**Wonder VR: Interactive Storytelling through VR360 with NHS Patients Living with Dementia**

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**Abstract:**

*This article explores the potential of an applied theatre VR360 project with patients in a London hospital, drawing upon the concept of wonder and the potential connections between bespoke VR360 films, and subjective wellbeing. This research focuses on exploring the impact of VR360 on the wellbeing of older adults living with dementia as a response to pressing issues such as the number of older adults in hospitals, the statistical concerns about the number of over 65s leaving hospital with a mental health condition and the need for creative solutions for person-centred care in acute hospital settings. The research investigates the potential offers that VR360 films can provide for patients drawing upon theories of immersion in virtual reality, and connecting the ideas presented to the needs of patients, and Phillip Fisher’s study of wonder and the aesthetics of rare experiences. The findings from the current iteration of the project will be discussed in addition to the limitations and future developments of the potential of VR360 as a tool for improving patient wellbeing.*

**Introduction**

Between January 2019 and March 2020, I co-created a project entitled Wonder VR in collaboration with a Clinical Nurse, Natascha Teszner, who is part of a Dementia Care Team. Our VR360 project (Wonder VR) is a quality improvement project[[1]](#footnote-1) with older adult patients living with dementia who were in hospital for a number of reasons including recovery from stroke, infections, and schizophrenia. The project team supporting the creation of VR360 video and working directly with patients, included an applied theatre facilitator, and a Clinical Nurse with a specialism in dementia care. The project intended to investigate the possibilities of improving wellbeing for patients in acute hospital contexts through the creation of VR360 films designed by patients with support from the project team. The Clinical Nurse worked alongside an applied theatre practitioner to deliver one-to-one bedside storytelling and introduction sessions to VR360, before creating bespoke VR360 videos for each patient tailored to their own interests and ideas.

In this article, I will discuss the initial impacts of our Wonder VR project that involves creating bespoke Virtual Reality 360 (VR360) videos for older adult patients in acute hospital settings as a means to improve subjective wellbeing and patient agency. I explore the potential impact of engagement with bespoke VR360 videos on patient wellbeing to offer insights into the potential affective uses of VR360 drawing upon the perspectives of the Clinical Nurse who supported the project and Nurse Consultant, Jo James, who observed the impact of the project. I draw upon theories of immersion in VR to frame the potential uses of VR360 as a storytelling tool that can provide points of agency for the audience, and engage with Phillip Fisher’s influential study on the aesthetics of rare experiences to present a discussion about the potential of encounters of ‘wonder’ to impact subjective wellbeing for older adult patients.[[2]](#footnote-2) To understand the urgency of creative practice to support older adults living with dementia I situate the project in relation to the current demographics of older adults and the consequences of social isolation.

**Older Patients in Acute Hospital Settings: Social Isolation and Consequences**

A 2018 report by the Royal College of Psychiatrists suggested that currently in the UK, up to 60% of people admitted to hospital from the age of 65 or over will develop a mental health disorder in the time that they are admitted that is often undiagnosed and causes delays for rehabilitation and discharge.[[3]](#footnote-3) Depression is one of the biggest chronic disorders experienced amongst older people in hospitals.[[4]](#footnote-4) Part of addressing increases in mental health disorders, and concern for patient wellbeing in hospital is understanding patients’ experiences of uncertainty related to their health and future care. CEO of the Lien Foundation[[5]](#footnote-5) Lee Poh Wah and Global Head of Health, KPMG[[6]](#footnote-6) International Mark Britnell, discuss the importance of supporting older patients experiencing long-term care: ‘[t]he transition into long term care is a difficult journey for elderly people which may damage their health and sense of self-worth. Care must therefore be oriented to meet the unique needs of each individual to ensure elderly people are treated with respect and given as much autonomy and independence as possible’.[[7]](#footnote-7) Enabling autonomy in acute hospital settings is a complex task. Patients who become agitated are often unresponsive or aggressive towards clinical interventions and medical staff. This can understandably lead to a negative impact on patient wellbeing. The autonomy offered in a hospital context is necessarily limited to administer medication and meet the basic needs of each patient. Unfortunately, this means that meeting Wah and Britnell’s suggestions for autonomy and independence are severely reduced in this context, which heightens the call for non-medical approaches to enable patients to assert agency as an approach to improve their wellbeing

One of the key factors that leads to patients experiencing low mood is social isolation, which Oliver Hämmig discusses offering a useful distinction between social isolation and loneliness: ‘Loneliness as distinguished from isolation does not mean *being* alone and isolated, but *feeling* alone, unsupported and isolated (or socially disconnected)’.[[8]](#footnote-8) In the context of acute hospital wards, this means that a patient may have infrequent visitors or no visitors at all. The impact this can have on health is extreme and includes unfavourable health behaviours, increased morbidity, and early mortality.[[9]](#footnote-9) With an aging population these issues are not conducive to a healthy long life and instead increase the need for further care as prevention and intervention to prevent the consequences of feelings of isolation. Elaborating further on the causes of social isolation, Susan McFadden and John McFadden discuss the feelings of fear and anxiety associated specifically with ‘not-knowing’ that can be caused by diagnosis specifically relating to dementia:

If we are unable to cope with a frightening situation, then, still aroused, we may feel the anxiety of not knowing what will happen next. This disturbs our sense of a world that is predictable and meaningful… As forgetting increases and produces greater confusion, persons who have dementia are more apt to encounter frightening situations. Suddenly the familiarity we expect in our worlds disappears.[[10]](#footnote-10)

The uncertainty that is experienced by patients in addition to social isolation that results from family or friends reacting through avoidance or simply self-exclusionary behaviours that occur as a result of anxiety and fear creates a negative conception of the future. In this context, it is key to offer interventions that can enable a positive, person-centred response. Clinical psychologist Elspeth Stirling[[11]](#footnote-11) discusses the importance of challenging negative perceptions of aging through implementing interventions that embody Wolf Wolfensbuergers’[[12]](#footnote-12) conception of social role valorisation (SRV) in connection with Positive Psychology (PP). Stirling suggests that the shared themes of PP and SRV embody a focus on roles and relationships, which impacts upon wellbeing and act as protection against adversity, recognising the importance of a community who share and offer an optimistic view on aging. This combination presents ‘opportunities to share life-defining experiences’ and challenge a pathology culture by perceiving adversity affecting individuals as an opportunity for learning instead of a barrier for access.’[[13]](#footnote-13)

This article offers an opportunity for intervention, potential reduction of low mood (fear and anxiety) and social isolation through the creation of bespoke Virtual Reality 360 (VR360) videos. Understanding the potential of VR360, I have conducted a semi-structured interview with the Clinical Nurse who supported the project to gain her insights into the potential of VR360 as a tool to address social isolation and improve patient wellbeing. Additionally, I have gained feedback on the project from a consultant nurse (dementia specialist), who has offered further insights into the potential of this tool for acute hospital patients. This research is not focussed on the medical impact of VR360 but rather posits the potential of this tool. The impact of the tool is analysed through interrogating feedback and primary interview data within a conceptual framework that aims to capture the potential links between bespoke VR360, wonder, and wellbeing for older patients.

Following on from Stirling’s proposed synergy between SRV and PP, it is useful to understand the potential of VR360 to propose opportunities to create a responsive experience for patients that answers Stirling’s call for improved wellbeing and opportunities to share experiences; additionally, this offers counter pathologies of ageing and illness. I will now explore four examples of the Wonder VR project in action for four different patients who chose to be part of the project to various extents. Each example provides insights into key learning that has shaped and helped to refine the project as it has advanced. I will investigate the experiences of wonder that VR360 provided for patients in connection to improved subjective wellbeing, the importance of the bespoke nature of this project that caters for each individual patient’s requests, ideas, and access needs. As a result of the bespoke nature of this project, the examples that I will analyse are not intended to offer a model of how to create VR360 for everyone living with dementia; it is clear from Alzheimer’s UK[[14]](#footnote-14) that people experience dementia in different ways, therefore it isn’t appropriate to suggest that this is a ‘one size fits all’ intervention. It is instead an observation on what we have learnt from this project, and what possibilities engagement with bespoke VR360 can offer.

**Enabling Accessibility for VR360**

One of the key challenges of this project was to ensure that VR360 videos were accessible for patients who were often in hospital for numerous reasons in addition to living with dementia. In the context of acute medicine for the elderly wards, for example, patients who took part in this project were often in hospital for additional mental health support needs, falls, UTIs (urinary tract infections), strokes, and other medical conditions. One of the patients who took part in the project was in hospital for support with schizophrenia. Part of their experience of this condition is paranoia and concern about their immediate environment. The Wonder VR project was offered to any patients that the Clinical Nurse felt might benefit from taking part, and this patient agreed to participate in the first part of the project.

The first part of the VR360 experience is an introduction to VR360 and the tools you can use to access this medium. Offering participants alternative ways of viewing VR360 provides multiple access points for the medium. To do this, there are various devices that can offer examples of VR360 that vary the level of immersion experienced. For example, a tablet or phone can access VR360 without the use of VR headsets. The nurse and facilitator introduce the patient to each device which can be physically moved around to show VR360 or the patient can move their finger on the screen to see the 360 video. This enables patients to see that the video is not confined to a flat screen view but that you can navigate around the picture to look around a scene. Once the patient has navigated the scene on a demo video in VR360, we ask if they would like to try VR360 in a headset. For the patient experiencing schizophrenia, at the time of the project she exhibited signs of paranoia about her immediate environment. The National Institute for Health and Care Excellence (NICE) describe patients’ experiences of schizophrenia as a belief ‘that something is real or true when it is not (called a delusion); such as, believing they are being watched or having their thoughts monitored’.[[15]](#footnote-15) Engaging in an immersive experience through an enclosed space such as a VR headset would not be an appropriate option in this case since this could have exacerbated the patients’ experiences of paranoia and uncertainty. However, the patient was able to access VR360 safely through a tablet without the need for a VR headset. This device offered her another way to safely engage with a virtual world, which was effective in this case. Though this is an effective way of offering alternative access, an ongoing consideration in this project involves the continual adaptation of the devices and tools we are using to help support access for patients experiencing similar states of confusion as a result of experiencing episodes of confusion, referred to as ‘delirium’ during their stay.

Part of the challenges of working in hospitals on the elderly wards is the likelihood of patients experiencing delirium, which can elicit symptoms of confusion and waking dreams, paranoia and fear. Patients in hospital for prolonged periods of time or who have infections, who are post-surgery, who are immobile, critically ill, dehydrated, malnourished, or have experienced the use of physical restraint whilst in hospital may experience an episode of delirium. Jo James et al. discuss the impact of delirium for patients noting that this can cause prolonged stays in hospitals, ‘higher morbidity, and mortality rates […] and are more likely to have a functional decline afterwards’.[[16]](#footnote-16) The negative impact of delirium is clearly detrimental for the health and wellbeing of a patient. Part of the preventative measures advocated by NICE is active orientation including engagement with stimulating activities. There is a concern to be thought through for each patient about how they are feeling and whether or not they are experiencing delirium at the time of a project workshop, particularly since over 66% of doctors and nurses do not notice delirium and often mistake this for dementia.[[17]](#footnote-17) There is therefore also an opportunity to offer VR360 as a preventative activity.

The second part of the project involves the Clinical Nurse supporting the patient whilst the applied theatre practitioner gets to know the patient and uses gentle storytelling approaches to find out what the patient would like in their own VR360 film. The storytelling can include real life accounts or aspirational stories about places the patient would like to see or return to. Part of the challenge in this scenario is to ensure the process is inclusive for patients who may struggle to communicate verbally or who may feel frustrated when recalling memories of places they have previously visited. There are multiple options in this part of the project to enable participants to be creative in what they would like to talk about or to indicate an area of interest from a range of images. Though of course memory recall and reminiscence projects offer important points of connection and support for older adults living with dementia to engage with their past, their families, and experiences, there is also an undeniable pressure in this process of recollection that can cause distress and upset. The Alzheimer’s Society aptly describes the impact of memory loss: ‘[e]veryone will react differently to their memory problems, but many people become frustrated or worried by them. They may lose self-confidence and be embarrassed by their difficulties. Memory problems can also lead to a person withdrawing from situations or stopping doing things they usually do’.[[18]](#footnote-18) Responding to this point, the VR360 project embraces Robert Atchley’s continuity theory of ageing, which posits that we are able to continually develop and adapt to our environment and that this continues with ageing.[[19]](#footnote-19) In this sense, offering a point of aspiration in the VR360 project, presents an opportunity for patients to imagine themselves in the present or future in a fictional space to adapt and develop creative skills within the storytelling exercises used in the project to generate ideas for their bespoke VR360 films. The ‘offer’ in this project is underpinned with a strong belief that ageing is a creative process, and therefore emphasis is not placed wholly on past memories as a contribution to the ideas of the project, but that there is scope for creativity and aspiration through the offer for patients to suggest places they would like to visit or have imagined. This offers a playful approach to the project that challenges notions of social ageing, which assumes and places expectations in the form of social constructs of ageing that are often negative or linked to decline rather than creativity.[[20]](#footnote-20) Since negative constructs of ageing are arguably linked to the value and worth placed upon a human life when one might not be economically contributing to society, it is imperative to challenge this reductive, discriminatory rhetoric by seeing value in experiences, in memory, and in creativity. Providing opportunities for this challenge to take place and to listen and respond to the ideas of older adults is a strong rationale for our insistence on creating bespoke VR360 videos to see and honour the ideas of each person we engage with throughout this project.

The third phase of the project is the creation of VR360 films that respond to the creative ideas offered by patients. The films are created in the location specified by each patient or close equivalents. The content in each film is determined by the requests and ideas of each individual patient. The bespoke quality of the project is informed by person-centred practice in that it is designed to be responsive to the specific requests of each individual rather than creating a general archive of VR360 videos in a range of locations that assumes what patients might like to engage with. An archive collection of VR360 would be simply a novel form of entertainment that would lose personal narratives. This approach addresses psychogerontologist Tom Kitwood’s concerns about the ‘malignant social psychology’ that can result from people working with older adults living with dementia who fail to recognise the importance of personhood. Denise Edgar et al. identify the consequences of this failure to respond to each individual noting that ‘[t]hese behaviours do not have intentionality, but form part of the deeper issues of how people with dementia are viewed and depersonalised by the world’.[[21]](#footnote-21) Part of the process of creating bespoke VR360 films to celebrate the ideas of patients also involves the adaptation of each individual film to meet the specific access needs for each individual patient.

In the process of making each film, we need to consider whether or not the patient has any mobility requirements. For example, if a patient has experienced a stroke and has lost mobility to easily move their head then we need to factor this into the editing and film making process so that the patient in a headset can still access VR360 and navigate around the space. This can be done through shorter scenes and panning around the space or moving the centre of the video to different locations. This can also be accomplished through YouTube’s VR360 google cardboard viewer options that enable someone to navigate VR360 using a touch screen tablet or phone as a device to navigate and maintain autonomy over the view they wish to see.

Additional access factors include planning for the consideration of the head height of the camera being consistent with the head height of the patient whilst seated or sitting up in a hospital bed to avoid jumps in distance from the floor to the view of the camera. We also use long dissolves and music to indicate that a scene is starting and stopping so the patient is not abruptly moved in and out of VR360. We have filmed a scene from an empty hospital bed with the curtains around to create the same ritual that we use for patients to prepare to view VR360. That way, when they enter the VR360 view, they see a similar space to the one they saw before putting on the headset. With the music and long dissolves, we start and end each video with this same shot to help gently return patients to their original location in the hospital. This is particularly useful to reassure patients that they are returning to the same space they started from. The Clinical Nurse assesses with the patient which viewing option would be best depending on how they are feeling on the day the footage is ready for them. This is a necessarily person-centred approach adopted for each individual to avoid making assumptions.

**Considering the Potential of VR360 to Improve Subjective Wellbeing**

An additional rationale for creating the project was the potential of VR360 to impact subjective wellbeing. Improving subjective wellbeing means providing points of happiness for patients in what can often feel like upsetting or worrying times waiting for prognosis, a care-home place, or recovery. Ed Diener et al. builds upon Aristotle’s Nicomachean Ethics to explore the importance of happiness in relation to high subjective wellbeing. This influential study reveals the challenges of reaching high levels of subjective wellbeing basing understandings of what might constitute happiness on a number of social, economic, and psychological factors:

Although the happy person is more likely to be from a wealthy nation and have enough resources to pursue his or her particular goals, characteristics such as a positive outlook, meaningful goals, close social relationships and a temperament characterised by low worry are very important to high subjective well-being.[[22]](#footnote-22)

The latter qualities listed in this statement are intentions of the VR360 project: the intent to offer a positive outlook and a moment of respite at times of uncertainty for patients. The potential for agency is echoed by Petri Böckerman who elaborates on the qualities of subjective wellbeing when discussing aging and institutionalisation for older adults.[[23]](#footnote-23) Böckerman posits that institutionalisation – which, in the case of this project, is defined as hospital stays – leads to a lack of autonomy and a loss of familiar locations and belongings in addition to a separation from family members. Each of these elements can impact the subjective wellbeing of an older patient in hospital. This section will unpack what is meant by subjective wellbeing by locating an example of this as it became apparent within the project.

The dementia specialist Nurse Consultant, who oversaw the project, notes the significance of developing immersive experiences that are accessible for older patients:

We know that PWD [patients living with dementia] struggle to cope with the experience of hospital admissions but also being immobilised, in pain and being in a strange environment. Because of this we often see high levels of distress in our patients. We focussed the VR programme on patients who had been experiencing this kind of distress. Initially, we were not sure whether it would be something which would work or not as we did not find evidence that it had been tried before. However, we found that helping a PWD in hospital to escape the situation for a short time had a significant impact on their agitation and restlessness.[[24]](#footnote-24)

This response suggests the potential of the project to improve wellbeing that in this case is offered through engagement with VR360 to gain a sense of calm and respite from the tedium of hospital wards. One of the patients who chose to take part in the project requested two films. The first requested retraced his steps through Epping Forest where he had walked every week with his wife; this was a location he noted that he missed after experiencing a major stroke that prevents him from walking. Retracing the steps of the patient, the project team created a film walking with the camera and discussing stories of the forest with a facilitator who had worked with this particular patient. This sense of movement and gentle pace meant that the usually static nature of VR360 was expanded with steady movement to allow the patient to join the facilitator on the walk when wearing the VR360 headset. Artefacts from the forest were also collected in adherence to advice on infection control and objects (such as leaves and twigs) and aromatherapy scents of pine were added to the immersive experience to enable the patient to access the forest through multi-sensory engagement.

This project was undertaken whilst the patient was waiting for news on his condition, a challenging and upsetting time. Understanding the significance of the project experience for this patient requires thought about how we perceive wellbeing in older adults experiencing precarity, and in particular how wellbeing can be defined as a measure of happiness. Tarani Chandola et al. considers levels of wellbeing in relation to eudemonic, evaluative, and affective measures.[[25]](#footnote-25) The results indicate that aging in older cohorts is consistently associated with increased deterioration in subjective wellbeing. The results also consider the rationale for this decline concluding that for the oldest cohorts this is often because of the imminence of death. This research links back to Becker’s study on the uncertain trajectory for stroke patients and older patients experiencing chronic illness. In this case, if we are to address the WHO’s goals for ageing, we need to find ways to improve patient wellbeing by offering moments of wonder, that might help the patient, albeit temporarily, to feel respite from the sensation of uncertainty through a new engagement with a more certain and affecting place from their past that resonates positively with them. Of course, VR360 is only a replication of an environment, but what it did manage to achieve was to bring a smile to the patient who was able to experience a place he felt connected with and was worried he would not experience again. The short narratives in the film did not pretend to replicate conversations he had had with this wife, but instead offered company for the patient as the viewer within the VR, which he could engage with or ignore, to experience a walk through a familiar space. Jaron Lanier notes that VR is ‘[t]he digital medium that fights the hardest against time’, and can be considered ‘[a] generalized tool for cognitive enhancement’ that creates the possibility for the viewer to experience the feeling of the past that can be associated with happy feelings of nostalgia within the virtual space created within the present.[[26]](#footnote-26) In this example, it is clear that VR360 enabled this feeling through immersion in a space that holds meaning for the patient and that re-seeing a space that may have felt unreachable is possible in this medium.

The necessity of bespoke experience for VR is posited by Leighton Evans, who argues that subjective feelings of immersion, defined as presence, need to be relevant and connected to the viewer:

The immersive qualities or properties of the VR experience can facilitate presence but are not sufficient for presence to occur. In essence, presence in VR is about the internal psychological state of the VR user rather than the characteristics of the VR technology […] So, a VR experience may be immersive for one person but not for another, based on the presence of the person, which is individual and subjective.[[27]](#footnote-27)

Patients noted experiences of joy and demonstrated happiness when immersing themselves in a space they had requested to see and experience. This may explain the sense of excitement that is felt if we note that VR is a subjective experience that needs to resonate with the person encountering it. This thinking provided another area of expansion for the Wonder VR project to include further ‘timed’ interactions that happen between the in-person and virtual worlds. This entails creating an immersive experience through VR360 that asks the patient to respond to instructions, i.e. reach in front of you to touch leaves from the woodland you are in. In response to this gesture, the facilitator uses this movement as a visual cue to place the leaves in reach of the patient on a tray or table. We have recently created a beach based narrative, in this case the interaction would offer patients a tray of sand to put their feet in so they can feel the surface of the beach whilst they see it on their screens. Usually, VR360 is not interactive; however, part of this research involves finding ways to offer this level of immersion in a non-computer simulated world. Drawing upon their research into the potential uses of VR360 and interactive microphones to improve wellbeing through group singing, Helena Daffern discusses the importance of creating an environment that allows for interactivity: ‘Interaction between singers is a key element of group singing and is likely to affect the quality of the VR experience, as realistic interactions within a VR environment are connected to the level of presence experienced by the user’.[[28]](#footnote-28) Enabling patients to feel immersed through live interaction enhances the virtual experience. This level of immersion helps patients to feel more of an ‘escape’ from the reality of a hospital ward through their encounters with a world that has been filmed with a narrative created by the patient.



Timed ‘live’ in person Interactions

View inside the VR360 headset pre-recorded

Figure Demo of interaction between facilitator and participant in VR360.

This additional level of interaction can improve experiences of immersion for patients through multisensory stimuli, which can add to the excitement of engaging with VR360; this, in turn, arguably impacts subjective wellbeing for patients engaging with the project. The Clinical Nurse noted the effect of bespoke VR360 for patients:

A big point is wellbeing, when they are in a very scary place which sadly hospitals are for a lot of people, then we might just be able to give them something comforting, which can remind them about something that is close to home or a loved one so they feel more relaxed, like a meditation session.[[29]](#footnote-29)

In this case, the offer of comfort can be located in familiarity and the impact on wellbeing can be usefully found in the experience created by the technology presenting a familiar location that patients can visit whenever they wish. The example in this section has offered insights into the potential of VR360 to improve subjective wellbeing through immersion. Another aspect of this project is the experience of wonder that can result from encounters with VR360.

**Wonder in VR360**

A third example from the project charts the responses of one patient who had always aspired to visit a zoo and felt an affinity with animals. Addressing this aspiration, we filmed her favourite animals in VR360 to create this experience. In this case, though clearly the patient knew what to expect from her prior knowledge of the appearance of monkeys, lions, and giraffes, she had not seen them up close before. The films created took the patient on a journey to see each animal, with the facilitator who had worked one-to-one with her virtually present to ask questions and accompany her on the virtual visit. The feedback from the clinical nurse who witnessed the patient’s response to the story offers further insights into the second phase of wonder described by Matthew Scott:

She was smiling, she was laughing, she was really talking to the animals and making gestures with her hands indicating to the animal to come closer.[[30]](#footnote-30)

The clinical nurse continued to describe the interactive nature of this video from the patient’s commentary to the facilitator outside the video to whom she was describing what she saw, and who responded with questions about the animals. This experience ignited excitement placing the patient in the role of ‘director’ dictating what she chose to share with those supporting her, and responding with awe and wonder to what she encountered. The potential of VR360 to provide moments of wonder is inherent in its immersive qualities to offer ‘visits’ for patients to other spaces beyond the confines and access of a long-term hospital stay; it is also a risk to create immersive experiences that may cause confusion or feel unsettling for patients living with dementia. To understand how VR360 can carefully traverse this line of exciting/unsettling it is useful to unpack the ways in which the medium can feel immersive and transport patients to a virtual location. Jason Jerald and Leighton Evans note that presence in VR is a subjective experience based on the individual’s desire to engage with the virtual world. Part of what enables this level of immersion is what Mel Slater terms Place Illusion (PI) and Plausibility Illusion (Ps).

Slater refers to PI as an encounter where the participant within a headset is ‘in a virtual environment with a sense of being at the place depicted by the virtual displays’.[[31]](#footnote-31) This definition deliberately veers away from presence theory noting that PI ‘*is the strong illusion of being in a place in spite of the sure knowledge that you are not there’*,[[32]](#footnote-32) though perhaps the subjective desire of older adult patients to visit a particular location cannot be separated from this idea of subjective presence as a way to accept place illusion. This level of immersion is voluntary but raises questions about the potential of the patient wanting to remain in the virtual space and then feeling confused when returning to the world outside of the VR headset. The sense of immersion in VR is dependent, to a degree, on the sensorimotor contingencies (SCs) that immersive technologies support. Slater refers to SCs as ‘actions that we know to carry out in order to perceive, for example, moving your head and eyes to change gaze direction in order to see underneath something’.[[33]](#footnote-33) The limits of PI then depend on how SCs are built into VR headsets and sensory systems in current versions of VR that you encounter in home gaming and VR arcades. For VR360, this is often limited to high quality 360 static views, although Wonder VR is aiming to overcome the restrictions of the immersion enabled by VR360 by adding movement and interactive storytelling components to the experience. It is also clear from this second project scenario that the patient chose to interact with the scene verbally by calling out to the animals, speaking to those supporting her about her experience as a commentary and pointing in the direction of animals she was facing in the VR360. Safely enabling the patient to return to the ward is important to avoid confusion or upset from returning suddenly from a virtual to a real space. To enable the patient to know when they are moving in and out of the virtual world, the films created for this project include the gradual fading in of music the patient has specified as a signifier that the scene will soon slowly dissolve from footage of the hospital to the location requested by the patient. The same process happens in reverse at the end of the film to return the patient back to the ward through a slow dissolve and the gradual fade in of music to signify a change of scene is about to take place.

The likelihood of a VR experience enabling a participant to feel part of the world they find themselves within is a combination of ‘correlations between external events not directly caused by the participants and his/her own sensations’.[[34]](#footnote-34) In this case a combination of PI and Psi can be enabled if an experience within VR offers a response to the participant in a way that engages their senses and offers points of interaction. This provides the possibility for patients who experience social isolation, depression, and uncertainty from their long stays in acute hospital wards to have respite in their immersion in a virtual space of their choosing. Pierre Lévy presents a useful explanation of ‘virtuality’ that helps to contextualise the possibilities inherent in VR360 noting that ‘[t]he virtual is by no means the opposite of the real […] On the contrary. It is a fecund and powerful mode of being that expands the process of creation, opens up the future, injects a core of meaning beneath the platitude of immediate physical presence’.[[35]](#footnote-35) This may explain why the patient called out to the animals in the zoo and started waving in the direction she was facing in the virtual world. The possibilities of VR360 to bring moments of discovery and wonder transcend any socially imposed harmful constructs of age and dementia, and move towards a multiverse of optionality that can be explored and offered to patients to temporarily and repeatedly break through the limits of hospital walls to experience that which they miss and aspire to see. Reflecting on the project, the Nurse Consultant overseeing Wonder VR discusses the joy patients can feel through the virtual escapism inherent in VR360:

There is something lovely about asking a person where he or she would like to be and then making it happen when that person is confined to bed in a clinical environment. The patients who were involved in the programme were stuck on the 8th and 9th floors and it was telling that both wanted to be outside, one with animals and the other in the woods. The use of VR to help a PWD to connect with nature is powerful and important as we know that these connections can improve a person’s wellbeing.[[36]](#footnote-36)

The possibilities identified here resonate with James Thompson’s consideration of the potential of affect as a tool that can lead to astonishment, which he suggests is only possible if an encounter ‘makes something familiar extraordinary’.[[37]](#footnote-37) The medium of VR360 has offered a lens to the familiar that is extraordinary in that the patient can be immersed in 360 environments and choose where to look.

Patient responses to seeing long loved locations again in VR360 holds an affective quality through the recognition of the ‘familiar’ but also a potential for wonder. Phillip Fisher’s seminal work, *Wonder, the Rainbow, and the Aesthetics of Rare Experiences*, offers useful insights into the potential of wonder as an experience that moves beyond and away from astonishment and fear towards intrigue and excitement. Drawing upon an encounter of ‘wonder’ in Vladimir Nabokov’s novel *The Gift* (1938), Fisher articulates an understanding of what constitutes an encounter of wonder:

Many elements of wonder are here: the sudden, the unexpected, the all-at-once of the visual, a first-time experience, a rare or even singular event, a progression from mystification to explanation, a feeling of the freshness of the world, the bodily states of the smile and the swaying – a somatic pleasure […][[38]](#footnote-38)

The qualities that Fisher draws from Nabokov’s work offer insights into the criteria for wonder. The notion of sudden, unexpected, and rare events generates a sense of instant ‘awe’ or intrigue in the visual representation of an environment created to immerse the spectator inside the world of the story they are about to experience. The joy asserted by the patient reacting to the animals that she saw before her, even though they were recorded images, suggests that she may have felt ‘awe’ at the sight of animals she had longed to see in person. Wonder in this can be located in the newness of the experience, though of course the ‘liveness’ of the form is an illusion, the patient experienced the zoo as if she were really visiting it for the first time. If, as Fisher suggests, wonder is innately related to the novelty of a new experience, then seeing a familiar location through VR360 provides a means of making the familiar exciting and strange. In this case, although there is a long-standing relationship with the locations offered in the VR360s for patients, the way of viewing a known location, which was thought to be out of reach due to reduced mobility and access, through an immersive medium causes wonder. This is arguably due to the possibilities for overcoming these barriers that VR360 offers patients. This can help to locate this type of encounter in Fisher’s definitions of wonder.

**What else can Wonder VR offer patients?**

Not all patients who experienced VR360 in the first stage of the project opted to have their own film created, instead the project served as stimuli for recalling past adventures. The clinical nurse working with us on the project reflected that one patient was very familiar with technology and seemed less impressed with the newness of the form and more preoccupied about his personal connection to the demo footage he saw, which provoked a memory about diving. In this instance, though the VR360 did not provoke the same response of excitement to the experience, the immersive quality of the medium prompted the patient to talk excitedly about his own adventures diving in various locations, which he shared enthusiastically with the facilitator and clinical nurse. In this sense, revisiting an unknown location was met with a memory of initial wonder from an earlier encounter with a similar site. The wonder in this moment was not provoked by an immersive headset but with the autonomy of the viewer to move the image and choose which area of the diver’s view to experience next on a tablet.

The communication of a memory demonstrated a patient’s enthusiasm for a topic and a desire to convey a re-enactment of the initial excitement of this experience through the retelling of the memory. This reaction relates to the work of Bethany Cotton, who discusses the significance of alleviating boredom by providing mentally stimulating activities for patients in hospital. This research also reinforces the potential of creative activities to alleviate sensory deprivation that can occur for patients experiencing the monotony of a hospital environment. Cotton argues that long repetitious stays in hospital can create confusion and increase agitation, which can escalate the likelihood of boredom, aggression, and withdrawal for patients with neurodegenerative conditions.[[39]](#footnote-39) Conversely, creating opportunities for patients to experience excitement and mentally stimulating activities can have a significant impact on patients’ wellbeing. Nicola Hatton[[40]](#footnote-40) and Sue Mayo and Liz Rothschild[[41]](#footnote-41) argue for the importance of finding innovative ways to create new experiences through the arts for older adults living with dementia, considering the joy that arts practice can bring through the aesthetic potential of the work. Drawing upon the Hello Brain research project from the Institute of Neuroscience, Dublin, James et al. continue to note the benefits of engaging activities for patients to improve brain reserve through brain stimulating activities.[[42]](#footnote-42) This insight relates to the knowledge of the patient who recounted their experience of diving showing positive emotional responses to the VR360. This raises another point about the necessity of bespoke VR360 experiences for patients to tailor activities to their specific needs, interests, and preferences to alleviate boredom rather than causing agitation through assuming interests, taste, and cognitive abilities based on the age and gender-identity of the patient. In this case, VR360 offers more than passive entertainment as a medium that provides a particular type of visual, emotional and sensory stimulation. The Nurse Consultant who oversaw the project identified this quality in the uniqueness of the project:

What has been powerful about this programme is the person centred approach to it. The patients are co-designing the experience that they want and so it is born from a combination of the patient’s wishes and imagination and the practitioner’s skill both in listening and interpreting what has been expressed. It gives a chance for people without a voice to feel heard and to be creative in ways that have not been available before.[[43]](#footnote-43)

The person-centred approach is vital for this project, which in part is about enabling agency through listening to patient ideas and responding by creating a VR360 video. There are of course potential limitations to person-centred approach that assume patients are able to communicate, or have difficulty understanding what the project is asking of them. However, part of the advantage of working through collaborative partnership is to find ways to communicate that need not rely on verbal communication but on images or signals and responses in addition to Clinical Nurses’ knowledge of patient preferences. Enabling access is imperative to the pursuit of creating strategies to enter what McCormick denotes as an age-inclusive society.

**Conclusion**

This document has unpacked the challenges and opportunities inherent in the Wonder VR project to engage older adult patients living with dementia and secondary conditions. The project embodies person-centred strategies for responding to the creative ideas of patients. There is often a lack of agency for older adults living with dementia in hospital contexts where decisions are often made on their behalf and there is a feeling of uncertainty around prognosis and outcomes that can negatively impact wellbeing. The project has also explored the potential affect of wonder enabled through the presentation of a familiar, aspirational, or memory-provoking place and how this can improve subjective-wellbeing. This has so far become evident in joyful responses to VR360 experiences through excited accounts of past memories, through the realisation of a virtual experience visiting an aspirational location, and through person-centred ‘calming’ experiences that deliver bespoke, consistent encounters that can be revisited whenever they are needed. This project can creatively and visually *transport* patients into a narrative encounter from which they return feeling happier, less agitated, and mentally stimulated to continue their stay in acute hospital settings.

The next iteration of the project will offer a training video for patients to experience interactive VR360 to help improve comprehension and trust in what this feels like and what might be possible through interactivity between the real and the virtual world to enhance the ‘wonder’ experienced by the patient. We hope to improve olfactory, audio, visual, and touch based interactions for patients to experience increased immersion and engagement with proprioception to create increasingly bespoke and wonder-filled experiences. It is our intention to continue to develop interactive VR360 experiences remotely for older adults living with dementia to further advance understandings about the potential of this medium to affect changes to the negative experiences and worrying mental health statistics impacting patients over 65 who are socially distancing as a result of COVID-19.[[44]](#footnote-44)

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2. Phillip Fisher, *Wonder, the Rainbow, and the Aesthetics of Rare Experiences* (Cambridge, MA: Harvard University Press, 1998). [↑](#footnote-ref-2)
3. Royal College of Psychiatrists ‘Suffering in silence: age inequality in older people’s mental health care’, 2018, 12, <https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/college-reports/college-report-cr221.pdf?sfvrsn=bef8f65d_2> (accessed October 24, 2019). [↑](#footnote-ref-3)
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5. Lien Foundation is a radical philanthropic organisation aiming for excellence in eldercare. They support innovations in care for older people through their research and offer support for new ideas that improve care quality for older people, their families and care givers. [↑](#footnote-ref-5)
6. KGMP International are an auditing organisation. Dr Mark Britnell offers insights and expertise into what could constitute the perfect health system. [↑](#footnote-ref-6)
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13. Stirling, *Valuing Older People: Positive Psychological Practice*, 5. [↑](#footnote-ref-13)
14. Alzheimer’s Society, ‘Understanding and supporting a person with dementia’(2020), <https://www.alzheimers.org.uk/get-support/help-dementia-care/understanding-supporting-person-dementia>, (accessed May 30, 2020). [↑](#footnote-ref-14)
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