Virtual Potential Spaces

A hermeneutic exploration of the bridge between
Winnicott and Virtual Reality.

Joseph van Zoomeren

2020

A dissertation submitted to Auckland University of Technology in partial fulfilment of the requirements for the degree of Master of Psychotherapy.

Faculty of Health and Environmental Sciences

Department of Psychotherapy and Counselling

Supervisor: Dr Brian Rogers

Abstract

Virtual reality (VR) is a new and exciting technology which shows great potential and promise in fields such as entertainment, health, education, business, public safety, and the military sectors. The highly immersive quality of VR promises the ability to safely and authentically simulate “real world” situations in a controlled environment. However, it’s appropriateness for use in psychotherapy remains largely unexplored. This study looks to bridge psychotherapy thinking and theory with virtual reality. A hermeneutic phenomenological review of the literature is undertaken to explore the links between Winnicott’s ideas of potential space and the concept of virtual space in VR. The study finds that Winnicott’s ideas of infant development and the potential space cross over with the key concepts of immersion and presence in virtual reality. It proposes that our understanding of VR may be furthered by seeing how virtual reality mimics human development through processes such as integration, personalisation, object relations and holding environments. This challenges the belief that technology is interrupting intimate human connection and instead asks the question, what is being reflected back to us through our own technology.

Table of Contents

List of Figures

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which, to a substantial extent, has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Joseph van Zoomeren

23 November 2019.

Acknowledgments

I want to thank my partner Maria for all her love and support through the challenges and difficulties throughout my studies. I could not have done this without you. I would also like to thank my mum, Stu and Sarah for their love and support and for making this dream possible.

I would like to thank one of my longest friends Rory Clifford. You are like a brother to me and thank you for the introduction to virtual reality. Also, thank you for sharing your expertise in the field of VR and for the many laughs we have shared throughout the years.

I would also like to thank my martial art family, especially Grand Master Chan and Master Kinney. Thank you for your belief in me, encouragement, and your wisdom you have shared throughout my studies.

Finally, thank you, Brian Rogers, for your knowledge and passion in this research project. You have guided and encouraged me through this journey and made my dream a possibility.

Chapter One: Introduction

My interest in the topic

Technology, especially computers, has a very dear place in my heart. Since I was a small boy of five years old, I have played computer games. They transported me to another time and place, where I could engage in things I could only dream of. I was able to be a mighty warrior, who saves the damsel in distress by fighting my way through hordes of enemy monsters and finally prove my worth to her. Or I could be a fighter pilot who turned the tide in War World II, or a pirate that sailed the seven seas. Technology was my escape into another world. When I was an adolescent boy, the use of computers changed to be a source of communication, as well as a source of entertainment and a place of play. The discovery of the internet was an amazing phenomenon. Now I was able to communicate and engage with friends and share my experience of gaming and the unique experience of playing out different aspects of myself with others. Technology facilitated a way of interacting with girls, whom I had a growing interest in, but also a growing comfort approaching and interacting with. I was able to reach out for help and seek support when needed, and navigate the difficulties of being a teenage boy, with the assistance of technology. Then as a grown man, I was able to research areas of interest and develop my academic and philosophical ideas and understandings. As technology has grown and developed, so have I. I am unsure if this process of growing and developing with technology has been a parallel process, or if technology has been the factor that enabled me to develop as a person in the face of somewhat absent parents. Perhaps, both are true, and technology has played a vital role

in my development as a human being; hence my interest and passion for technology.

Figure 1. My first experience in virtual reality

My interest in virtual reality came about when a childhood friend, with whom I would regularly game (and still do), demonstrated his current Ph.D. research. He explained that his research focused on using virtual reality; he was testing the effects that distress and other disruptions had on the aerial crew in the New Zealand Fire Service (Clifford, et al., 2018). Clifford, et al. (2018) explained that the research used an HTC vive (virtual reality game) and a custom-made helicopter frame to create a virtual environment, which they then used to test the aerial supervisors' abilities to make decisions under stress. Virtual reality simulation allowed for high risk and high-cost situations to be

explored and increased the efficiency of the supervisors under pressure. After he showed me the simulations he was creating, he asked me to test this new technology for myself. Knowing I was an avid gamer, he loaded a zombie survival game. I was amazed with the level of immersion that virtual reality possesses, and how I felt transported to another place in an embodied sense rather than having the usual experience of being aware I was playing a game. As a joke, one of my other friends touched me while I was playing the zombie survival game and I almost jumped out of my skin in fright. I had thought a zombie had touched me, which terrified me for a moment until I realised my friend had done this, and I was able to take off the headset and headphone to hear their gales of laughter. This experience demonstrated to me the power of virtual reality and how the immersion is far deeper than any other technology I have experienced. After thirty minutes of playing the zombie survival game in virtual reality, I felt worn out. My nervous system was working hard, and I felt as if I were suffering from an overloaded nervous system. The immersion I experienced was nothing like I had experienced before. My body was unable to distinguish between what was real and what was not real, or know what reality is.

Origins of the Research Question

The topic for writing about virtual reality in this dissertation came to me in a dream. The dream connected the experience I had with my childhood friend in virtual reality, with treating clients. The dream is forgotten to me now, but the powerful image of the connection between virtual reality and psychotherapy was like a lightning strike on a dark night; the image is gone now, but the impression remains. The dream

highlighted the potential of a therapist to work with a client from anywhere in the world, allowing the therapist the flexibility and freedom to virtually travel the world but stay in close communication with clients. Also, it offered the benefit of staying in close communication with more disturbed clients, potentially allowing for a less worrying holiday. I saw the possibility of clients having access to different forms of expression by using paints, being able to play music, and show films to a therapist, all during a single session. I could see the possibility of clients having the freedom to choose a setting such as a beach, a temple, or the mountains, rather than having the more classic approach of entering a therapist's office, where the therapist has created the environment. It was the unlimited potential and possibilities that I saw in the dream that fuelled the passion for this research.

The dream highlighted the potential of both virtual reality and psychotherapy, but I was left with the problem of how to marry the two topics together. It required a year of reflection and searching the literature for psychotherapy approaches and concepts to solve this. The psychotherapy concept that struck me, in terms of using it in virtual reality, was the thinking of Donald Winnicott. Winnicott was a paediatrician in England, where his focus was on the mother-infant dyad. Winnicott's concept was that the therapist, like the mother, creates a holding and facilitating environment for the infant to play, learn, and develop (Winnicott, 1965). These ideas of holding and playing seemed to provide a bridge between the worlds of psychotherapy and virtual reality, and provided a focus for further engagement with the literature.

Introduction to Winnicott

Winnicott believed that everyone struggled through life, and that life was inherently difficult for every human being (Winnicott, 1987, p. 13), but he also believed that life was worth living. After thousands of hours of infant observations, Winnicott began to see the emergence of what he called the "self". He stated that "the central self could be said to be inherited potential which is experiencing a continuity of being, and acquiring in its own way and at its own speed a personal psychic reality and a personal body scheme" (1960, p. 67). The idea that individuals have a moving and growing force within them, is an essential part of Winnicott's theory. He believed that the central self is the source of energy and the source of spontaneity and play. In Winnicott's observations, he began to see that the central self, or what he later coined the "true self" could be impacted, and when this happened, an infant's ability to enjoy spontaneity and play was compromised. He first began to see this compromised in infants' play, in his experiment called "the spatula game". Winnicott created this game to observe how infants react to a new item - a spatula. He observed the infant's initial reaction to the spatula, if the infant grabbed the object or not, then the second stage, which often involved mouthing and careless use of the object, and finally, the last stage of riddance (Winnicott, 1965). He noted that some infants reacted to this new object, the spatula, with anxiety, and were unsure how to play with or use it, and he became curious about these phenomena. He thought that the spatula game highlighted something of the infant's fantasies, which captured the infant's bodily functions and feelings, which were largely unconscious.

The mother's interactions and influences led to Winnicott's idea, and later, to the concept that the mother created an environment which would impact on the development of the infant. He labelled this the "potential space", and proposed that in "potential space, being the experience is fluid, lacking structure or purpose, (and) the possibility of play emerges" (Winnicott, 1971, p. 56). There was a developing understanding that the infant was able to play with the idea of "what is me and what is not me" or "between the subjective and that which is objectively perceived" within this space (Winnicott, 1971, p. 46). Winnicott theorised that if the potential space was free, relaxed, and encouraged spontaneity and play, then the infant's central self or true self would develop. This allowed for two processes to occur. One was the mother's identification with the baby, to which she brought her understandings, empathy, and ability to make sense of what the baby needs, and the other was the infant's process, with its state of identification with the mother, a state from where all things begin (Davis & Wallbridge, 1990). This led to Winnicott's realisation that the mother was assisting the infant to build capacity to play in the potential space, allowing it to develop and increasing its capacity to withstand being alone (Davis & Wallbridge, 1990).

Winnicott believed that for the satisfactory care of an infant, three things need to take place. Holding, mother and infant living together, and the father's creation of a safe environment for the mother-infant dyad (Winnicott, 1960). Holding can be seen as the physical holding of the infant, but also being in tune and having an emotional connection with the infant. Living with can be viewed as the play that happens between the mother and infant, which helps the infant grow

and develop and form a sense of inner and outer reality. Finally, the father's protection ensures that the mother is safe, and her needs are provided for, which in turn means she can focus on the infant with no (or at least reduced) fear of not being taken care of. These three elements, Winnicott believed, overlapped each other and were in flux, rather than in a static structure. Conversely, Winnicott explained that when there are interferences with the “good enough” environment such as the mother’s intrusiveness, disturbances, or failures to meet the infant’s needs, or physical or emotional absences, the infant loses the ability to be spontaneous and becomes over-compliant, resulting in the creation of a “false self” (Davis & Wallbridge, 1990). Winnicott explained that the false self is a fundamental requirement for functioning in the world and that there was no way someone could be purely their true self, but failures in the holding environment created a hardening of the false self that impinged on the ability to play, and thus, the ability to access the true self (Winnicott, 1965). Winnicott explained that “the ego support of the maternal care enables the infant to live and develop in spite of his being not yet able to control, or to feel responsible for, what is good and bad in the environment” (1965, p.65). The idea of the false self or what also can be seen as the protective self, is the layer that protects the true self and responds to social situations. However, if there is a failure to provide a good enough environment often enough, then the infant’s false self-hardens. This hardening can lead to issues for the infant as he/she develops into adulthood.

Introduction to Virtual Reality

Virtual reality (VR) has been defined as a computer simulation that allows participants to physically engage in a simulated environment that is distinct from their physical reality (Maeder, Jacq, & Ryser, 2010). Another definition comes from Vince (2014), who stated that virtual reality is a medium in which humans can share ideas and experiences through a visual and aural stimulus through a head-mounted display (HMD). According to Craig, Sherman, and Will (2009) the HMD is one of the defining features of VR, as another technology such as augmented reality alters the user's view of the real view. The HMD positions a screen in front of each of the user's eyes, which allows a computer program to generate a synthetic world that can interact with the user's movements and adjust the sensory display to give the experience of being immersed in another reality (Craig et al., 2009).The creation of VR was due to the vision of Ivan Sutherland. In 1965, Sutherland published a paper entitled "The ultimate display", which highlighted his vision of a window into other worlds, which had the ability to immerse the user in this other world (Vince, 2004). He built the first HMD in 1968, which included a mechanical head tracker and a computer that was able to create a three-dimensional hexane molecule dispensation (Maeder et al., 2010). However, due to issues with funding and access to computer technology, his idea of VR remained dormant. In the early 1970s, VR systems were being tested with flight simulators for pilots (Craig et al., 2009). The VR system was a mechanical apparatus that was a duplicate of the aeroplane's cockpit, and motion video cameras over a scale model of terrain were added to give pilots a sense of immersion (Craig et al., 2009).

However, during this time, VR was still an unaffordable technology and remained in the realm of university experiments. This changed in 1990, when faster and cheaper computer systems were more accessible, which led to new and exciting and creative ways for harnessing VR; the era of VR had begun.

Currently, the application of VR is used in entertainment, health, education, business, public safety, and the military sectors (Skarbez, Brooks, & Whitton, 2017). According to Coquillart, Welch, and Brunnet (2011), VR is a tool that works with three-dimensional, so the technology is ideal for real-life problems and situations or in terms of entertainment, to provide a more realistic sense of what is being enjoyed. The main attraction of VR is its ability to immerse the participant in a whole new reality or environment. Witmer and Singer (1998, p. 67) defined immersion as “a psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences”. However, such immersion is not a cognitive illusion, but more, a perceptual experience in which the body and nervous systems react automatically to a stimulus, and after the stimulus has passed, the cognitive system can conclude that the stimulus is not real, but can still have a real-time experience with and reaction to it (Tham et al., 2018). Another attraction of VR as a technology is the ability to increase learning outputs through more engaging/immersive presentations and representations of reality, as well as the ability to create otherwise expensive real-life scenarios (generally for a fraction of the “real” cost) that can also be used in the future (Dede, 2009; Coquillart et al., 2011). However, one of the main

benefits of VR is its safety. VR as a medium can create dangerous and difficult real-life situations and the increase danger or difficulty without the potential for harm or death.

The Research Question

Within these two seemingly disparate bodies of literature, threads of connection began to emerge and a more solid sense of the research question evolved. In particular, Winnicott's idea of creating a potential space that is fluid and free links with what virtual reality is trying to achieve, by creating a whole new reality. Through this lens, the user can experience reality within reality, or in Winnicott's words, play with the idea of what is me and what is not me. Virtual reality starts to blur the lines of what is real and what is not real, and it could be said that it invites us to focus on the human experience that is being created, rather than following mental constructions of what is reality and what is not. That is, the focus becomes the connection between the internal experience of a person and the external connection with the environment, be it a physical or virtual one. This in turn hinted at the possibility for conceptualising the therapeutic potential of a Virtual Reality space. The research began how can Winnicott's ideas of potential space and infant development make sense of virtual reality?

Chapter Two: Methodology

Gadamer and Hermeneutics

Hermeneutics is the research methodology chosen for this research. In part, the choice was a reflection of the needs of the research question, but also a reflection of the needs of the discipline of psychotherapy. Firstly, hermeneutics is an approach that focuses on interpretation (Connor & Weinsheimer, 2007). Gadamer (1982) stated that the understanding and interpretations of texts is not merely a concern of science, but belongs to the human experience of the world in general. This, however, is not a simple matter of reading and making interpretations of what one reads.

Hermeneutics requires a complex understanding of self, and how this relates to others through the text read. Gadamer (1982) explained that the hermeneutic process is the understanding that reading a piece of text is the conception of knowledge or a starting point from where experience can lead the reader to a deeper understanding of a topic and draw closer to the truth. Gadamer (1982) mentioned that there is a backward and forwards interplay between the tradition, experience, and interpreter, which he labelled as “play”. This process, according to Gadamer (1982), is a dialectic dialogue of experiences and cognitions that allow for reflection and re-interpretation. The philosophical underpinnings of hermeneutics from Gadamer’s view are that the subjectivity of the interpreter gives a unique experience and view of the literature, and plays with the text that draws him or her closer to understanding the studied phenomenon. Interestingly, the

hermeneutic process of knowing one's subjectivity, reflections, and interpretations, is a process intrinsic to the discipline of psychotherapy.

Freud and Interpretations

Sigmund Freud, the creator of psychoanalysis and the father of psychotherapy, stated that "the interpretation of dreams is the royal road to a knowledge of the unconscious activities of the mind" (1913, p. 47). Freud understood that much of the mind was inaccessible to his patients, and in fact to all of us, and explained that "the mind is like an iceberg, it floats with one-seventh of its bulk above water" (1913, p. 105). Freud (1913) developed the concept of conscious and unconscious states, in which he understood the conscious mind to contain memories, cognitions, and feelings, whereas unconscious mind was considered to contain deeper and often unprocessed material. Freud understood that the unconscious state of the mind had strong influences on how his patients experienced the world. He developed psychoanalysis and the approach of free association to help his clients access their unconscious processes. More recently, Bollas (2017) spoke of the importance of therapists recognising their subjectivity or being aware of their thoughts, feelings, and experiences, and being aware of how their clients' subjectivity and the material the clients brought to therapy, affected the therapist during the therapeutic hour. These interpretations are an attempt to help the clients move closer to experiencing or expressing what Bollas termed the patient's "idiom", or in Winnicott's words, the "true-self" (Bollas, 2017). Bollas (2012) explained that this process requires deep reflection in and out of therapy sessions as well as a strong understanding of the client's history and pathology). This was an

important observation. Both hermeneutics and psychotherapy have similar philosophical underpinnings; interpretations of information are core to understanding or making sense of phenomena. This then links to the research question, of how Winnicott's idea of immersion can make sense of virtual reality as a potential therapeutic medium. The research question, itself, is asking about the connection between and interpretation of two separate bodies of knowledge. The connecting factor between these two separate bodies is me, the researcher and interpreter. My interpretations will be reflections of my position as a student psychodynamic psychotherapist in New Zealand, with a keen interest in both Winnicott's theory of human development, and my passion for the emerging developments in virtual reality. Reviewing virtual reality through a psychotherapeutic lens will assist in adding validity to my research, and the possibility that there is a deeper development happening in the therapeutic use of virtual reality. I also hope it paves the way to creating psychotherapy approaches in virtual reality, which could address issues around high costs, travel, and accessibility, that are partly related to lack of government funding in the New Zealand mental health sector.

Method

The method for this dissertation was to review the literature. The process was a journey into something of the unknown, and resonated with Smyth and Spencer's (2012) suggestion, that the researcher becomes a journey partner with the literature. Indeed this study felt like a journey with two partners, one being Winnicott's thinking and writing, and the other being the thinking and writing on virtual reality. Both these journey partners have challenged, assisted, and shared

knowledge with me towards an unknown destination. Smyth and Spencer (2012) mentioned that this process consisted of a “reading, searching, intuiting, thinking, talking, writing, letting come process” (p.14). At times on this journey I felt like I was going around in a cyclical maze, with Winnicott at one end and virtual reality at the other. The maze had a horizontal feeling to it, as I searched the literature, but I also experienced it as a deepening process, that brought the two different ends together. The hermeneutic process required shifting from the parts and the whole, or in my process, finding a way to navigate and journey through the maze. This meant not moving blindly through the maze, but rather, shifting from the whole picture or idea, to the different parts that continued to emerge, which kept me from becoming lost in the maze.

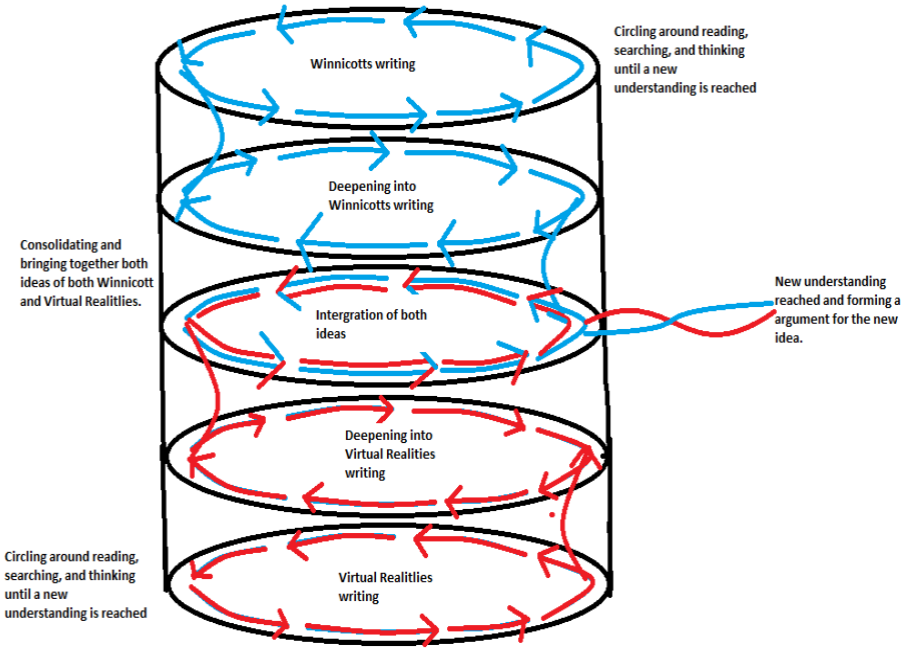

Figure 2. My drawing to capture my hermeneutic journey of the cyclical maze.

Searching, gathering, and reading was the first step of the journey. I had an idea of what I was looking for in the psychotherapy literature with thoughts of Winnicott, Bion, and other theorists I was drawn to. I began to read into psychotherapy theory and quickly found that Winnicott had some interesting ideas that I could see crossing over into virtual reality, especially his ideas of boundaries and space which were linked to the potential space. I began searching through the Scopus, Arts & Humanities Citation Index, and EBSCO databases, searching for "psychotherapy" and "potential space". I began to slowly move through the maze. It felt as if I were moving through, but also had a feeling of going nowhere. I would search down one interesting path, just to be met with yet another dead end, and have to retrace my steps and head down another direction through the maze. I was moving through the Winnicottian maze with searches revealing how to treat different presentations using the potential space, to the creative use of art and music in the potential space and many other applications. However, I sensed that this was not the journey I was on, nor the direction the research was heading in. I followed Boell and Cecez-Kekmanonic (2014), who suggested an approach of "snowballing" and "citation tracking" (Beoll & Cecez-Kekmanovic, 2014, p. 269). The snowballing and citation tracking of Winnicott's work was like walking through the maze, but then finding a staircase that led down into a deeper level and closer to a way out. With the psychotherapy theorist selected and an idea of his identified, it was time to move to the virtual reality literature.

The journey into searching into the virtual reality literature was a far different experience to searching the psychotherapy literature. I had

no idea what had been written or researched within the VR context. The Winnicottian maze had a smooth path, with smooth walls and edges, a path that I had travelled many times before, during my study as a psychotherapy student. The virtual reality maze felt dark in comparison; it was poorly lit, with uneven surfaces where I was afraid I would trip and fall. I had no idea where the path would lead or where I was going in this dark and dungeon-like place. I searched the databases of IEEE Xplore Digitial Library, CINAHL Complete, and the Auckland University of Technology (AUT) library catalogue. Reading the literature of virtual reality, I began identifying key authors, terms, and core articles. I was searching for links between Winnicott's potential space and what virtual reality had to offer. Kinsella (2006) suggested that the researcher often stumbles on material through serendipitous encounters; just as suggested, I stumbled on "presence" in virtual reality. I felt like a thirsty man stumbling upon water. A way to get out of the darkness and roughness and move closer to the light of understanding appeared before me, and the more I read the more I started to see links appear between Winnicott's potential space and the virtual space. Again, I had found a staircase that led deeper down the cyclical maze. I began to see links between Winnicott's idea of tuning in and the VR idea of presence, and made connections between Winnicott's understanding of the mother-infant dyad and virtual reality with the programmer-user dyad. With two areas identified and links and connections beginning to emerge, I was able to start to move deeper into each end of the cyclical maze, moving closer to the middle and the way out.

The deepening process required that I stay open and listen to what the text was saying, but also listen carefully to the process of what was taking place within the research process, or what Heidegger called "relatedness" which is a vital aspect of the approach (Smythe & Spence, 2012, p. 12). Not only does the text speak to the research, but also to poetry, art, metaphor, and speaking. The maze started to speak to me. This meant that I was able to see clues in the maze and listen out for signs that a dead end or a wrong turn was ahead. The walls, floor, and roof of the maze started to show signs of what lay ahead, and it became easier to find the staircases that led deeper inside the maze. I found that after reading the literature, I could write and talk with others about my ideas and research progress. This process was a rich one, as I found that through reading, I got a broad sense of the topics, and writing helped me narrow these down and understand what I wanted to focus on. Speaking with others helped me become clearer about what the research was saying, but also sharpened what I was focusing on. Ideas came from the process of searching, gathering, and reading, and through writing, organising, and thinking I was able to sift through these and integrate the parts with the whole, deepening my understanding of the research project. I was noticing a pattern within the maze. Sometimes I would wander through a part of the maze and find a staircase that led to a deeper knowing, knowledge, and understanding of that part. But then, I would need to re-enter the maze at the other end. After re-entering, I would find my way through that part of the maze and find the staircase leading down so I could return to the other end of the spiral. There was a clear cycling process happening. When I went in cycles with Winnicott's writing, I would reach a new understanding of his works,

then take this new understanding to the virtual reality literature where there would be a similar process of circling the literature until a deeper understand and connection to Winnicott would emerge, and then a back and forth process would continue to deepen to new depths, but also move closer to each other and a way out. The process resonated with Smythe and Spencer's (2012) suggestion that the "task as a hermeneutics researcher is to listen, ponder, question, analyse and stimulate thinking" (Smythe & Spence, 2012, p. 19). This was a crucial part of the process of the research project, because through listening to the research and pondering its meanings, I was able to grasp a better understanding of both Winnicott's theory and VR understandings, wonderings, and application. Through questioning and analysis I was able to notice that not only did the maze speak to me and guide me through it, but that the two different ends spoke to each other and guided me to the middle and perhaps an exit from the maze.

Smythe and Spencer's (2012) suggested the idea of "letting come", which is the idea that thoughts and connection naturally emerge from the literature. I found this process to be a natural one, in which at times it felt as if this research project had a mind and will of its own, and I would merely write what came to me. What began to emerge was how infant development played a key role in Winnicott's understanding of human development and was an important part of the potential space, as it showed growth and how the infant developed in the good enough environment. This realisation started a change within the research; a change from comparing Winnicott's theory with virtual reality understandings to seeing how virtual reality captures many of the

aspects of infant development and is perhaps reflected in the human devolvement and how humans integrate experiences in VR

The inclusion and exclusion of literature was a difficult, but essential part of the process. The inclusion and exclusion criteria for Winnicott was focused on the theoretical understandings and underpinnings of Winnicott's original writing, and followed the psychotherapy approach of making sense of phenomena and the interest in the process around those phenomena. The focus was on infant development and specifically writing and thinking related to the potential space, good enough environment/mother, and the infant's development within this environment. This meant that it excluded much of the clinical application and other understandings associated with Winnicott and his work. For virtual reality, the focus and inclusion criteria were practical applications and findings from experiments, especially in research that focused on immersion and had elements of Winnicott's themes of development of emotional connection, integration of experience, and motor development. This focus followed virtual reality research, that reflects virtual realities' focus on results and a positive research method. The exclusion criteria for virtual reality excluded research that had no connection to the potential space or Winnicott's themes of development.

Chapter Three: Data

Journeying with Winnicott

Winnicott wrote about the idea of primary maternal preoccupation. This describes the idea that the expectant mother has an increasing identification with the infant growing inside her, and that there is a bond created between mother and infant, or in Winnicott's words, the mother has a "special ability to do the right thing" (Winnicott, 1965, p. 87). He highlighted that the "good enough mother is able to identify with the infant and know what is needed" (Winnicott, 1965, p. 53). However, he also highlighted that there are two issues or maternal disorders of extremes. The first occurs when the mother's own self-interest overrides the infant's needs, or conversely, the preoccupied mother sees the infant as a pathological preoccupation (Winnicott, 1965). In other words, the good enough mother is in tune with the infant and has the special ability to be able to know when she is required and why she is required. If the mother is overly involved through her own desires, or under involved from external stimulants outside the mother-infant relationship, the infant's development will be affected. Winnicott stated that recovery from "primary maternal preoccupation" is a weaning process, in which the mother slowly moves from a place of preoccupation with the infant to returning to her normal state (Winnicott, 1965). The ill mother, on the other hand, does not wean her infant from her preoccupation, or weans suddenly, with no regard for the development of the infant (Winnicott, 1965). The continuation of preoccupation or sudden weaning, forces the infant to cope with no longer having a good enough environment and the absence of an attuned mother, which impacts on the infant's ability to grow and

develop and reinforces and hardens the infant's false self, restricting access to the true-self potential. There are some interesting overlaps between Winnicott's thinking of maternal preoccupation and virtual reality. The idea that the mother's engagement with the infant impacts the infant could be interpreted as similar to the programmer's engagement with the VR technology. For the programmer to create a good enough environment, they must keep the user in mind and be in tune with what is required for the user, and why it is needed.

If the programmer is not able to keep in tune with the user's experience, then the user may experience something akin to the maternal disorders mentioned by Winnicott. Instead of the infant's ability to grow and develop, they experienced being dropped, which could result in negative effects such as motion sickness and unbelievable immersion in a VR context. Furthermore, if the programmer does not factor motion sickness into the creation of the virtual environment, this is akin to physically dropping the infant during the weaning process. The user then experiences the lack caused by the programmer's not being in tune with their experience, thus rendering the virtual environment useless, as the user cannot experience the environment due to motion sickness. The programmer can mitigate these experiences by having a teleporting ability in the VR environment or provide a treadmill to help integrate the physical experience with the virtual experience, to help counter motion sickness. Then it could be said that the programmer is in tune with the user's needs, which in turn allows the user to experience the environment and develop and grow. Similarly, if the programmer fails to keep the user in mind and is perhaps preoccupied with another

agenda, then they could fail to create a high level of immersion within the virtual environment. This failure to create a high level of immersion results in the user's experience of the virtual environment as real and thus the unique experience of VR is missed. This highlights what Winnicott described as "being in tune" and shows how important knowing what is required and why it is required by the person, be it infant or user, is crucial in creating a good enough environment for both VR and the mother-infant dyad, to stimulate and encourage growth and development.

Winnicott (1965) proposed that infants have three areas of development: integration, personalisation, and early object relations. "Integration" is the idea that the body functions such as motor and sensory components, create the beginnings of experience for the infant of what he labels "primary narcissism". He believed that at the beginning, the infant is in an unintegrated state and with sufficient holding and care from the mother both physical and subtly, would not be frightened by this state but would be at ease, so integration can begin to take place (Winnicott, 1965). Winnicott (1965) noted that if the environment is good enough the infant will experience itself as part of the environment, and there will be no separation between the two. If the environment is not good enough the infant will dissociate or make "non associations" leaving the infant in a state of non-integration. He noted that a large part of the integration process was linked to affective or emotional experiences for the infant such as experiences of rage and frustration, but also excitement and joy over being breast fed (Winnicott, 1965). However, he also stressed that the capacity for the infant to be able to return to an unintegrated state is the catalyst for

being able to relax as an adult in later life (Winnicott, 1965). The level of integration varies as each mother's and infant's relationship differs, with some infants having a strong personality at one year of age, whereas others are dependent on continuous care(Winnicott, 1965).

"Personalisation" which Winnicott (1965) labelled as "indwelling", describes the infant's emerging new state of being a person in connection with sensory and motor functions. Winnicott (1965) believed that at one year, the infant has a strong connection with the body, and that it is important to develop sufficient muscle tone (Winnicott, 1965). From this strong connection with the body, a new emerging state creates a skin for the infant, so the infant can now start to distinguish between what is "me" and what is "not me" (Winnicott, 1965). This state is like the creation of a skin that separates the infant's inner and outer experiences and makes it possible for the self to reside in the body. The skin creates the ability for "indwelling" so that the self can take residence in the body. Winnicott (1965) linked indwelling with the handling of the infant, stating that "handling describes the environmental provisions that correspond loosely with the establishment of a psycho-somatic partnership. According to Davis and Wallbridge (1990) Winnicott believed that it was vital for the infant to have satisfactory muscle tone and coordination, as this is what links the individual to the collective and binds us to our shared reality. With the manifestation of coordination and muscle motor interaction, the infant begins to harness the ability to use the body to achieve goals and undertake tasks. Personalisation is also the start of fantasy and imagination for the infant, and is linked to anticipation, experience, and memory, as well as the separation between conscious and

unconscious processes (Winnicott, 1965). Winnicott (1965) believed that this leads to the creation of an “inner world” that is unique to each individual but has the same characteristics as those of others’ world, and that we all share. These are as follows.

1. The preservation of what is felt to be ‘ good ’ – that is to say, acceptable and strengthening to the self (ego)

2. The isolation of what is felt to be ‘ bad ’ – that is to say, unacceptable, persecutory, or injected from external reality without acceptance (trauma)

3. The preservation of an area in the personal psychic reality in which objects have living interrelationships that are exciting, and even aggressive, as well as affectionate (p.143)

The infant’s view of the world is largely impacted by the environment. The environment includes parental behaviours towards the infant that affect the infant’s inner reality and expectations of positive and negative experiences and consequences (Winnicott, 1965). Winnicott believed that both good and bad experiences shape the infant and reside in the infant as objects.

Winnicott (1965) hypothesised that an infant can initially only see part objects, so a mother’s breast is not seen as part of the mother, even if the infant experiences the care of the mother while breast feeding (Winnicott, 1965). Through gradual integration of the infant’s personality, the infant can start to see and experience the mother as a whole object, or in other words, know that the breast is connected to

the mother during breast feeding (Winnicott, 1965). In other words, “object relations” refers to the introjection of the mother or the mother’s care becomes part of the infant. Mullin, Hilsenroth, Gold, and Farber (2017) stated that object relations describes how the infant captures and symbolises the care of others. Winnicott (1965) believed that as the mother is the first care giver, she is the foundation on which other relations are built. For example, an anxious mother handles her infant anxiously. The mother’s anxiety and anxious handling of the infant would be introjected or taken in by the infant and the infant could experience care as anxiety-provoking. In later life, the infant could grow into an adult who experiences anxiety around others or be unable to relax, especially around other people. Perhaps these early interactions between mother and infant, are what create the foundation of human interactions and have an impact on or set patterns for later relationships

Journeying with Virtual Reality

One of the key components of VR (and for immersion to take place), is its level of engagement with the human senses. Carl (2018) noted that its high level of sensory engagement puts VR ahead of other technologies. By creating a reality, the user enters a real-world scenario that has high levels of sensory input, thus leading to reinforcement, strengthening retention, and transferring to performance in different users of VR technology. VR training simulations have shown to be reliable platforms for providing training and testing for many different areas, specialists, and professions (Carl,

2018). Carls (2018) stated that using and integrating “haptic, vestibular, and kinaesthetic elements; visual sensing” components into the VR experience means the user will have increased performance or output. This in an interesting idea, that the greater and more realistic the sensory experience in VR, the greater the performance and more integrated the experience is for the user experiencing VR reality. Olson, Lockhart, and Lieberman (2019) agreed with the notion that sensory systems play a major part in the VR process. Their study was conducted using a random control trial, with Wii fit training in a VR environment for individuals suffering from Parkinson’s disease. They used stretching, strengthening, and balancing exercises and measured gait, muscle strength, and sensory integration. Olson et al. (2019) found improvements in all three areas that were measured for the majority of the individuals tested (Olson, Lockhart, & Lieberman, 2019). However, they also found that the sensory systems are the main influencers in the maintaining of postural control, which affects balance and gait. Their study highlighted how VR showed increased improvements in balance and gait, which they attributed to the high levels of optical flow and visual feedback in the virtual environment. Their research highlighted how the use of muscular strength is linked to our perceptions and senses and how this affects elements that impact on each other (Olson et al., 2019). Again, this highlights how integrated the human being is and how connected we are to our senses and the environment we live in. It is through these senses that people perceive and make sense of the world or reality they are in. What is interesting in this VR research, is that the primary focus is often on qualities of immersion, and around quite functional and/or cognitive aspects, such as the haptic, vestibular, and kinaesthetic

elements identified by (Vesisenaho, et al., 2019). There would seem to be opportunities to employ therapeutic concepts and understandings such as Winnicott's "potential space" and capturing the uniqueness of our own realties that were formed by our first interaction with our mother or primary caregiver, to gain a broader understanding of what is needed for deeper immersion to take place.

Emotional engagement is also an important aspect in the function of immersion in VR. In Veisienaho et al.'s (2019) study, which focused on teaching outcomes, emotions had both positive and negative impacts on the participant's ability to retain information and learn from simulations run in VR. There appeared to be a relationship between authentic emotional reactions and experiences of immersion, which can manifest as anxiety and fear, impacting on people's ability to perform certain tasks (Vesisenaho et al., 2019). Conversely, Allcoat and von Mühlenen (2019) found in their studies on teaching, that VR had a positive impact on mood, and participants reported decreased negative emotions compared to other forms of teaching. The participants in their study reported a higher level of engagement with VR, which Allcoat and von Mühlenen (2018) attributed to the level of immersion and emotional responses experienced in VR. Also, in a therapeutic context, Maskey, Lowry, Rodgers, McConachie, and Parr (2014) conducted a pilot study that showed a positive effect of VR on certain phobias in autism. They noticed that VR was able to access certain components that are essential in the context of treating phobias, with emotional engagement being one of the components (Maskey, Lowry, Rodgers, McConachie, & Parr, 2014). Stavroulia et al., (2019) stated that VR environments provide rich emotional

experiences for the users. These rich emotional experiences are vital for the users' sense of immersion as they are related to how the users experience and make sense of the world, whether virtual or not, and the emotional engagement maximises the emotional experience. These studies highlight how an individual's responses to certain stimuli can vary, and outcomes can vary, but also, how important emotional engagement is to the level of immersion experienced in VR. These studies show how immersion is not merely a visual and audio experience, but a deep experience that engages the senses and deeper inner experiences of the user. It highlights a link between Winnicott's idea of infants' development in the good enough environment and the effectiveness of immersion. Winnicott wrote of how having affective or emotional experiences are essential for an infant to integrate experiences, leading to its development and states of integration. It could be argued from a Winnicott perspective, that affective or emotional experiences are a crucial part of the good enough environment and without emotional and affective engagement, then deep immersion and possibly integration of the experience is not possible, or at least, greatly impacted. It also highlights how VR could be used as an attempt to recreate the mother-infant dyad, as the more accurately and fully it can capture aspects of this relationship, the more immersion and integration can happen in the VR environment.

Presence is an essential aspect of VR and an important function of immersion, with "immersion provides the boundaries within which presence can occur" (Slater, Lotto, Arnold, & Sanchez-Vives, 2009, p. 197). Witmer and Singer (1998, p. 34) defined presence "as the propensity of people to respond to virtually generated sensory data as

if they were real'. Bacchus (2018) had a more defined view of presence, when he stated that presence is:

> a psychological state or subjective perception in which even though part or all of an individual's current experience is generated by and/or filtered through human-made technology, part or all of the individual's perception fails to accurately acknowledge the role of the technology in the experience. (p. 56.)

Slater, Lotto, Arnold, and Sanchez-Vives (2009, p. 32) defined presence as "a normal awareness phenomenon that requires directed attention and is based in the interaction between sensory stimulation, environmental factors that encourage involvement and enable immersion, and internal tendencies to become involved". In other words, presence is the realistic feeling or immersion that VR can offer. The more involved the participants' fives sense are while in VR, the greater the sense of presence felt in the virtual environment (Garcia-Valle et al, 2017). A sense of presence relates to how real the participant finds the virtual environment in VR, so the more realistic and more engaged the participants' senses and nervous system are, the harder it is for the participant to know what is real and what is not real, or show high levels of immersion. Velichkovsky (2017) highlighted that presence can be separated into technological and psychological components. The technological components refer to the hardware such as HMD, audio, and other sensory feedback devices such as body suits and software and levels of interaction with virtual objects, high frame rates, high resolution, and reductions in latency issues (Velichkovsky, 2017). However, the psychological components of presence show a wide variety of impacts. Participants' age, gender,

personality, openness, willingness, and levels of positivity/negativity all seem to impact on the levels of presence experienced within the virtual environment (Velichkovsky, 2017). Skarbez et al. (2017) highlighted that the psychological component is what makes presence hard to measure, as it refers to internal feelings elicited from our sense of perception or qualia, which can be individualistic. This is an important point, as it highlights the subjective experience and individuality that we as human beings experience as part of our reality. Velichkovsky's (2017) experiment tried to control the different participants' psychological aspects by introducing cognitive controls as a means to bridge the vastly different objective experiences of the individual and increase their levels of presence. Perhaps, instead of using controls and trying to manipulate the psychological components of presence, there could be an honouring of human individuality and uniqueness and instead, create an environment that, as Winnicott theorised, assists individual to develop in their own unique way.

Chapter Four: Discussion

The exploration of the literature on Winnicott and on Virtual Reality revealed some interesting points of connection. These two bodies of literature are not commonly linked, and it has been enlightening to discover areas in which Winnicott's theories appear to provide a new lens of understanding VR. This chapter discusses some of the implications of these cross-over points, particularly for practice, training and research.

Integration

A key point of cross-over appears in the potential space in Winnicott's ideas, and the virtual space in virtual reality. Winnicott stressed how important having a good enough environment is for the infant to develop and grow, with the mother in tune with her infant's needs and desires. He also highlighted that if there are too many disturbances in the good enough environment of the infant, then the environment is not good enough, and the potential growth of the infant is lost. Similarly, virtual reality needs to foster a good enough environment for the user to experience and integrate that experience, whether it is learning from a simulation, education, or playing videogames. The programmer must be in tune with the needs and desires of the user, which is linked to the idea of immersion, so that the user can experience the good enough environment as fully as possible. What is interesting, is that in the VR literature, this quality of a good enough environment is typically discussed in very functional and technical terms, such as high frame rates, high resolution, and reductions in latency issues (Velichkovsky, 2017). Similarly, Garcia-Valle, Ferre,

Brenosa, and Vargas (2017) focussed on the importance that the five senses play in the development of presence in virtual reality, as they are used to experience and make sense of our environment. Perhaps closest to bridging the psychological and technical realms is the discussion by Skarbez et al. (2017), who highlighted the importance of the psychological component of presence in which internal feelings that are elicited are an important part of the experience, as this gives the user an emotional connection to whatever they are experiencing within the virtual environment. However, none of this literature captures the richness and nuances of Winnicott's work with infant development. Winnicott highlighted integration, personalisation, and object relations as part of infant development. There would seem to be rich potential to relate Winnicott's developmental theory to the concept of a good enough environment in VR to reveal new understandings about the less conscious or functional components of the VR experience. For example, Winnicott's ideas of integration focussed on the creation of associations between the felt experiences of the senses and the cognition that connects the experience. When the integration and connection between the senses and motor functions create links with the cognitions, these in turn allow the experience to become part of the person, so they can grow and learn from the experience. Also, with increased levels of sensory outputs, the higher the levels of immersion and presence, and the greater the integration and experience retention there appears to be. The link is that we make sense of the world and create reality through our five senses and our associations between the senses and the environment we are in.

Personalisation

Winnicott's next point of personalisation is also an important cross-over point. He highlighted how at this stage in the infant's development, the infant is starting to play with the idea of who it is, and how it fits into the world. The infant slowly creates a skin that is strongly rooted in the development of muscle strength and physicality. By developing a strong body, Winnicott believed the infant was able to begin separating from its mother and the process of individualism could begin. Similarly, virtual reality creates a skin between the physical and the virtual environments, and is linked with physical movement. Olson et al. (2019) found a link between the physical engagement and perceptions engagement of participants, and showed how improvements in both these areas led to overall improvements in gait and balance. However, this is where the linking stops. The results of their study are consistent with results in the virtual reality literature, in which links are found between two variables, but that is where it ends. There seems to be a lack of complex thinking that captures what is happening within the virtual environment that is assisting with these improvements for participants. The focus seems to favour how virtual reality is applied to a certain problem or situation, rather than what is virtual reality is doing to cause these results. In discussions about personalisation, Winnicott highlighted how the development of physical strength is interlinked to a person's senses and internal dynamics. The way the skin of virtual reality gives users an experience of playing in the good enough environment which developments physical strength, increases the brain-body connection, but also allows users to access to their internal world. The internal world is a crucial element of Winnicott's approach, as it led to the

beginning of fantasy and imagination, and later, to the ability to play. Winnicott believed that through play, the infant could access its true self-potential, which would lead to a rich and fulfilling engagement. Virtual reality does more than just increase the body strength and the associations of users, but may also allow users to engage on a deeper level with their own creative internal worlds, through acts of play fantasy and imagination. Perhaps, it is the act of entering virtual space that elicits creative internal play and grants access to the true self-potential that offers healing, improvements, and developments of participants, rather than the improvements being a by-product of the application.

Winnicott's idea of personalisation also captures how every mother and infant is different. He highlighted that these differences also mean that the potential space and development will be different. He stressed that the good enough environment was facilitated by a mother who was in tune with her infant and limits her impingements on the infant, resulting in an environment that is free and changing, and not a set environment that restricts the individualism of the dyad. Sharbez, Brooks, and Whitton's (2017) research highlighted how psychological aspects of virtual engagement are hard to measure, as there are many variables to consider. They mentioned that due to mixed variables, research results are often varied and measuring is problematic. However, from Winnicott's point of view, this is a crucial point, as the good enough mother needs to be in tune with her infant's unique desires and needs. This means that the virtual environment needs to be able to respond to people's individualism for the potential space to be fully engaging and good enough. Otherwise, the virtual

environment can be experienced as impinging on the participant, rather than being freeing and liberating. This also highlights Brown's (2010) observation that unconscious impingements can disempower those beneath those with power. Brown indicated the importance of identifying biases and disempowering structurers and taking steps to be curious of biases and seek to remove power imbalances. This highlights the current problematic standpoint that virtual realities take - the view that virtual reality is an application, in which the virtual environment is something to be applied to a person, who then responds to that environment or situation in varying ways. Winnicott's concept of personalisation challenges this paradigm and indicates the importance of the environment's response (in varying ways) to the user's individualism, rather than trying to test or squeeze the individual's uniqueness into a narrow and impinging environment, that is ultimately disempowering. This idea opens the way for future research, in which the virtual environment could be linked to the user and respond to that person's unique needs. Perhaps this highlights that the power of the mother-infant dyad lies in the growth and development of the mother and infant together, so for virtual reality to maximise its effectiveness, it needs to grow and develop with the user at that moment in time. This will add a complexity that begins to mirror the complexity of human development and relating, leading into the exciting future territory of machine learning and human- technology integration.

Object Relations

Object relations also have interesting cross-overs with virtual reality literature. Winnicott stressed the importance of how the mother's

handling directly impacts the infant, as he believed that the mother's handling of the infant becomes part of how the infant experiences the world. This has interesting implications for virtual reality and shows how relationships with the environment can deeply impact the individual experiencing it. It indicates that perhaps virtual reality is not just a simulation that allows a participant to cognitively learn a new skill or develop part of their body, but the experience within the environment becomes part of that person and how they experience the world. It highlights the developer's responsibility for keeping the experience of the user in mind, as the virtual environment can potentially change how a person experiences the world. It illustrates the power of the developers, and that they use this with care. They potentially have the power to change how someone experiences not only the world but also themselves. It means that any experience in virtual reality has the potential to profoundly impact someone's life, as the experience of being held in a safe environment could be a new experience for some. Virtual reality could free someone from a lifetime phobia by providing an environment that is good enough to hold the user, so they can experience and experiment with their fear and perhaps have a good experience of maternal holding. This had the potential to help with other illnesses and difficulties that people experience and provide holding environments that allow for new experiences to emerge. It also opens the way for psychotherapists to explore virtual reality as a medium for treating clients. A therapist could host a virtual environment that could meet a client's needs and tastes, further increasing the capacity of creating a good enough environment and possibly creating a better holding environment for meeting the client. It also allows for clients to interact with art, music, simulations,

and other mediums that were not available before. This is an area for future research and development, and potentially an exciting new field and way of working with clients in a virtual way.

Holding Environment

There also appears to be a link between Winnicott's concepts of holding, mother and infant living together, the father creating a safe environment, and VR. These concepts manifest in VR with immersion in the virtual space being a type of holding, where the user's experience is held within this environment. The infant and mother living together is the experience of the user and program running in harmony, with a good enough level of presence so the user is able to interact and live within the virtual environment. The father that protects the intimate relationship of the mother-infant relationship could be the device that provides the ability to enter into the VR space. Winnicott believed that through the combination of the father, who provided the mother with safety and resources, she was free to focus on the mother-infant dyad, tuning in and providing what the infant needs. Perhaps Velichkovsky's (2017) separation of technological and psychological components captures something of the father and mother relationship with the user. Perhaps also, the technology, or hardware such as HMD, audio, and other sensory feedback devices, are aligned to the father's function, by providing the safety, resources, and framework that allows the user to enter into virtual reality. The hardware may also carry a masculine "edge" with masculine energy, which is focused, logical, strong, structural, hard, controlling, intellectual, and giving (see Lattimore, 2018). In terms of the headset and controllers, with the HTC Vive there can be links and connections made to many of these

elements within the hardware. The father/hardware holds the functionality and allows for the intimate process of the mother-infant or developer-user relationship to begin. This also aligns with the mother's relationship with the infant, which could be seen as the program and user interaction. The maternal or feminine qualities are senses, creativity, nurturing, experiencing, being, expressive, fluid, empathic, emotional, and receiving (Lattimore, 2018). The feminine qualities or the mother's creative capacity to be nurturing and emotionally attuned is captured in the intimate experience of the user entering the virtual world, where the program holds the user in this creative endeavour buried deeply in the sensory, emotional, and creative realms. The idea that both mother and father or hardware and software are required to create the potential space and how the idea of mother/father and feminine/masculine are reflected in virtual reality or indeed the technology we use, suggests that technology may not be so different to us. Perhaps technology is a reflection of our own projections as humans, which are reflected in the technology and devices we use. Could it be, as the Holy Bible says, that we are made in God's own image and likeness? Is virtual reality and other technology we use, made in our own imagine and likeness, and thus reflecting back to us our own human qualities and uniqueness? This does not suggest we are gods, but that our creations are shaped and moulded by us, and thus reflections of us.

VR Mimicking Human Development

Perhaps these discussions highlight the phenomenon that VR mimics our earliest relational interactions, although perhaps we are recreating something through the use of VR, and it is not merely a mimicking but

a longing to create something of that early environment. It could be that humans are attempting to recreate a safe environment, the unique and intimate experience of creating and sharing reality with our primary caregiver, and as technology develops, it moves closer to this re-creation of this phenomenon. Perhaps this is a place where we can have periods of unintegrated states where we can relax and ponder and move to more integrated states where we function in the world, with sensory and motor involvement, and a place where we can create our own associations - a place where certain environments or avatars can show our personalities and we can explore our own uniqueness, alone, but also in the presence of other people or a reflection of our inner reality. This could be a place where we relate to object use, from external use of a virtual/physical object to the internal objects Winnicott wrote of, which refers more to the internalisation of our relationships with others or indwelling. Most importantly, this is a place of play, where a person can play with the idea of reality and the idea of who he or she is, and who this is to others. I do not believe it is an accident that VR and Winnicott's idea of human relationships has so many cross-overs. Rather, I wonder if VR has the potential to capture much more of the mother-infant interactions and thus has the potential for greater outcomes in many different directions. The more developed and life-like VR becomes, the greater the reflection of the mother-infant interactions and the greater the outcome of VR will be over other technologies. Answering this question, however, is outside the scope of this dissertation, but it leads to an interesting question. Does VR closely capture the essence of human relating and human relationships, which is a reflection of our humanity and what it means to be human?

Feminist Critique

Within this discussion, it is important to note the critique of psychotherapy from a feminist perspective. Brown (2010) has highlighted that psychotherapy, like many other forms of health care in the West, came from an historically patriarchal point of view. She highlighted that in the past, psychotherapy has been male-dominated, with men in power treating women in distress (Brown, 2010). Brown stated that the patriarchal framework is harmful to women, as it reaffirms gender roles and oppressive norms and values, which are harmful to women, as they replicate barriers and potentially disempower women. She also mentioned that even when women have trained to become psychotherapists, it has been within a patriarchal framework, so there is potential for unconscious disempowerment of both female therapists and clients to occur within a patriarchal system. Her ideas are interesting when considered in conjunction with Winnicott's writing. At the time of Winnicott's writing, there was pressure for women to stay home and look after the children, while the men went to work. These ideas are reflected in the idea of the mother being the main caregiver for the infant, and the father creating a safe environment for the mother, who in turn creates the potential space for the infant. This begs the question, did women at that time experience their gender roles as oppressive, or as Brown (2010) suggested, was there more of an unconscious barrier that disempowered women? This also raises the question, if these women did experience an unconscious barrier that led to disempowerment within a patriarchal system, did it impact on the development of potential space and did it have a flow-on effect to disempower infants in the mother's care?

Current psychotherapy understandings have taken steps to balance the gender roles with the use of terms such as “primary caregiver”, rather than “mother”, and a shift from a male-dominated profession as a psychotherapist, to a female-dominated profession in the New Zealand context. However, society at large is still based on a patriarchal system, despite efforts to balance power and empower both men and women in their private and professional lives. One question still persists - how much do these societal unconscious biases affect and disempower parents, and what effect does this have on a parent’s ability to create a potential space for an infant to grow and develop?

In relation to the present study, this raises the question of how much of these societal unconscious biases affect the development and implementation of VR? Can this critique of psychotherapy help understand the predominance of VR usage by males, especially for entertainment and game playing? Can this be understood as a natural expression of our patriarchal systems that primarily cater to males? Interestingly there has been some parallel critique of the predominance of virtual assistants such as Siri, Amazon Alexa, Microsoft Cortana and Google Assistance being represented by females and how this replicate historical dynamics of females being “commanded” by males. Piper (2016) found that within western society, femininity is often objectified, both physically and sexually. She highlights how western culture often empowers masculinity while disempowering femininity. This can often be seen in Western movies, where the main role is given to the man who often is empowered with masculinity who will save the helpless damsel in distress (Piper, 2016).

She highlights how the women characters serve as an object or price who are won at the end of the movie, lacking their own agency to choose a partner but are ultimately won and then serve the male protagonist. Piper (2016) goes further, stating that this phenomenon of helpless females that serve is captured in using female voices for digital assistants, which further encouraging and reinforcing harmful gender stereotypes. West, Kraut, & Chew (2019) support this idea of suppression of femininity through technology, where they found the digital assistants hold no power beyond doing what is commanded. That they respond regardless of tone or hostility, further reinforcing subservient and tolerance for poor treatment of women (West, Kraut, & Chew, 2019). Are these “virtual” representations actually a mirror of the darker patriarchal origins of modern society which subtly collude and maintain dynamics of male power and privilege?

Implications for Virtual Reality

This study has outlined a potential framework for working, viewing, and developing virtual reality in the future. An exploration of Winnicott’s ideas of the potential space and his work with infant development reveals similarities between virtual reality and the mother-infant relationship. The framework suggested in this paper highlights how important both internal and external factors are for creating an immersive and integrative virtual experience. External factors involve senses and motor engagement, which are important for an infant’s development, and are reflected in the adult’s later development. These allow the user to experience the virtual environment more fully, increase motor capacity, and help the user create associations in the virtual environment, leading to increased integrative experience. Also,

internal factors such as the person's own unique experiences, emotional, and other internal dynamics are crucial for the immersive and integrative process. The framework suggested by this dissertation is that all these components are an essential part of being a human being and the more virtual reality can understand and match the human experience, the more impact, and effectiveness the virtual experience will have. Another element is how integration, personalisation, and object relations potentially play a part in the creation and engagement of the virtual environment. This approach adds complexity and depth to how we view and understand virtual reality.

For future research, external factors could be fine-tuned and brought closer to lifelike experiences, so that the user is experiencing increasingly life-like sensations and stronger associations and increasing the integrative experience. Internal factors could also be explored and developed, along with the complexity around how deep human processes can impact and be impacted by virtual reality. This could also mean creating a space that is in tune with a user's needs, empowering the user, and encouraging the developer to develop an increasing consciousness around how they are impinging on the user's experience of the virtual experience. Another suggested future endeavour would be to examine the creation of a virtual environment that responds to the individualism of the user and shows the capacity to grow and learn with the user, so both user and machine can grow and develop together. The final suggestion for future research is to explore how the combination of external and internal factors impacts the user's experience and the integrative process in the virtual space.

However, Winnicott's concept of the potential space creates a rich way to think about and hopefully develop virtual reality. There were many more links between Winnicott's work and virtual reality, but these links could not be explored due to the necessarily limited scope of this research. This leaves space for continued future research in the area of Winnicott's relevance to virtual reality.

Implications for Psychotherapy

Within psychotherapy, there are many different approaches and ideologies around client presentations, healing factors, and other points of difference. This section does not enter into a discussion of these topics. Instead, the implications broadly discuss psychotherapy from the point of view that its traditions are based in face-to-face therapy with human contact, attachment, and the relational experience being the healing tools for people's disturbances. From this standpoint, psychotherapy has shown a reluctance to engage with purely technological treatments. There are arguments made that a relationship needs to be established before a therapist and client can enter into a technological treatment such as a Skype or telephone session, in which certain aspects of the therapy may be lost. This could be the case, but the suggestions in this dissertation are that perhaps technology is a reflection of our humanity and the use of technological treatments in this day and age, with the increasing use of technology, is perhaps the next step forward in developing future psychotherapy treatments. Perhaps virtual reality is a technological medium that reflects Winnicott's concepts and is more consistent with principles of psychotherapy, compared to other technological mediums. Virtual reality has significant potential for future research and the use of virtual

reality as a therapeutic medium highlights the potential for virtual face-to-face therapy in a virtual environment. Perhaps more work is needed to explore the idea of machines being able to mirror human capacities and whether technology is able to simulate or assist in clients transforming their lives.

Limitations of the Study

This study focused on certain works of Winnicott that were relevant to the research topics and did not encapsulate all of Winnicott's writings and works. Similarly, all of the virtual reality literature was not searched, but only a portion that was deemed relevant for this research paper. This study is based on interpretations of Winnicott's works and in the spirit of Winnicott and used his writings in a playful manner. This playful manner was also applied to the virtual reality literature. I have tried to capture the spirit and essences of both disciplines and am aware that all interpretations come from my own personal lens as a psychotherapist and as a person with a keen interest in technology, which I realise will not capture the full extent and richness of both disciplines. This study focused on literature that was written in English and came from a Western cultural lens, limiting the study to one language and cultural view. It restricted the study from exploring German, Japan, and other cultures and languages that have a rich interest and investment in virtual reality, limiting this study to one from other rich perspectives. This study had limitation of time, as this study was attached to a master's degree that had a one-year time frame. The limited time frame restricted how far and how deep the hermeneutics process could go, restricting the potential and depth of exploring the cross overs between Winnicott and virtual reality. Space

was also another limiting factor, as I had clinical and academic requires during this study. This drew my attention and focus away from this study, resulting in a restriction in how much focus I could put towards the hermeneutic process.

Conclusion

In this age of technology, there is a growing concern with the dramatically increasing use of technology, particularly in terms of social media, gaming, and other sources of entertainment. There appears to be a fear that the intimate connection between people is being interrupted and often technology is blamed for creating this interruption to human connections. This study challenges this model of thinking and invites us to view VR, and also other technologies, as a reflection of our humanity, and not something alien and foreign from us, but a mirror and extension of our being. Perhaps the question around VR and other technologies being a good or bad thing is not really the important question, but rather, what are these devices and programs reflecting of our human and social shortcomings? Are they reflecting back what Winnicott referred to as the mother's illness, in which our own human failings and faults are being shown to us through the mirror that is technology, rather than the cause being technology itself? Perhaps it is easier to blame a device for causing harm to our relationships rather than looking deeper within ourselves to see our own humanness? Though this study cannot answer these deep and complex questions, it has made some initial links and asks questions for further research that is required to deepen and discover new understanding between human development and VR.

Reference list

Allcoat, D., & von Muhlenen, A. (2019). Learning in virtual reality: Effects on performance, emotion and engagement. *Research in Learning Technology*, *26,* 1-13. https://doi.org/10.25304/rlt.v26.2140.

Bacchus, D. (2017). Articulating a post-human understanding of presence in virtual reality. Proceedings of the *23rd International Conference on Virtual System & Multimedia (VSMM) Virtual System & Multimedia (VSMM),* 1-8. https://doi.org/10.1109/VSMM.2017.8346260

Beoll, S. K., & Cecez-Kekmanovic, D. (2010). Literature reviews and the hermeneutic circle. *Australian Academic and Research Libraries, 41*(2), 129-144. doi: https://doi.org/10.1080/00048623.2010.10721450.

Beoll, S. K., & Cecez-Kekmanovic, D. (2014). A hermeneutic approach for conducting literature reviews and literature searches. *Communication of the Association for Information Systems, 34,* 257-286.

Bollas, C. (2018). *The shadow of the object: Psychoanalysis of the unthought known.* New York, NY: Routledge.

Bollas, C. (2013). *Catch them before they fall: The psychoanalysis of breakdown.* New York, NY: Routledge.

Brown, L. (2010). *Feminist therapy.* Washington, D.C: American Psychological Association.

Carl, D. (2018). The shifting realities of performance improvement: VR, AR, MR. *Performance Improvement*, *57*(4), 6-9.

Clifford, R., Marcadet, N., Linderman, R., Hoermann, S., Billinghurt, M., & Oliver, H. (2018). Evaluating the effects of realistic communication disruptions in VR training for aerial firefighting. *Proceedings of the International Conference on Virtual Worlds and Games for Serious Applications.* https://doi.org/10.1109/VS-Games.2018.8493423.

Connor, S. (1987). Gadamer's hermeneutics: A reading of 'truth and method'. *Modern Language Review*, *82(*3), 686-687. https://doi.org/10.2307/3730427

Coquillart, S., Welch, G., & Brunnet, G. (2011). *Virtual realities: Dagstuhl seminar,* xiii*, 1-*251*.* https://doi.org/10.1007/978-3-211-99178-7

Craig, A., Sherman, W., & Will, J. (2009). Developing virtual reality applications: Foundations of effective design. *Developing Virtual Reality Applications*, *1*, 1-32. https://doi.org/10.1016/B978-0-12-374943-7.00001-X

Davis, M., & Wallbridge, D. (1990). *Boundary and space: An introduction to the work of D.W. Winnicott.* New York: NY: Routledge.

Freud, S. (1913). *The interpretation of dreams.* New York: NY: The Science Press.

Gadamer, H. G. (1982). *Truth and method (2nd. ed.).* New York, NY: Crossroads.

Garce-Valle, G., Ferre, M., Brenosa, J., & Vargas, D. (2017). Evaluation of Presence in Virtual Environments: Haptic Vest and User's Haptic Skills. *IEEE Access*, *6*:7224-7233. https://doi.org/doi:10.1109/ACCESS.2017.2782254.

Kinsella, E. (2006). Hermeneutics and critical hermeneutics: Exploring possibilities within the art of interpretation. *Qualitative Social Research*, *7*(3), 1-13.

Maskey, M. R., Parr, J., Lowry, J., & McConanchie. (2014). Reducing specific phobia/fear in young people with autism spectrum disorders (ASDs) through a virtual reality environment intervention. *PLoS ONE*, *9*(7), 1-12. https://doi.org/10.1371/journal.pone.0100374.

Mullin, A., Hilsenroth, M., Gold, J., & Farber, B. (2017). Changes in object relations over the course of psychodynamic psychotherapy. *Clinical Psychology and Psychotherapy*, *24(*2):501-511. https://doi.org/doi:10.1002/cpp.2021

Olson, M., Lockhart, T., & Lieberman, A. (2019). Motor learning deficits in Parkinson's disease (PD) and their effect on training response in gait and balance: A narrative review. *Frontiers in Neurology*, *10,*10-17 https://doi.org/: https://doi.org/10.1016/j.ijge.2014.06.007.

Piper, A. (2016). Stereotyping femininity in disembodied virtual. *Graduate Theses and Dissertations*,1-55. https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=6799&context=etd.

Skarbez, R., Brooks, F., & Whitton, M. (2017). A survey of presence and related concepts. *ACM Computing Surveys*, *50*(6), 1-39. https://doi.org/doi:10.1145/3134301

Slater, M., Lotto, B., Arnold, M., & Sanchez-Vives, M. (2009). How we experience immersive virtual environments: The concept of presence and its measurement. *Anuario de Psicologi*a, *40(*2), 193-210.

Smythe, E., & Spence, D. (2012). Re-viewing literature in hermeneutic research. *International Journal of Qualitative Methods, 11*(1), 12-25.

Tham, J., Duin, A., Gee, L., Ernst, N., Abdelqader, B., & McGrath, M. (2018). Understanding virtual reality: Presence, embodiment, and professional practice. *IEEE Transactions*

on Professional Communication, 61(2), 178-195 https://doi.org/ 10.1109/TPC.2018.2804238

Velichkovsky, B. B. (2017). The relationship between interference control and sense of presence in virtual environments. *Psychology in Russia: State of the Art, 10*(3):165-176. https://doi.org/10.11621/pir.2017.0311

Vesisenaho, M., Juntunen, M., Hakkinen, P., Poysa-Tarhonen, J., Miakush, I., Fagerlund, J., & Parvianen, T. (2019). Virtual reality in education: Focus on the role of emotions and physiological reactivity. *Journal of Virtual Worlds Research*, *12*(1), 1-15.

Vince, J. (2014). Introduction to Virtual Reality. *Introduction to Virtual Reality*, 68, 1-16. https://doi.org/10.1007/978-94-007-6910-6_1

West, M., Kraut, R., & Chew, H. (2019). I'd blush if I could: losing gender divides in digital skills through education. *UNESCO's*, 1-104. https://unesdoc.unesco.org/ark:/48223/pf0000367416.page=1.

Winnciott, D. W.(1960). The theory of the parent-Infant relationship*. International Journal of Psycho-Analysis.* 43, 235-237.

Winnicott, D. W. (1965). *The maturational process and the facilitating environment.* London, England: Hogarth.

Winnicott, D. W. (1971). *Playing and reality.* London, England: Basic Books.

Winnicott, D. W. (1987). *The child, the family and the outside world.* London, England: Penguin Books.

Witmer, B., & Singer, M. J. (1998). Measuring presence in virtual environments: A presence questionnaire. *Presence: Teleoperators and Virtual Environments*, *7*(3), 225-240. https://doi.org/10.1162/105474698565686