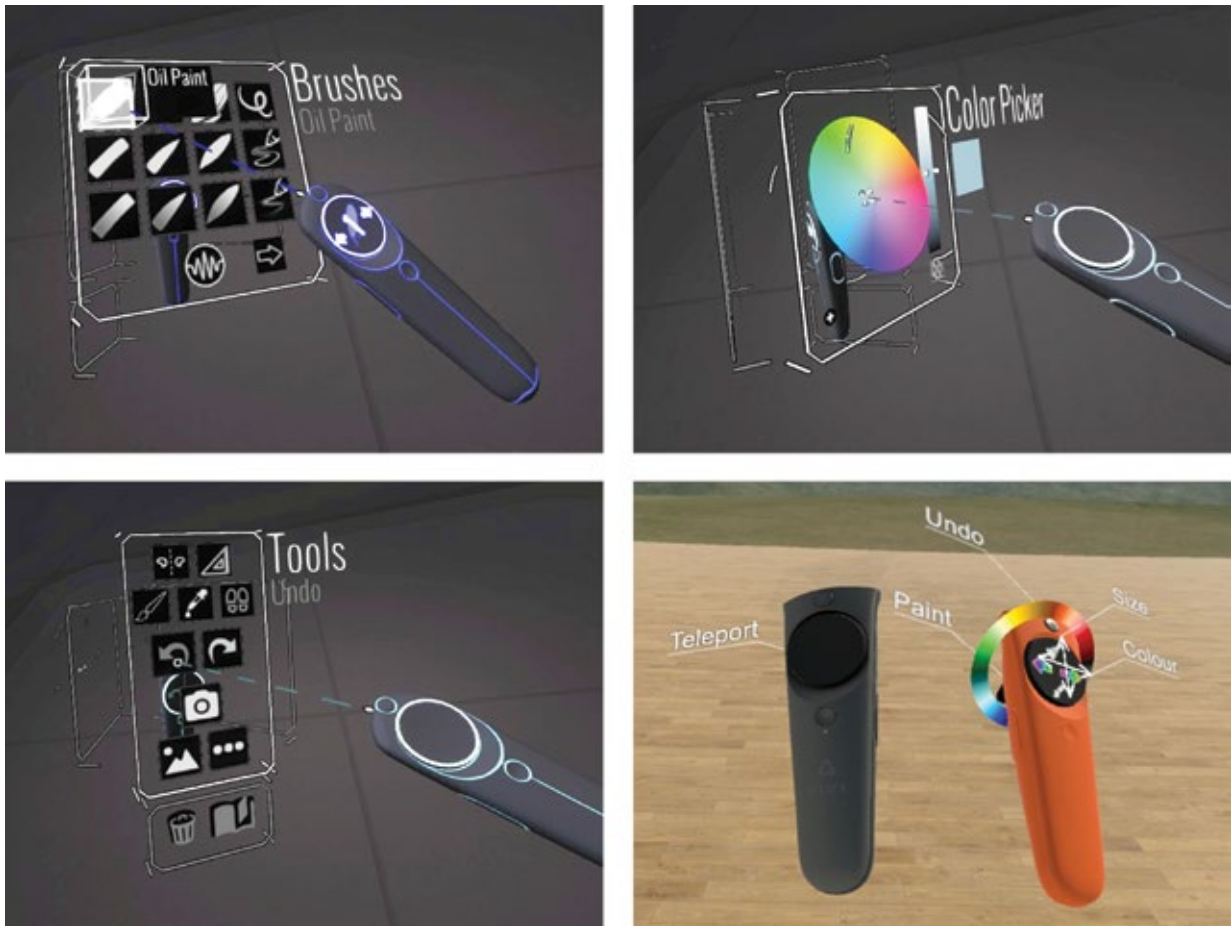


Figure 1. Comparison between the overwhelming variety of tools and options in Google Tilt Brush, all arranged around the left-hand controller (top row and bottom left), and the simple version of our VR painting application.

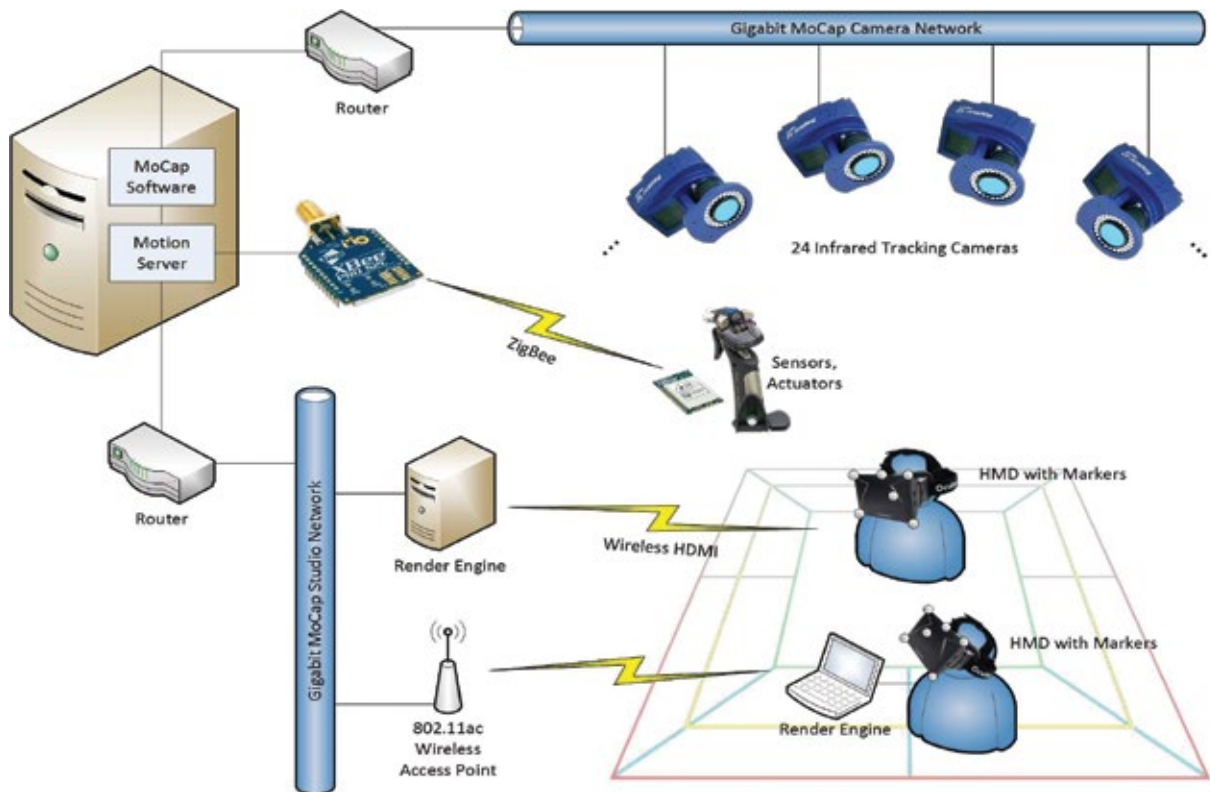


Figure 2. Diagram of the Sentience Lab facility and framework used for fully immersive movement and interaction in a virtual environment.



Figure 3. Wireless head-mounted display and joystick, both with markers attached for the motion-capture system.

The cameras are connected to a computer that processes the locations of the markers in the space, recognises the objects to which they are attached (such as an HMD or a joystick), and calculates the position and orientation of those objects 100 times per second – sufficient for rapid movements, such as when creating a virtual painting.

This information stream is then sent into the network and can be received by other computers with software for rendering the VR environment. Dedicated render engines, such as Unity (Unity Technologies SF, 2016), use the information provided in this data stream to draw the environment, based on the positions and orientations of the HMDs and other objects like handheld pointers or joysticks. Wired or wireless HMDs then present the resulting video to the user on a stereoscopic display. Due to the tracked position and orientation of the HMD, the user can intuitively change the view of the virtual scene by moving their head, walking around, etc.

To avoid limiting the user's freedom of movement, we send the video signal to the HMD via a wireless transmitter. The HMD is connected to the corresponding receiver and to a battery in a small pouch that can be attached to a belt. Custom 3D-printed marker sets are mounted on the HMD, with reflective markers attached (see Figure 3). Six markers are more than sufficient to prevent loss of tracking due to occluded markers.

By changing the layout of some markers, it is possible to have several independently tracked

HMDs in the motion-capture space at the same time, allowing for collaboration between several users, such as a client and a therapist, either in the same physical space, or even remotely in different physical facilities.

To allow for intuitive control of the immersive three-dimensional visualisation, we also integrated wireless sensor technology into controllers such as joysticks, to allow not only for tracking of their position and orientation, but also events such as pressing a button or triggering a vibration motor in the controller.

Although this is a very advanced and admittedly expensive setup, we found the wireless nature of the equipment to be of vital advantage for the exploration process, as the user did not have to worry about stumbling over wires and was able to fully concentrate on the process (see next section). In addition, the Sentience Lab software framework is designed so that any VR application written for it can also be run on consumer-level hardware, such as Oculus Rift or HTC Vive. This feature was used in phase three, when we used a standard consumer-grade HTC Vive setup at the 2016 ANZATA symposium.

## Results and findings

### Phase one

Due to the relative novelty of the technology and approach, and a lack of specific research in this field, we decided to start with an auto-ethnographic, art-based and practice-led playful exploration of the potential of this technology,

to develop our understanding and experience. During this phase, we also discovered some functional shortcomings and bugs in the application and were able to fix those before moving to phase two. One of these was the cable that connects the HMD to the computer when using the commercial HTC Vive equipment. This prevented the user from focusing on the process of making art, as they constantly needed to consider the cable, and remain cautious to ensure they did not trip or fall, or damage the equipment.

Initially, the new technology was approached in the form of playful exploration. This way we hoped to ascertain the general suitability and intuitiveness of the application. The starting point was created by applying the open studio approach (Allen, 1995) to drawing in a VR space. The first author initially wrote an intention, entered the virtual realm to create the drawing, and then took time to witness her artwork (see Figure 4). This brought to light two major aspects:

1. The sacredness of the virtual drawing  
When adding something to the artwork, the user felt a reluctance to “step into her own drawing”. On reflection, she realised that this mirrored the idea of the art product itself being a visual representation and “extension of the person’s self” (Gussak & Rosal, 2016, p.31). Both art-product world and virtual world are therefore sacred spaces, which need to be respected and protected;
2. Wonderings about the possibility of creating transitional objects or spaces  
A client might create an artwork that could later be 3D-printed (see Figure 5). This can allow for a symbolic transfer of what is inside one’s mind into an object. Through this process, the virtual becomes tangible, creating transitional objects (Winnicott, 1953) that can be further modified (for instance, painted or embellished). In this way, the potentially sterile nature of the VR application can be combined with the more tactile and sensory visual art-making. Alternatively, the client might create a VR space representing, for example, safety or hope. This space, thanks to the possibility of saving it digitally, could be re-entered and expanded in later sessions, creating continuity as well as a link to the client’s inner or preferred world.

## Phase two

The initial playful exploration sparked ideas for further, more structured uses of the VR arts therapy application. We planned three (auto) ethnographic case studies, using a narrative therapy framework, with the task ‘Draw a problem’. The sessions were facilitated by the first author, while the other two authors and a third participant acted as clients. All participants gave consent for the data gathered to be used in presentations and publications.

One tenet in narrative therapy is the concept of externalisation (Monk, Winslade, Crocket & Epston, 1997). When confronted with difficulties in life, clients are invited to imagine that the problem is an actual ‘being’ outside the person (Monk et al., 1997). This is beautifully illustrated in the metaphor of the black dog, symbolising depression (Johnstone, 2007). Externalisation enables people to understand the nature of their problem more deeply while gaining insight into how big or small it is, where they stand in relation to it, and what they might need in order to gain control over it (Monk et al., 1997).

In the case studies conducted for this research, we specifically focused on possible shifts in perspective. After an initial drawing of the problem, a therapeutic conversation followed – exploring, incorporating, and working towards each participant’s hopes, values and supports. Using the teleport function, participants could move towards and away from their problem, playing with distances and sizes (see Figure 6). They could also place their hopes or supports at appropriate distances. This ability to play with distances and perspectives facilitated internal shifts: participants gained more control over their problem, came to even ‘like’ their fear, gained awareness of present supports and future hopes, and achieved clarity about their values. We theorise that the VR application expands the ability to externalise problems: while creating a visual representation of a problem, clients and therapist are simultaneously able to ‘sit next to’ and further ‘step into’ it.

The VR application’s ‘chaperone system’ – a virtual wall that is faded in to prevent injuries when a user gets too close to actual physical obstacles such as walls – also added to this experience. One participant reported



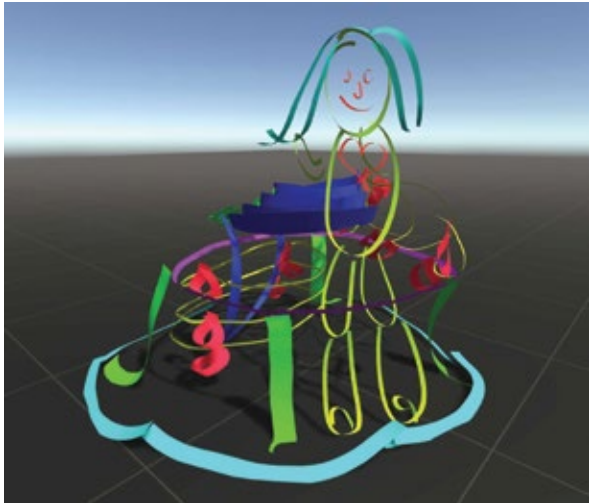


Figure 4. Phase one: first exploration, using the open studio approach.

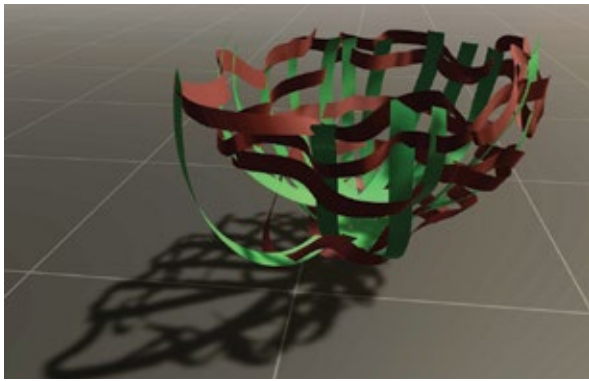


Figure 5. Phase one: Virtual reality drawing of a nest as a transitional object (top), a 3D print of the object (centre), and the 3D-printed nest modified with traditional art materials (bottom).

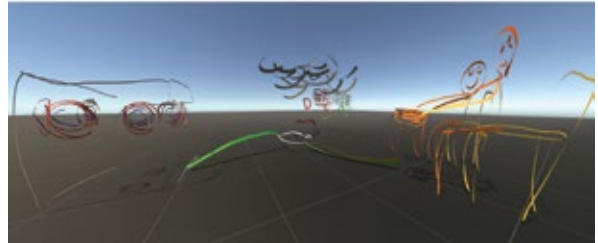
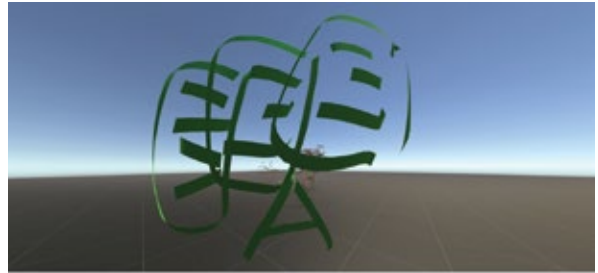


Figure 6. Example of a shift in perspective. The upper image demonstrates how one point of view can literally block the user's view of other parts of the drawing, causing one aspect to appear very dominating. The lower image shows a different point of view, with a much more balanced perspective on the scene.

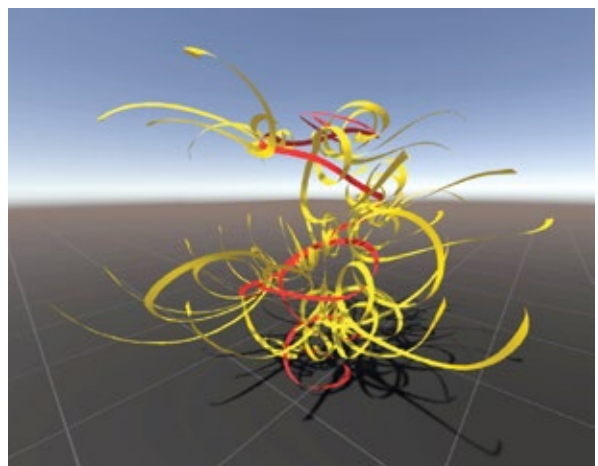
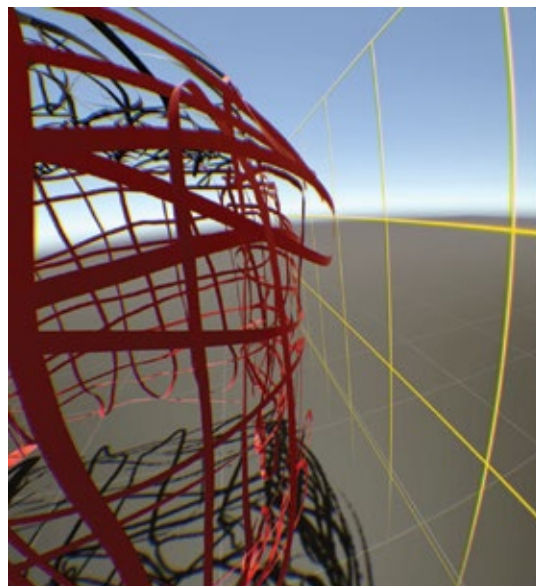


Figure 7. Example of the chaperone system causing a feeling of being 'closed in' (top), and the teleport system enabling a change of perspective (bottom).



Figure 8. Participant in the 2016 ANZATA symposium using the virtual reality drawing application, creating large and spacious drawings using her whole body. The facilitator is guiding the cable to the head-mounted display to avoid the participant getting entangled in it or tripping over it.

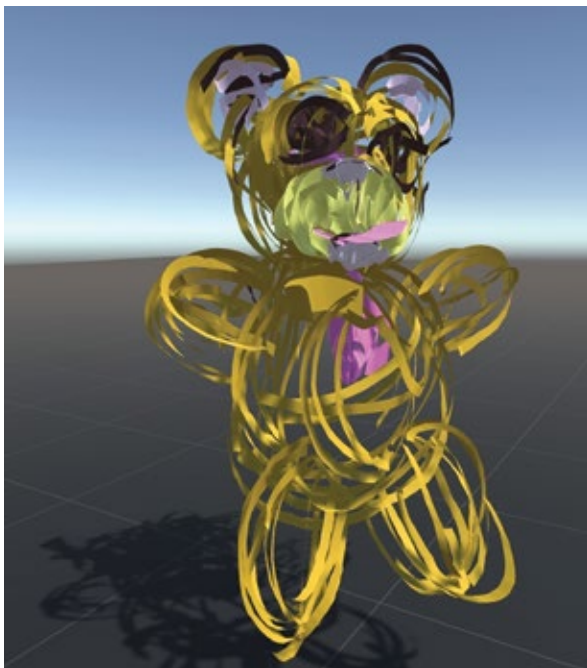


Figure 9. Drawing by a participant in the 2016 ANZATA Symposium workshop. In virtual reality, this bear appears life-sized. At one point, the participant stood inside it, to “see the world through its eyes”. When asked what the bear needed, she decided to add a brain and a heart.

initially feeling “closed in” (see Figure 7, left) and stated that the chaperone system intensifies the emotional experience (for instance, claustrophobia). When reminded of the possibility of using the teleportation system, another participant reported a change of emotional experience, to the extent that she liked a previously feared artwork (see Figure 7, right).

### Phase three:

In this ethnographic phase, we used elements of the open studio approach to showcase the application to arts therapy domain experts at the 2016 ANZATA symposium in Christchurch. Some 20 symposium attendees entered the VR environment without a specific therapeutic framework. We invited free expression, exploration and play. Anecdotal feedback was provided by some participants directly after using the application, as well as by personal communication via email after the symposium. Initially, we explained how to use the handheld controller. After this brief introduction to the technology, participants were able to intuitively create art works without further explanations.

In this context, it was noted that large-scale movement was not only made possible by the application, but also encouraged. It freed people up to improvise and experiment: one symposium attendee spoke of its “seductive quality”. Using the VR application invites the person to use their whole body, adding a movement or dance dimension to the act of drawing (see Figure 8). The concept of combining movement and drawing has previously been explored by Ip, Hay & Tang (2002) and, more recently, by Wang (2012).

In this setting, the qualities of the VR application became even more apparent: it encouraged instant experimentation with both the use of colours and shapes and the space itself, supported the building of trust and rapport, and proved its intuitive use after a short introduction. Most people were able to enjoy the creative act, experiencing playfulness and lightness (see Figure 9). It further offered immersive, “other-worldly” experiences.

Generally, participants “did not want to get out” as they found themselves getting “lost in time and place”. They often showed light and playful emotional responses such as giggling. Most people expressed disappointment when taking off the HMD, as they would have liked to keep using it. The lack of tangible feedback – such as when working with materials like clay and paint – was not raised as an issue by the participants.

It was noted, however, that in order to achieve trust and rapport, some clients might need to be physically aware of the therapist’s presence, for example by placing a hand on their shoulder. The VR environment can become “overwhelming

and vast”, as one participant stated. In these cases, the therapist’s presence functioned as an anchor, with the intent to build and maintain trust (Hall, Ferreira, Maher, Latimer & Ferreira, 2010). The participant later reflected: “I am still pondering the lack of sensation/un-embodiment that I experienced whilst engaging with the VR technology”. These valuable ideas could be explored in future research.

## Conclusion

Arts therapy is an amazing field where new forms of expression are constantly explored. The inclusion of VR will add a new tool with exciting possibilities and benefits, such as being able to enter a client’s world while playfully combining art and movement therapy in the virtual space. As clients create three-dimensional objects in the virtual world, their bodies move expressively, like a dance of their emotions:

Afterwards, I reflected on how easy it was to become absorbed in this VR experience and the pleasure of creating in the physical space with such freedom of colour, movement and ability to ‘walk through’ the images I created. For me it was a wonderful new experience... Being able to walk through the colour and shapes was an amazing experience and I could see how I could use it for expression and processing of parts of my life experience. (Symposium attendee, personal communication, 2016)

VR currently brings its own problems, such as cumbersome hardware, wires causing trip hazards, the potential for motion-sickness and eyestrain, as well as the relatively high cost of purchasing equipment. Some of these shortcomings (such as wires) are already being addressed at the time of writing (Coppock, 2017). Technological progress will also take care of the size, weight and cost of VR hardware, so that in the not-so-distant future, this technology will probably be as mainstream and publicly available as mobile phones and computer tablets are right now.

We envisage that the adoption of VR in arts therapy will be led by technophile therapists and younger clients, but might become more widespread and accessible for a more varied clientele in the future. The use of VR applications

fits into the typical duration of a therapy session and can be accommodated in a range of physical spaces. To avoid problems such as nausea in clients who are not used to the medium, VR would need to be introduced slowly and incrementally.

Our future research will take the form of in-depth, qualitative studies, following up on the findings of phase one (open studio approach) and phase two (narrative therapy framework). As part of a growing body of researchers, developers, practitioners and clients, we want to help arts therapists add stable, reliable, safe and intuitive VR applications to their ever-growing and changing toolbox, providing additional means for them to step into their clients’ (virtual) worlds.

## Endnotes

1. As expressed in the title of this article, we focus specifically and consciously on the application of VR to ‘arts therapy’ (that is, use of a wide range of expressive media for therapeutic conversations, such as visual art, drama, dance and movement). The term ‘art therapy’ appears either in citations or when we are purposefully referring to art therapy (that is, the sole use of visual art for therapeutic conversations) as such.
2. We refer to a software/computer program as an ‘application’ for the remainder of the article.

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