Virtual reality and male-on-male violence prevention: An exploratory study

by

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"Yeah, it was just like, ah, hey, this is this is actually real. This is actually what's happening. Oh, my gosh! I've either experienced this, I've experienced something like this or I've had a friend that seen a friend that's experienced something like this." Participant J

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Thesis summary

Male-on-male violence is a significant and persistent societal issue in Australia and was the fourth leading cause of death among young people aged 15–24 years in 2014-15 (ABS, 2015). Young male perpetrators are often strangers to the victims, and most violence occurs at a place of entertainment or recreation (ABS, 2015). Some schools and community groups run violence prevention programs; the more successful of these programs are 'gender transformational' addressing how young men view themselves as men – their masculinity, and the link between problematic masculinities and violence. These violence prevention programs have weaknesses that the emerging technological paradigm of Virtual Reality (VR) could help address.

In this practice-based study, I explore how a VR artefact, the Island was co-created with young males, via qualitative inquiry, and which uncovered experiences of violence, as part of a heutagological approach to address two challenges facing violence prevention programs. Firstly, fostering critical reflection in young males concerning the masculinity they hold, and secondly, safely practising non-violent responses to aggressive situations.

The Island VR experience is powerful and affective, taking participants on a journey of self-discovery, learning and challenge, through five scenes: 'Exploring'; 'Learning about men'; 'Learning about de-escalation'; 'Experiencing an aggressive situation'; and 'Reflection'. The Island is centred on the participant and their agency to interact with the objects, the learning and the narrative. Scenes are a mixture of VR and granular branching narrative 360 film. Critical masculinity theory and transformative pedagogy underpin the Island experience.

The Island was evaluated by another group of young men to discover what and how they learned and if they felt the Island could change young men's views of their own masculinity and, also, safely practice de-escalating an aggressive situation.

This study's contributions are relevant to producers of VR experiences that seek to be transformational, creators of video-based learning content who wish to transition to VR, and curriculum writers of violence prevention programs and those who wish to use VR as more than a didactic learning experience.

Acknowledgements

This journey is now at an end. A research study into violence prevention using virtual reality and immersive film finalised during a pandemic does lean into dystopia. Into the themes of what it is to be a man in a culturally confusing world and what is it to be a young man living in relative poverty in a small Australian city. All these moments of creating, researching, enjoying the company of other HDR students and the challenges of directing film 'inside and out' are now, borrowing from Scott's, Roy Batty character, "…lost in time, like tears in the rain".

This study owes many dues to the young men who agreed to partake; thank you, I hope your lives will not be marred by violence. To my superb supervisors, Ben Wadham and Belinda Lange, thank you and thanks for understanding my needs as a mature student. To the excellently led office of graduate research - Tara Brabazon, thanks for being there and for supporting research equipment grants. To the most important people, my long-suffering partner Sue Foster and my brother Christopher Hall without his support, this study would not have been possible a huge thank you.

While this study is at an end, as Imohtep put it, scratched on the inside of his sarcophagus, "...is only the beginning". I and others have already applied the learnings from this study to societally focussed virtual reality productions with more in pre-production.

I would also like to acknowledge that this exegesis and artefact was written and created on the traditional country of the Kaurna people of the Adelaide Plains. I would like to pay my respects to Elders past and present and acknowledge their cultural heritage, beliefs and relationship with the land are of continuing importance to the Kaurna people living today.

Thesis declaration

I certify that this Thesis (exegesis and artefact): 1. does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and 2. to the best of my knowledge and belief, does not contain any material previously published or written by another person except where due reference is made in the text.

I acknowledge the contribution of the Australian Government Research Training Program, Flinders University Research Scholarship scheme and Dr Sam Franzway for editing assistance.

Signed:  **Date: 22 March 2021**

Stephen John Hall

Student ID 2177604

To access the Island artefact

This exegesis should be read, alongside experiencing the Island artefact. To access the Island, download the following files 'Briefing notes the Island.pdf', 'How to install the Island.pdf' and 'Island.zip' from the download link below. The installation instructions are contained in the document 'How to install the Island.pdf'. Before experiencing the Island, read the briefing notes contained in the document 'Briefing notes the Island.pdf'.

Download link: https://flinders-my.sharepoint.com/:f:/g/personal/hall0613_flinders_edu_au/EhZ8ay8aZQpMgeGE7HXseGEBe9kmfoy-pYmYHnztdho_hA?e=jQCOw0

DEFINITIONS AND ACRONYMS

360 camera: A camera which creates video and or stills using a 360-degree field of view.

360 video: Video captured shot using a 360 camera, which can be viewed on a smartphone, tablet or computer. The view can be changed by using a mouse on a computer or by changing the position/rotation of a smartphone or tablet. When viewed through a head-mounted display, the view can be changed by head movement.

360 film: Draws from cinematic traditions to create narrative 360 scenes using 360 video recording techniques.

3DOF: Participants immersed in a virtual environment are limited to looking around from a fixed viewpoint

6DOF: Adds translation to 3DOF, whereby participants in virtual environments can look around and move to a different position - translation

Co-creativity: In the context of this study, this refers to how young males are informing the study through their descriptions of Virtual Reality objects, storylines and experiences that are recognisable and relevant to their forming masculinity.

FPV: First person point of view. The view one would experience looking directly out of a camera lens, where the viewpoint is restricted to one character and their storyline.

HMD: Head-mounted Display. A device that provides vision and sound to a user and which excludes real reality (RR – see below) sound and vision.

Immersion: "A psychological state characterised by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences" (Witmer & Stinger, 1998, p227).

Real Reality (RR), Augmented Reality (AR), Mixed Reality (MR) and Virtual Reality (VR):
RR is the reality we experience through our unadulterated senses. AR uses a digital device to supplement what is experienced in RR, with digital objects. MR takes AR further and creates an environment where the user can interact with these objects. VR replaces RR with sensory input from artificial sources (Joyce, 2017).

Violence Prevention Programs (VPPs): Programs run by schools, community and sports groups in an effort to reduce violence in the community.

Virtual Reality Learning Experience (VRLE): A learning experience which is created using VR software to encourage meaning-making in VR participants. VRLEs can have the attributes of AR, MR and VR and include 360 film. One of the outputs of this body of work was a prototype VRLE.

VR: For the purposes of this study, a broad approach to defining VR has been taken. VR unless otherwise stated includes 360 film.

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PART A
Context of this study

Chapter 1: Introduction

This chapter introduces this practice-based study, its scope, purpose and research questions, my background as a practitioner, the rationale for the methodological approach I adopted, and the structure of this exegesis. This study emerged from my life long interest in educative media and what I believe is its capability to create authentic and transformative learning experiences. I started to think seriously about virtual reality (VR) in 2016 when completing a M(Phil) degree that focussed on film education and those academic emotions known to support learning (Hall, 2016). It became apparent when completing the research for this degree that the new and emerging media paradigms of virtual and augmented reality would be well suited to, and will find a role in, education, and I wanted to be part of that 'finding' which led me to undertaking this project. I am a creator of educative media and my practice is, usually film-based for the vocational education and training sector. My productions are used to support units of competency that comprise a qualification; specifically, short, filmed vignettes that support a learning outcome which are set in an authentic setting. My most popular production was 'Responsible Service of Alcohol', and its primary focus was how to refuse service in an assertive manner that would not needlessly aggravate inebriated patrons; the refusal of service is a known trigger for violence (Home & Clark, 1995; Taylor, Keatley et al. 2020). This theme of deescalating a confrontation using digital media is continued in this study. Rather than using film, I have used the emerging media paradigm VR.

This study investigates a VR prototype artefact – the Island – which I have co-created with a sample of young males as learning content to support the curricula of transformative young male violence prevention programs. A sample of young males also evaluated the Island for its usability, immersiveness and its efficacy in changing the way young men viewed their masculinity. Included in the study is my reflexive commentary of how I have developed both personally and technically from a producer of film-based learning scenarios to a creator of VR learning experiences.

This exegesis's role is to situate the Island within theory and provide an analytical and reflexive view of the decisions made when creating it. They, along with the results of qualitative inquiry, inform each other to create the contributions of this study. The Island also contains a bar, where an aggressive scene is enacted, requiring participants to practice de-escalation. It is a prototype and intended to explore how a production version, that develops further and draws upon the findings of this study, could be used in gender transformational violence prevention programs (VPPs), in addition to how it could support other VPP curricula elements, such as group and individual discussions and additional reflection tasks.

The Island includes the following scenes:

- an onboarding experience that includes participant-identified masculine objects as onboarding/acclimatisation aids;
- three learning experiences focussed upon scaffolding participants' understanding of masculinities and violence de-escalation strategies;

- an interactive, realistic conflictual scenario, set in a bar, which requires participants to practice violence de-escalation; and,
- an experience to foster critical reflection in young males about the masculinities of the characters they experience in VR and their masculinity.

The theoretical and qualitative elements of the Island content – men, violence and change – are not divorced from understanding the human condition and personal transformation by knowing the 'how' of fostering changes in young men's views of themselves as men. Reviewing VPPs led to focussing on those fostering change using a gender transformative approach by provoking young men to review and reflect upon their masculinity – a more successful approach than programs that do not adopt such an approach (WHO, 2007; Flood, 2015). Though transformative change assumes a level of agency in young men and an understanding of societal structures, the norms, customs, traditions, and ideologies surrounding young men as they grow up, these structures are however situated. For instance, societies' expectations of 'being a man' in Adelaide will be different from other societies, even those within regional and rural and metropolitan Australia (Winton, 2018). Even at the city level, the structures and agency of men will be different. For instance, the practices of being a 'man' at a local football club might limit agency, for example, many footballers might be scared to come out as 'gay', instead choosing "playing straight" (Willis, 2015., p383) compared to being a 'man' in the clubbing scene. The agency of young men, drawing from studies of sexual assault survivors, are dependent upon masculinity's local constructions (Touquet, Heleen, & Schulz, Philipp., 2020, p1). This study assumes that young males in the Adelaide area have the agency to review, reflect and change their masculinity, in a similar manner to those attending violence prevention programs (Flood and Dyson, 2005; Flood & Pease 2009; Jewkes, Flood & Lang, 2015; Taliep, Lazarus, & Naidoo, 2017).

However, creating VR experiences is complex and cannot be divorced from its technical components, because each element of the software workflow scaffolds each other. How a participant experiences VR is reliant upon each component of this workflow and the software and hardware platforms used to develop and deliver it. To some extent, the lowest-performing item in either the workflow or platforms is a limiting factor which impacts the participant experience and therefore becomes a critical element of the design. These limitations did have an impact upon the creation of the Island experience. I have therefore added in to this exegesis, how I tackled and ameliorated the limitations, which related to: the complexity of the VR scenes; the depth of interactions possible; and the optimisations I made for the delivery platform, the Oculus 'Rift S' HMD. As part of the Island evaluative process, I measured how affected the participants were by these decisions, in terms of usability of the Island experience and their level of immersion in it. These measures supported the view that the participants' experience was substantive enough to form evaluative opinions.

This study's contributions apply to educative media producers who wish to transition to the emerging paradigm of VR. Those who seek to implement VR learning experiences that encourage participants to see themselves in different ways. Furthermore, those who design and deliver young men's violence prevention programs.

Scope of the study

This study is not a technical study of VR or a qualitative study of the masculinities uncovered as a result of the research carried out as part of this study. It is an exploration of how VR could be used to create educative and transformational learning experiences that are relevant to a specific cultural cohort of young men, and support parts of an existing violence prevention curricula. This study does not use the 'Creating a Research Space CARS Model' approach where a 'gap' in knowledge is identified (Swales 2005). Virtual reality is an emerging media form, applying it to VPP curricula using a practice-based approach that includes a qualitative element is intended to be generative where new insights are formed (Clarke & Braun, 2021), rather than an additive reductionist approach. Therefore, identifying a 'gap' in knowledge will not enhance this type of study but rather restrict it (Thompson, 2021). Chapter two -'founding concepts' establishes the context and warrant for this study rather than creating a 'gap'.

Study purposes and research questions

This study is important in attempting to address the issue of young male-on-male violence, which is a significant and persistent societal issue in Australia, and was the fourth leading cause of death among young people aged 15–24 years in 2014-15 (ABS, 2015). Young male perpetrators are often strangers to the victims, and most violence occurs at a place of entertainment or recreation (ABS, 2015), often in the night-time economy. While violence is often related to the socioeconomic status of the perpetrator and the factors in their life, including poor parenting, violence at home, mental health problems, poverty and poor housing (Crutchfield & Wadsworth, 2003; Gottfredson, M. R., 2018), the masculinity they hold is a common factor of violent young men (Kimmel & Mahler, 2003).

The primary purpose of this project was to explore whether the Island can encourage non-violent masculinities in a qualitative sample of young males, aged 18 to 24, through the fostering of critical reflection on the masculinities they and the characters they virtually encounter hold. The secondary purpose is exploring how a VR learning experience based upon the Island could be used in VPPs to address the lack of opportunity to practice non-violent strategies in response to aggressive situations; a known problem of VPPs (Finkelhor, Vanderminden, Turner, Shattuck, Hamby, 2014). These purposes create the two research questions which guide this study:

- How could a VR based learning experience be used foster critical reflection in young men as to their own and non-violent masculinities?
- How could a VR based learning experience be used to provide authentic, safe opportunities to practise de-escalating aggressive situations?

In addition to the formal research questions, I have also included a reflexive commentary as to what I have learned and how I have changed during my transition to a producer of gender transformational VR learning experiences

Creator's practice

My practice is a producer of educative media, typically narrative film-based. I use the term 'film' as opposed to 'video', as when producing I draw from film and cinematic traditions, by using a narrative act structure approach, including storytelling through mise-en-scene, visual framing of shots, colours, lighting and high quality of audio. I have produced successful learning productions using these filmic methods based upon curricula from the vocational education sector.

Critical to this study is me as the researcher and creator, how I interpret the world around me and the culture that formed me and the masculine traits I possess; this lens impacts upon how I understand the world, the qualitative data collected, and the creative actions I enacted as part of this study. I have included a reflexive commentary in the artefact creation sections and analysis sections of this study. However, these commentary cannot stand on their own without a back story, my story, which led me here to this study. While this study is not an auto-ethnography (which often is a component of an exegesis), a short biography will help place me in the cultures that formed me and the theoretical frameworks that inform this study.

So why me for this project? During my high school and first years of university, I fell into casual work as a television and film extra, which I enjoyed immensely. Many years later, as a stressed-out company director running a large registered training organisation, seeking relief from corporate life, I picked up a video camera and re-ignited my passion for film production. Deciding to follow this passion, I curated my media skills, including working as a sports video journalist, gaining skills as a media educator and educational filmmaker, and attending filmmaking courses. I have always been adept at using technology, from hardware, software and coding perspectives. I deliberately sought to merge my practice as a vocational educator with my media skills.

I have produced several educational films which had a degree of success with short vignettes for the Vocational Education and Training accredited units: 'Responsible Service of Alcohol', 'Safe Food Handling' and 'Provide First Aid'. However, during this period I realised my lack of theoretical knowledge that informed how people learn from educational films, so I completed a M(Phil) degree focussing on film education and the emotions that support learning. The research for this degree provided me with further technical skills and knowledge of learning theories that are relevant to media and film education (Hall & Walsh, 2015), specifically, constructivist-based theories such as authentic education (Herrington & Herrington, 2008; Aiello, D'Elia, Di Tore & Sibilio, 2012).

Since commencing this study, my technical skills have developed further, and I now can create virtual learning environments, including embedded branching narrative film scenarios. Moreover, as I researched critical masculinity theory, my masculinity changed. I now have a much greater appreciation of feminism's goals and values, and I have also made sense of the 'toxic' masculine environment of running a business. Which, as a senior manager, I was required to perform, control staff, compete aggressively with competitors, be stoic, and perform these hegemonic traits in front of peers and staff as an indicator of success.

This study was well suited to my experience, technical competence and thirst for exploring emergent technical media areas that could have a societal impact. Moreover, what I learned about my masculinity, through my reflexive approach to this study has provided me with critical insights into healthy masculinities, thereby helping me to understand the journey that young men need to take to be a pro-social man and an asset to their community.

Study methodology

This section discusses the methodology I chose to facilitate answering the research questions, while accomodating the interdisciplinary nature of this study that attempts to address a societal problem of male-on-male violence by utilising the emerging media form of VR. I employed a practice-based approach to explore the emergent nature of VR and provide the creative latitude, including experimentation, to produce learning experiences. Moreover, I have employed a co-creative approach to inform the creation and evaluation of the Island, facilitated through qualitative inquiry. Figure 1, illustrates the methodology, where the practice-based approach is, in effect, a vessel containing, my practice, theory and qualitative inquiry which together generate the outputs of this study, the artefact (the Island), this exegesis, and this study's contribution to knowledge.

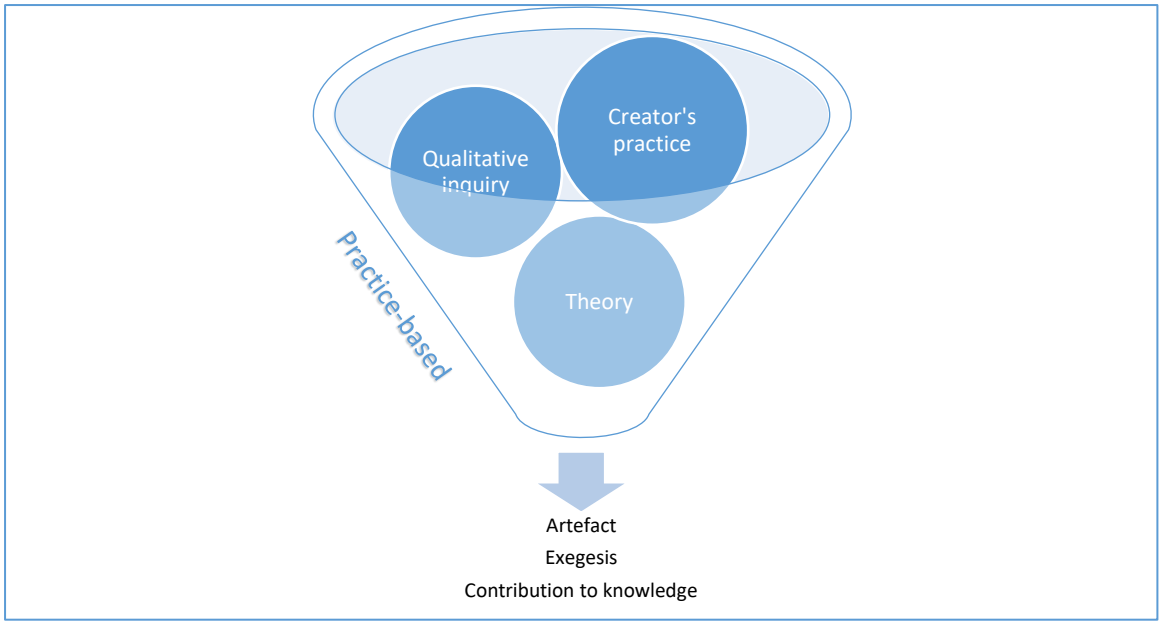

Figure 1: Methodology - Practice-based informed through qualitative inquiry

I chose this methodology over the traditional approaches of observation, action research and experimentation. While qualitative inquiry has observational elements within it, this study observes participants whilst they are being interviewed and when they are experiencing the Island. Observation alone cannot provide insights into how participants view their masculinity after experiencing the Island; a qualitative approach will uncover these views (Hammarberg, Kirkman and de Lacey, 2016). Action research is iterative problem-solving (Koshy, 2005) and cannot capture insights that emerge from a practice-based approach, which is suited to the novel nature of this study. An experimental approach presumes enough

knowledge exists about a topic to form a hypothesis. This study is novel in applying the emergent media of VR to VPPs, as such it's creating this prerequisite knowledge for an experimental approach. Establishing a hypothesis at the beginning of the study is therefore problematic; establishing such an experimental approach using the outputs of this study does align with research practice, where a qualitative component informs an experimental quantitative study (Agius, 2013). To gain a deeper insight into the methodology I have chosen, I will detail the rationale for using a practice-based approach then the qualitative interpretative approach employed.

Practice-based

I adopted a practice-based approach for this study because I needed a methodology that could be flexible enough to allow for and support:

- a qualitative research component to allow for research questions; (McNamara, 2012),
- participant co-creativity and evaluative components, which are elements of a heutagological approach (Narayan & Herrington, 2014);
- creatively exploring and experimenting with a new media form (Holmes, 2006), to create "understanding that originates in and from practice" (Bolt, 2006, p3);
- a reflexive component (Sullivan, 2005, p.6); and
- a conceptual, critical based perspective as part of the exegesis "concerned with the relationship between theory and practice" (Smith & Dean, 2009, p.5), in this case, the theoretical constructs that underpin VPPs and the emerging theory of VR.

Practice-based PhDs are more common in the arts field (Candy & Edmonds, 2018) and considered "a recent arrival on the research landscape" (Smith & Dean, 2009, p222). Monash University's 'SensiLab' defines these types of PhDs that include creating digital artefacts –(films, VR, and an accompanying exegesis), with a societal focus, as a 'new form of PhD' ("PhD at SensiLab - SensiLab", 2017). Importantly, practice-based PhDs are flexible, providing they meet the requirement of a significant original contribution that "enhanc[es] artistic practice in a way that contributes to that practice and to the intellectual discourse of the field" ("Doctor of Philosophy – Flinders University Students", 2020). Moreover, the contributions to knowledge from this study emerged from experimentation and reflection upon practice and the outputs of the traditional qualitative research. Therefore, I needed a methodology that could be flexible enough to accommodate the different ways these contributions emerged. I chose this methodology for this research project because, as Arnold (2012) puts it, there is "no single model of practice-based research" (p.19), and this study draws "first, and foremost research, but is conducted through exploration in creative practice" (Skains, 2016), and is also informed by qualitative research. The creative practice of producing the Island, has generated new insights that, while different, are complementary to traditional research methods (Smith and Dean, 2009), in this case, a qualitative component.

Qualitative co-creative approach

I chose a qualitative approach to inform the Island because of the following:

- I needed to understand the masculinity of young men in the Adelaide area to make the Island experience meaningful to them because masculinity is a situational, fluid, social construct (Connell, 1995). Using this understanding allowed the learning content embedded in the Island to be created so that is is relevant and engaging to young men and the masculinity they hold.

- To help answer the research questions, I also needed to understand young men's experience or perceptions of antagonists in order to re-create an experience they feel they might encounter, thereby providing a realistic scenario to practice de-escalation strategies. Furthermore, I needed to understand young men's reflective practice to create a place where they could reflect upon their masculinity as a transformational aid to explore whether VR can be an aid to transforming young men's masculinities.

  A qualitative approach drawing from interviews with young males allowed the gathering of such information because this research paradigm assumed that there are multiple realities and every individual experiences the world differently depending on their life and societal co-constructed experiences (Lincoln, Lynham, & Guba., 2011). This co-creative approach is similar to the self-directed heuatgological approach outlined by Hase and Kenyon (2000) in which learners are "the major agent in their learning, which occurs as a result of personal experiences" (p. 112). This study explores using VR to create these personal experiences. I also argue that this qualitative, part-heutagological approach is well suited to the emerging paradigm of VR, where participants have agency in determining what, who and how they interact within a virtual environment and thereby what they learn from the experience; self-directed learning.

  The co-creative and practice-based methodology I have used for this study reflects its interdisciplinary nature and is different to more arts- and practice-based studies because of the qualitative research components needed to help co-create and evaluate the Island. This methodology allowed me to adopt the role of practitioner, researcher and theorist to create a written scholarly critical dialogue between the form – VR and 360 film – and the content: the Island (Brabazon & Dagli, 2010; Sullivan, 2005). This was supported by the answers to the research questions to create this study's original contributions to knowledge, as described in this exegesis.

Structure of this exegesis

This exegesis is split into three parts: Part A: the Context; Part B: the Island; and Part C: evaluation, findings and conclusion. I have chosen to present this exegesis in this partitioned manner because this study is complex and breaking down each major section will allow for a clearer understanding of how the contribution of this study was created: from practice insights and qualitative research, by allowing each substantive part of the study to be explored in part without excessive overlap from the others, notwithstanding the narrative of the study which spans all three sections. Figure 2 provides an overview of the stages of the production of the Island, and what processes and/or tasks were employed.

The creation of the Island had four stages: formation; prototyping; iterative trialing and amending; and evaluation stages. Qualitative interviews – co-creating and evaluation – were employed during stage 1 (formative) and stage 4 (evaluation). The formative stage (stage 1) was informed by the results of 14 qualitative interviews, theoretical frameworks, the educative approach taken, my practice, and a pre-prototype concept. Stage 4 drew from qualitative interviews after a sample of 13 participants experienced the Island, and was supported by a questionnaire which determined how immersed they were during the Island experience in order to ensure participants were immersed enough for them to evaluative the Island, with a further 'reflective' interview a day or so later.

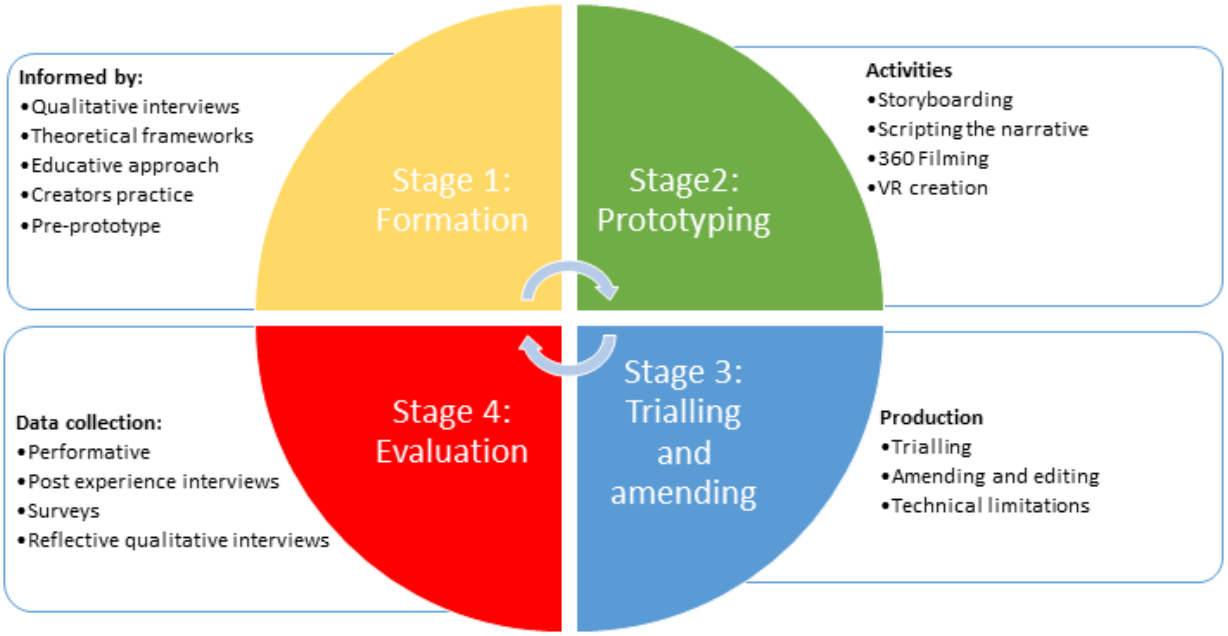

Figure 2: Stages of the Island creation and evaluation

I have outlined the contents of each stage and chapters of this exegesis below to provide a clear overview of this study.

PART A has three chapters:

- This introductory chapter which sets the scene for the study, its context, background, purpose, research questions, methodology and my practice.
- The second chapter scaffolds the reader in gender transformational violence prevention programs, their contents and basis in critical masculinity theory. It continues with a basic review of VR and 360 film and finishes with a review of heutagogy; self-directed learning for a digital age (Blaschke, 2018; Blaschke & Hase, 2015). Reviewing these contents acts a short, traditional literature review – detailing the conceptual frameworks used in this study – although VR and 360 film are emergent technologies with as-yet more grey literature than formal publications to describe and support their use in this study.
- The third chapter provides an in-depth discussion between the form – VR and 360 film – and the content of this study: the Island as VPP learning content. This includes how I created the Island concept, how the

theory embedded in VPPs is used, and the transformative component included in the pre-prototype design. I use a sculptor as a metaphor of creating a clay statue, as an analogy of how I explore and use the tools of VR to create a pre-prototype concept. I also discuss some of the content constraints and finish the chapter with my reflections on the use of avatars and 360 film and what I have learned by exploring how to use them. This chapter is similar to more arts-based exegeses because it focuses on the form, content and creator's approach.

Part A of this exegesis establishes the context of this study by pulling together formal theory with the application of VR and 360 film to aid the creation of the Island.

PART B has two chapters, the contents of which matches stages 1, 2 and 3 of the 'Stages of the Island (Figure 2) creation and evaluation.

- Chapter 4 details how the Island was co-created and includes the formal qualitative component and research outputs.
- Chapter 5 describes how and, importantly, why the Island and its contents were created and how learning content was formulated and expressed in the VR environment. Each scene has a link to a 'fly through' video of the Island that does not need a HMD to play and can be played on most media players. The chapter completes with the production and creative decisions made after trialling the Island, and the insights gained from practice.

PART C contains the final chapters of this study and matches stage 4 of figure 2, 'Stages of the Island.

- Chapter 6 discusses the results of the evaluation of the Island, where a sample of young men experienced the Island, and subsequently undertook an immediate post-experience interview, and a survey to determine how immersed they were in the Island and a more reflective interview a day or so later.
- Chapter 7 discusses the findings of the study, answers the research questions, and contains the study's contribution, including new insights and new theory to the creation of VR learning experiences that encourage young males to critically reflect on the masculinities they hold. The chapter completes this exegesis with my concluding thoughts on the role of VR and 360 film in transformative education, and points to further areas for research.

The structure of this exegesis is constructed as a linear narrative, to aid the reader in navigating this complex study, which includes four data gathering points, analysis, my practice, and synthesises the research findings with the insights from my practice to create the contributions from this study. This exegesis explicitly links to the Island artefact and clearly discusses the research, and my practice – both of which have informed contributions to this study – thereby addressing known weaknesses of practice-based exegeses (Brabazon, Lyndall-Knight, & Hills. 2020).

Chapter 2: Founding concepts

This chapter explores the theoretical and conceptual frameworks used in this study. To start to understand how VR could be used in VPPs, it's necessary to understand the relationship between violence, masculinity and how masculinity theory is used in VPP curricula. I start with a short discussion on interpersonal male-on-male violence, then review a sample of VPPs that seek to transform young men's views of the masculinity they hold. I then briefly review the relevant masculinity theory literature which is used to inform VPPs, and then introduce VR, starting with immersion, presence, empathy and perspective-taking as unique properties of VR, followed by the application of VR to education. I also review heutagogy, which is a learning methodology suited to self-directed learning in the digital age which employs critical reflection as an aid to transformation (Hase & Kenyon 2000; 2003; Narayan & Herrington, 2014). I pull these theoretical frameworks and concepts together to create the argument of this study, which is exploring the use of VR as a tool to create authentic, immersive learning experiences and exploring how VR could encourage critical reflection in young males concerning their masculinity. This chapter describes these founding concepts and creates a warrant for exploring the use of VR as a learning content to support youth male VPPs.

Interpersonal male-on-male violence

The causes of interpersonal violence are complex. Some essentialist scholars argue that biological, genetic factors individuals inherit predispose them to violence, which ignores how widespread the variant forms of a gene (alleles) identified with violence are. Many men carry these genes, yet most men are not violent (Reif et al., 2007). Schaffhausen put it this way "while there are many biological factors associated with aggression, their predictive value remains still quite low. Thus, it seems the best road to reducing dangerous kinds of aggression is learning more about the factors that shape aggressive behaviour" (Schaffhausen, 2006, p1). Therefore to understand why young male-on-male violence occurs, we need to understand the way men see themselves as men; their masculinity. Masculinities are formed as young men grow up and negotiate society around them; their relationships with peers, and their school and home lives (Messerschmidt, 1997). Male-on-male violence is associated with the sorts of masculinities that inform their own masculine practices and performances (Tomsen, 1997; Polk, 1994; Connell, 1991). Research suggests that violence committed by young males at the interpersonal level is often part of a hyper-masculine performance (Beesley & McGuire, 2009). In Violence: A Microsociological Theory (2008), Collins describes different aspects of this performance: fair fights, honour codes, recreational violence, moral holidays, sports violence, and antagonistic identities that define individual violent occurrences. Importantly, he describes the body language of young males when they respond violently to being called 'gay', having their 'honour' challenged, or defending another individual. Moreover, he describes males resorting to bullying or using violence as a performative hyper-masculine practice in front of their mates, some even using violence as a form of exciting entertainment in itself. There is a link between hyper-masculine males and violence (Beesley & McGuire, 2009; Jewkes et al., 2015). Hypermasculinity is constituted by dominance, control, vulnerability

and affinity; it is a complex set of human and cultural relations, and an extension of the male provider role (Herek, 1987).

Importantly, men's public violence, while performative, is often part of the fratriarchy of a group of males who adopt the values of hypermasculinity while also valuing mateship and honour (Jackson-Jacobs, Curtis, 2013; Tomsen, 1997, Copes, Hochstetler, & Forsyth, 2013; Anderson, 1999). This male-to-male violence is nested within male cultures of fratriarchy that include drug and alcohol use, the performance of strength and aggression, objectification of women, and an emphasis on rivalry, honour and mateship (Jackson-Jacobs, Curtis, 2013; Tomsen, 1997; Higate, P. 2012).

Violence experiences for young males mostly occur around night-time economy entertainment venues like pubs, hotels and clubs (ABS, 2015). Studies by Homel and Thompson (1995) and Taylor, Keatley et al. (2017), identify these situational factors that contribute to violence. Factors they identified that contribute towards violence include the venue itself as 'low-comfort' and employing aggressive staff/bouncers. Patrons are drunk, bored, and strangers to each other. Violence is often triggered by the refusal of service to already intoxicated clients. (Home & Clark, 1995; Taylor, Keatley et al. 2020).

Male-on-male violence occurs because of unhealthy masculinities that young people hold, such hyper-masculinity and violence is expressed often as a drunken performance in front of mates, and is more likely to occur in certain bars and hotels, with aggressive bouncers, where drunk, hyper-masculine males are refused service. Violence has been recognised as a societal ill, and governments and private organisations have used education as a means to counter it, because young men's masculnities can change and are fluid (Connell, Hearn & Kimmel, 2005), therefore education can foster more healthy and non-violent masculinities.

Violence prevention programs

During the 1980s, the first domestic violence prevention programs emerged from America based on the feminist Duluth model, which argued that gender inequality explains violence towards women. In Australia, state and federal governments have responded to the issue of community (public and private) violence as a community health issue by funding agencies and community groups to run VPPs. Australian men's behaviour change programs were built upon the Duluth model by including elements of Jenkin's model from the Dulwich Centre in South Australia and cognitive behavioural therapy approaches; these programs' primary aim is to reduce domestic violence (Jenkins, 1997, Pence & Paymar, 1993; Brown, Flynn, Fernandez, Clavijo, 2016). They focus on gendered violence such as the 'Respectful Relationships' program (State Government of Victoria, 2017), and there has been less attention given to male-on-male violence prevention (McPhedran and Eriksson, 2017). The programs designed to help reduce domestic violence (DV) contain significant amounts of knowledge that can be used in male-on-male violence prevention programs because male-on-male violence has an intimate relationship with violence against women (Flood, 2013). However, there is a significant difference, that needs to be brought to the fore: women mainly

experience violence from men they know and in domestic settings, while men experience violence from other men who are often strangers, and mainly in the night-time economy (ABS, 2015).

Drawing from health practice male-on-male violence prevention programs can be divided into three categories: primary programs that address violence prevention in the general community and seek to engage young men who might have or might not have experienced violence in their lived experience; secondary violence prevention programs that target individuals who are at risk of or have perpetrated violence; and tertiary programs which are often mandated for violent, incarcerated perpetrators.

Measuring the success of VPPs is difficult. Until recently, there has been a dearth of male-on-male VPP evaluations, due to the lack of programs. However, recent quantitative and qualitative evaluations of both male-on-male and DV programs point to philosophies and curricula topics that help reduce violence, allowing programs to be delivered that are evidence-based.

The following review of the elements of more effective VPPs and their philosophies, content, design and evaluation (Table 1: Review of VPP strategies), draws from the following sources:

- Australian programs reviewed directly and as part of meta-reviews include the AFL's Respect and Responsibility Program, Respectful Relationships, LOVE BiTES, MATE, Communities that Care.
- International programs that include multi-media approaches such as the 'The Mask You Live In', 'The Macho Factory' and 'A Call to Men'.
- The Meta-Synthesis of Interpersonal Violence Prevention Programs Focused on Males (Taliep, et al., 2017).
- This review highlights the approach of VPPs in attempting to foster in young males inclusive, non-violent and positive masculinity (positive masculinity is a constructive, peaceful way to relate to others and characterised by non-violence, gender equity, resilience and emotional responsiveness). Moreover, VPPs that seek to transform gender roles and promote more gender-equitable relationships between men and women, are, according to the World Health Organization and leading scholars, associated with a greater reduction in violence than those programs that do not include such an approach (WHO, 2007; Flood, 2015). These gender-transformational programs have the following attributes: multiple sessions; community buy-in; interactive elements; cultural relevance; group learning; positive masculinities; and reflective elements. Table 1 summarises these strategies and program elements and the literature that supports their use.

Table 1: Review of violence prevention program strategies

Strategy	Description	Reviews
Multiple sessions	Short multi-session interventions lasting only a few months can reduce violence among a universal audience of youth.	Fagan & Catalano (2012) Thompkins, Chauveron, Harel, & Perkins (2014) Finkelhor, Turner, Shattuck, & Hamby (2014)
Gender transformational	Interventions with men and boys address masculinity; they explicitly address the norms, behaviours, and relationships associated with ideals of manhood, including positive masculinities.	Taliep, Lazarus, Naidoo (2017) Jewkes, Morrell, Hearn, Lundqvist, Blackbeard, & Lindegger (2015) Jewkes, Flood, & Lang (2015) Flood & Dyson (2005) World Health Organisation (2007) Flood (2006)
Social skills	Training including conflict resolution and bystander strategies.	Thompkins, Chauveron, Harel, & Perkins (2014) Shapiro, Burgoon, Welker & Clough (2002) Flood & Dyson (2005) Flood (2006)
Understanding emotions and emotional regulation	Understanding self and anger, regulating your emotions, understanding others emotions and empathy for victims. Build young men's reflective capacities through mindfulness associated with self-regulation to mitigate conflict and promote peace and safety.	Taliep, Lazarus, Naidoo (2017) Flood & Dyson (2005) Flood (2006)
Relevant and contextualised to the local community	The local cultural context is discussed and the situations and places in which young men might find themselves is part of the program.	Taliep, Lazarus, Naidoo (2017) Flood & Dyson (2005) Flood (2006)
Pedagogies that include interactive elements and opportunities to practice nonviolence	Pedagogies commonly employed include 'role-plays', discussion of video clips to aid young males in understanding the precursors to violence, and practice of deescalating potentially violent situations. The use of multi-media content is popular with participants.	Taliep, Lazarus, Naidoo (2017) Shapiro, Burgoon, Welker, & Clough (2002) Flood (2006) Finkelhor, V., Turner, Shattuck, & Hamby, 2014).
Reflection	Young men are encouraged to reflect upon their future and alternate ways of being a man.	Taliep, Lazarus, Naidoo (2017) Flood (2006) Jewkes et. al (2015)

Gender transformational VVPs address masculinities by "changing the way men see themselves as men and the resulting gender practices, including the use of violence" (Flood et al., 2015, p1583). That is, they explicitly address the norms, behaviours, and relations associated with ideals of manhood and ask participants to question their own violent and non-violent masculinities (Flood & Pease 2009; Jewkes, Flood & Lang, 2015; Taliep, Lazarus, & Naidoo, 2017). This gender transformational approach is important to

this study as it provides evidence to support creating VR content that draws from these more successful programs. Moreover, this review points to other known transformative elements such as critical reflection (Mezirow, 2003).

In VPPs that encourage participants to shift their thinking regarding masculinities and what it is to be a man (gender transformational), participants often watch video clips and/or participate in role plays, which requires them to act or think about an action in response to scenes presented, described or acted out. These scenes may or may not include a potentially violent situation and illustrate the environments, situations and build-up to violence. Participants are then required to reflect on what sense they made of this experience, how they responded, how they might respond in the future, and what it is to be a man in these situations. The use of reflection on masculinities as an aid to transforming participants is supported with evidence, "when interventions are with individual men or groups of men, its value [hegemonic masculinity] is to surface (and then shift) values and attitudes and provoke reflection on behaviour" (Jewkes et al. 2015, p117).

Gender transformational VPPs seek to change the way participants view their own socially constructed masculinity as well as that of others. To do this they address cognitive, affective, and behavioural domains – what people know, how they feel, and how they behave (Flood and Dyson, 2005), and use critical reflection to encourage change.

Young men's VPPs can be gender inclusive or exclusively male, supported by leading researchers such as Michael Flood, due to the unwillingness of males to disclose masculinity problems around violence, sexual and domestic violence, power and domination. These programs directly address the issues of socially constructed masculinities, though deconstruction and reconstruction of program participants' masculinities.

Deconstruction assumes and unpacks socially constructed masculinities, where masculinity is associated with power, domination, privilege and patriarchy (Connell, 1995). These masculine traits are seen as causes for different types of violence – sexual, domestic, and against other men –thereby helping men understand these masculine traits' problematic nature.

Reconstruction builds upon this approach to foster and reconstruct pro-social masculine norms that include respect, inclusiveness and non-violence. Combining these two approaches into a social reconstruction method attempts to make social change agents of participants, where they attempt at the meso level, through education, to transform society (Shiro, 2013).

Two tools for use in deconstruction and reconstruction approaches are dominant stories and counterstories. Dominant stories within cultures produce stock, historical truth stories, (Tate, 1997; Yosso, 2006), which might be the dominant cultural story of men being stoic, in control and aggressive, and which are passed on, for instance through contemporary media or sports cultures. A foil to these culturally dominant stock stories are the counterstories that disrupt these stock stories, which might be, for example,

caring masculinities, or masculinities that value other traits such as study, intellectual pursuits or non-violent sports.

The dominant story of masculinity and violence is of stoic or angry men; the dominant story of empathy is essentialist in either having this trait or not. The counterstory to both these is that empathy can be fostered in individuals breaking the binary of only stoic or angry men. Empathy is used in violence prevention, where victims and their stories are presented, encouraging an empathetic response in males as a means to help reduce violent behaviour (Salazar, 2014; Flood, 2006). Using empathy in violence prevention can be part of a social and emotional learning strategy that includes self and social awareness; responsible decision making; management of self; and relationship skills. Social and emotional learning can help men deconstruct their barriers to more healthy masculinities (McKenzie, Collings, Jenkin, & River, 2018).

Participants in VPPs are also provided with strategies to help them deal with potential aggressors. These include understanding the violent person, and reducing the risk of and dealing with the violence itself. An example of such a program is 'The Macho Factory' developed by Amphi Produktion (www.machofabriken.se/-informationssidor-/in-english/).

For VPPs to be meaningful to participants, it is important that they are socio-culturally relevant to individuals undertaking the program. Young men's masculinities are formed at the nexus of masculine cultures experienced where men meet: home, school, sports clubs and in public places (Connell, 1995). This conception of masculinity formation also leads to the argument that emergent masculine cultures will be different at different schools or neighbourhoods, and that masculinities are somewhat deterministic. An example of how VPPs can be customised for a culture's specifics is the Swedish 'The Macho Factory' where language and the dominant societal culture of young men match the 'actors' and their stories (Flood, 2015).

There are a number of online programs and resources tend to be US-centric, embedded in urban, black culture and which use role models drawn from basketball and American football; sports and role models who Australian youth are not familiar with. Contemporary programs, such as the US-based, 'A Call to Men' program, teaches young men that society creates a limited version of masculinity for young men, which limits their views and attitudes to what it is to be a man (Porter, 2010).

In 2018, a study of young men in Australia found that the attitudes and beliefs that the US, UK and Mexican 'Man Box' program reports on (Heilman, B., Barker, G., and Harrison, A. (2017) are strongly present in a sample of 18- to 30-year-old men.

> *The Man Box is alive and well in Australia today. The majority of young men agree there are social pressures on them to behave or act a certain way because of their gender.*
>
> *The majority of young men surveyed disagreed with the Man Box beliefs. But there is still a large number who agree with some of the beliefs that make up the Man Box, including being strong, not showing vulnerability, always being in control and men being the primary providers at home.*

> *Living up to the pressures of being a 'real man' causes harm to young men and those around them, particularly women.*
>
> *Young men who most strongly agree with these rules report poorer levels of mental health, engage in risky drinking, are more likely to be in car accidents and to report committing acts of violence, online bullying and sexual harassment.* The Men's Project & Flood (2018)

The metaphor is that of a box trapping men in and restraining them. As part of their transformational program, young men are challenged to break out of the 'Man Box' and the limited hegemonic masculinity it represents, so young men free of the 'Man Box' can envisage themselves adopting a masculinity that is no longer limited by the box. In a similar vein is a program called the 'Mask You Live In' in which the metaphor (a mask) constrains young men to wear and adopt the hegemonic values of this mask. Breaking free of the mask by metaphorically taking the mask off encourages young men to see themselves and their masculinity in different ways. The mask is a useful metaphor as it talks to young men about their masculinity being hidden and the mask as masking their emotional selves in a fixed expression, no matter how emotional the situation young men face. The mask provides a clear link between society's expectations of men not showing emotion, and being stoic as a marker of masculinity. A young man accepting the mask as a representation of society's orthodox masculinity values provides a point at which this masculinity can be externalised. A process used in narrative therapy with perpetrators of domestic violence (White & Epston, 1990) encouraging them to reimagine their future masculinity.

> *Externalising locates problems not within individuals, but as products of culture and history. Problems are understood to have been socially constructed and created over time. The aim of externalising practices is therefore to enable people to realise that they and the problem are not the same thing.* (Russell & Maggie Care, 2004)

Both of these programs, the 'Mask you live in' and 'The Man Box', are web-based and focus on a curriculum that contains ideas drawn from Connell's (1995) work, which is grounded in feminism, and alerts young men to ideas of male power and privilege, unrealistic media representations of young men, violence and bullying being part of a controlling and dominant masculinity, and young men not able to distinguish between societal expectations and their own needs of masculinity expression, thereby forcing compliance to a strict hegemonic orthodoxy. Intersectionality between poverty and violence are also explored in these programs where young men can attain a hegemonic legitimacy through exercising violence and aggression – which is available to lower socio-economic males rather than achieving legitimacy through working, education and mastery of a skill or trade which routes are not as readily open to disadvantaged young men.

These programs also provide resources for other trainers and organisations to adopt and use, including curricula, DVDs, webinars and PowerPoint presentations. However, while these programs cater for US-based, urban, young men's organisations, they are unsuited to Australian programs, where local cultures and cultural experiences are very different, hence their different masculinities (Connell, 1995).

Masculinities

Gender transformation programs are informed by and draw from masculinity theory. In 1995, the Australian sociologist Raewyn Connell, building on the existing scholarship of masculinities, gender and power, produced a theory of masculinities that is now widely adopted in sociological studies (McCarry, 2007). Connell and James Messerschmidt refined this theory of masculinities in 2005, arguing that "masculinity is not a fixed entity embedded in the body or personality traits of individuals. Masculinities are configurations of practice that are accomplished in social action and, therefore, can differ according to the gender relations in a particular social setting" (Connell & Messerschmidt, 2005, p859). A principal idea in this approach to researching masculinities is the idea of hegemonic masculinity. Hegemonic masculinity describes the widely accepted custom of being a man in society. Hegemonic masculinity is the dominant form of masculinity in any given situation and is sustained through the collective relations of that ideal of manhood. Hegemonic masculinity is used to describe what men do, and the strategies and practices they adopt to maintain dominance, individually and collectively. Broader relations of hegemony sustain violence, domination, control and dominating practices of masculinity. Connell (1995) describes four categories of masculine practices:

- Hegemonic masculinity defined as a practice that legitimises men's dominant position in society and justifies the subordination of women and other marginalised ways of being a man.
- Complicit masculinity practices are those masculinities that benefit from the advantages of male power in society and specifically over females while not "rigorously practising" hegemonic masculinity.
- Subordinate masculinity, seen as feminised at "the bottom of the male gender hierarchy" (Connell, 1995, p79).
- Marginalised masculinity relates to a broader societal issue of class and race marginalising males from their traditional roles of power and the authority of the context of the male's social group.

These relations of masculinity produced 'masculinity politics'; the ongoing contest across and between men for the ideal expression of manhood, and the maintenance of male dominance. According to Connell, masculinities are multiple, and, therefore, hierarchical; some forms of masculinity are deemed more culturally legitimate than others. Masculinities are collectively and actively constructed; they are cultural and corporeal, lived in and through the body.

While Connells's (1995) gender theory provides a lens through which to look at the relationships between men from the perspective of dominance and subjugation of women, there are several post-hegemonic critiques. Principle among them is 'inclusive masculinity' theory where Anderson and McQuire (2010) describe the greater societal acceptance of gay males. This is based on their research into traditional hegemonic environments of rugby in 2010, rather than when Connell wrote his 1995 gender theory. They continued this theme by revisiting gay soccer players' experiences in 2018, and these papers supporting their critique of Connell and their 'inclusive masculinity' model – which undermines a tenet of Connell's

(1995) construction – where gay males are seen as more female and at the bottom of the subordinated category.

Moller's (2007) critique, 'Exploiting Patterns: A Critique of Hegemonic Masculinity', suggests that Connell's framework "seeks to establish particular modes of enquiry, and a specific set of arguments" (p. 264). The effect of which is to limit researchers to thinking within Connell's framework, and that the framework itself "lacks nuance and [is] incapable of understanding the messy construction of peoples lives" (p. 270) and excludes "practices, statements and feelings" (p. 268) that do not fit into Connell's hierarchy of relationships.

Andrea Wailing (2018), goes further when discussing post-hegemonic critiques, herself critiquing the new models of masculinity as naming a new type of masculinity whenever men do not fit into a particular model. These include: Anderson's (2009) inclusive masculinity; mosaic masculinity (Coles, 2008); and hybrid masculinity (Bridges and Pascoe, 2014). Similarly, she critiques types of masculinities that describe groups of men and their practices, including the Sensitive New Age Guy, the New Man, the Metrosexual and types of masculinities, as hard, soft heroic, caring and hyper. She says these models do not address how men reflect upon such masculinities and say they neglect men's agency, subjective experiences and reflexivity. Moller (2007) is concerned with the researcher's refusal to admit their place in the hierarchy and the benefits received from hegemonic masculinity itself. Although he does accept the use of Connell's framework for situated privileged masculinities, seeing its usage as producing "thin readings and boy's and men's power" (p. 274).

While there are many critiques, Connell's work still underpins VPPs. This study employs Connell's (2005) view of masculinities, as a theoretical framework, where masculinities are variable, changing, situated and able to transform (Connell, Hearn & Kimmel, 2005). Furthermore, Connell's (2005) theories do underpin VPPs and use hegemonic masculinity as a framework for analysing masculinities (Flood, 2015). This study assumes that men are 'agential' and have the power within them to shake off the masculinity that has been imposed upon them by society, peers and families and defines masculinity not as a problem, something set in stone, but as a practice of young men 'doing' masculinity, they are agents in their practice choices (Waling 2019), thereby able to change. Furthermore, while hegemonic masculinity is used to analyse masculinities at the global level and used to explain how social institutions and social groups at the meso-level legitimise masculinities (Morrell, Jewkes, and Lindegger, 2012), using hegemonic masculinity to make sense of inter-personal level (micro-level) violent practice is troublesome, because while violent masculine practices may or may not be hegemonic, not all hegemonic males are violent (Messerschmidt, 2012). This study will use 'hypermasculinity' (Herek 1987) because of its link to violence (Beesley & McGuire, 2009) as an aid to understanding male-on-male violence.

In this section we have sought to understand the elements of more successful VPPs (gender transformational, address masculinities, use of reflection and externalisation as an aid to transformation), their theoretical basis in masculinity theory, and have uncovered a masculinity – hypermasculinity – that we

can use to make more sense of inter-personal violence. Taking these concepts and framework forward, we need to understand the emerging paradigm of VR, and how educative experiences can be created in such an environment before we start to consider how to create the Island.

Virtual reality hardware and software

This section briefly introduces the hardware necessary to experience VR and the software necessary to create VR experiences. The hardware technology required to experience VR environments is complex and evolving. There are three categories: mobile, tethered and hybrid. Common elements of these systems include a head-mounted display (HMD), which includes audio, and hand controllers. Tethered systems draw from powerful computers via wires that interface to graphics cards and motherboards; an example being the Oculus Rift S (Figure 3) (note that this model is now no longer available with Oculus focussing its efforts on the Oculus Quest). Older systems had external cameras to aid tracking of the HMD and controllers (outside-in) which are now superseded by HMDs with inbuilt cameras (inside-out). Other popular tethered systems include the HTC Vive VR system (Vive.com., 2017). The Vive VR system includes body and hand tracking by using infrared scanning, enabling the user to interact with virtual objects by moving their hands and body.

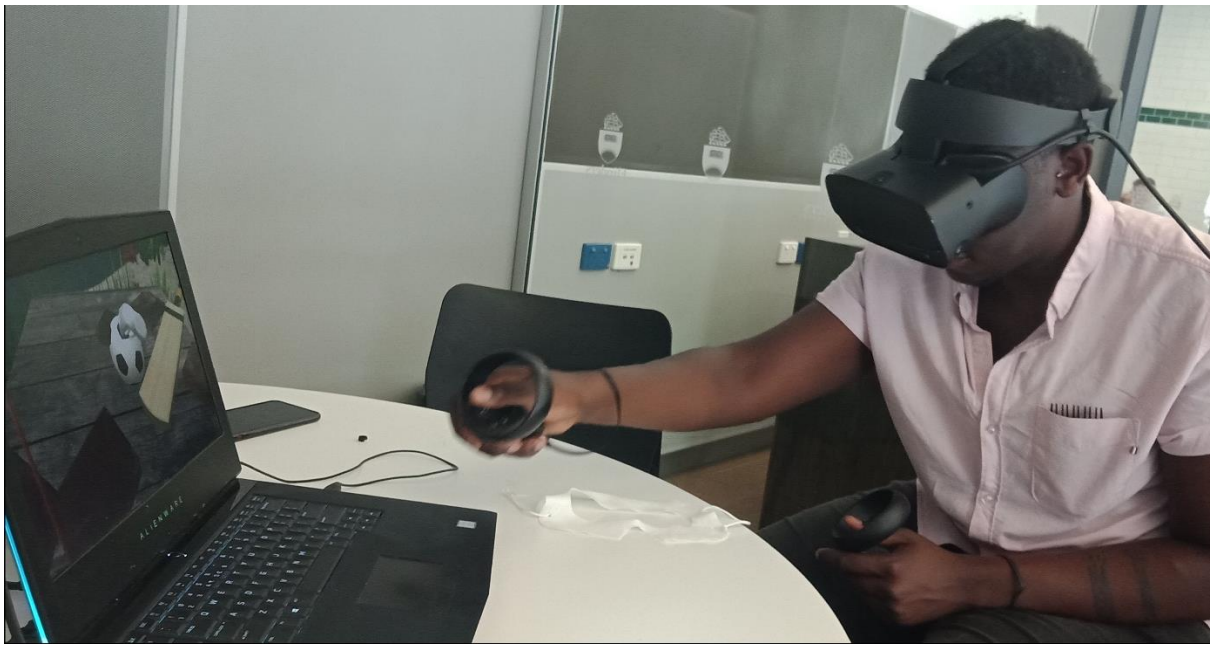

Figure 3: The Oculus Rift S

Mobile systems were based on powerful mobile phones such as the 'Samsung Galaxy Note' (Samsung, 2018), however, they had limited interactivity. These systems have now been superseded by HMDs, which include more powerful integrated processors such as the Oculus Quest (Figure 4). While these mobile systems are not as powerful, in terms of graphics rendering as tethered systems, newer models are popular because they are more affordable and offer similar interactive abilities to tethered systems.

Figure 4:The Oculus Quest

Interestingly the Oculus Quest can also operate as a hybrid HMD, able to be tethered and access the powerful graphics capability of gaming laptops. It also now features hand tracking.

Digital production of VR experiences is complex and requires powerful software run on graphics-based computers to generate the experiences and prepare them for uses. Virtual reality producers often use the same software that game producers use. Examples include the Unreal and Unity (Unity, 2017) game creation software. While these engines provide a wraparound platform, developers also draw upon other packages such as Adobe Premiere for editing of 360 films, the open source Blender 3D rendering engine for creating 3D objects, and complex audio software for creating sound spheres, such as Reaper. Creating a VR experience is complex. The workflow includes different software packages, depending on the project. This complexity is added to by each HMD having different capabilities and requirements. A high-fidelity interactive production aimed for use on the Oculus Rift S will not work on lower capability devices such as the Oculus Go or the Oculus Quest unless tethered.

Virtual Reality

This section introduces VR, and VR production, including 360 film. Joseph Lanier, a Silicon Valley entrepreneur, started arguably the first VR Company, VRP Research, in 1984, which sold VR HMDs and associated devices. He is credited with coining the term 'virtual reality'. Joseph Psotka defines VR as "a simulated environment that looks and feels to some degree like the real world" (Psotka, 1995, p406). What distinguishes VR from film and computer games is the sense of being immersed in a heightened sense of awareness and being there in a virtual world (Psotka, 2013). This being there can include interacting with the virtual world via haptics, body movement, olfaction, eye tracking and ambisonic sound (Steinicke, 2016).

Virtual Reality can be seen as having two genres: a computer graphics interface (CGI); and 360 films. Practitioners argue over the legitimacy of calling 360 film 'virtual reality' due to the limited amount of interactivity a user can have with objects in a 360 film (Lutz, 2016). Users experiencing 360 film can look

around them; the video wraps all around them (3DOF). Interactivity can be added to 360 film by adding in 'hotspots', allowing users to move between pre-determined viewpoints, giving them a choice in a scenario. This is much less interactive than CGI VR where users can look around them and move (6DOF) and interact with three-dimensional objects and characters they might encounter. These interactions can include pushing, holding or driving objects, walking around or possibly holding a conversation with a character, and features interactive choice-points similar to those found in video game design (Fennell 2016). However, 360 film does provide photo-realism compared to 3-dimensional computer-generated environments that are more cartoon-like. Using 360 film is important because it does provide a realistic representation and some researchers link realism with engagement and efficacy of learning (Tashiro & Dunlap, 2007), although this is contested.

Storytelling in Virtual Reality and 360 Film

Storytelling using VR and 360 film requires a different approach from that of game makers or film directors. The notion of presence –what filmmakers call 'suspension of disbelief' – has created a gap, a zone where there is the emergence of a new film grammar. In 360 film, the narrative story is disrupted through participants creating their unique experiences (stories) by choosing where and what they look at within a 360 film experience. A post-structuralist perspective of this disruption is the binary between the creators, the storytellers, and the audience is disrupted (Brabazon, 2017). Users have agency, meaning "the VR viewer is present as an active agent who is involved in the unfolding narrative" (Dooley, 2017, p161), as opposed to traditional film where viewers are passive. This agency is challenging the film industry, which is yet to fully come to terms with 360 video and VR. Director Stephen Spielberg said disparagingly

> *I think we're moving into a dangerous medium with virtual reality…the only reason I say it is dangerous is because it gives the viewer a lot of latitude not to take direction from the storytellers but make their own choices of where to look…I just hope it doesn't forget the story when it starts enveloping us in a world that we can see all around us and make our own choices to look at.* (quoted in Child, 2016)

The audience, in this study's case, young males, create their own unique experience choosing where to look and what objects they interact with, using their agency to become part-storytellers. Another example of this agency is the 'Running of the Bulls' 360 film clip (Running with the Bulls 360 injected, 2017), a still from it is shown in Figure 5: 360 film of 'Running with the Bulls'. Watching this film clip through a HMD places you in the position of the camera; however, this camera is a 360 camera, affording the viewer, the ability to look where they like. They can choose their own story within the experience to look at the bulls or choose to look at other objects.

Figure 5: 360 film of 'running of the bulls'

This screen grammar of narrative VR is evolving and challenging creators. As VR has matured into a recognised media genre, it now attracts creators from media forms such as film, whose focus is more on the humanistic affordances of VR compared to the engineers who were the early adopters (Jerald, 2015). These new creators need to come to terms with the new genre, especially the need to "design for short experiences" (Jerald, 2015, p217) to accommodate viewer comfort and manage the intensity of the experience and reduce the risk of overloading users. Another area of screen grammar challenging to those transitioning from film is the lack of a screen edge. Traditional filmmakers have relied upon the rule of thirds to help focus attention and give a pleasing aesthetic (Murch, 2001). Therefore, as creators, we need to think differently about the approach to creating VR experiences. It is important to draw from experiences of film but adapt to the new medium's requirements. Furthermore, in 360 film production the challenges are also on set, with lights needing to be hidden, the director not able to see the 'live' action, though maybe directing from a phone app. Moreover, creators need to take into consideration what HMD will be used and the dimensionality of the scene, whether this is three- or two-dimensional 360 film. Postproduction includes complex software to stitch the output from more than one lens to create video spheres and the output of multiple microphones to create ambisonic (vectored) soundscapes.

Virtual reality disrupts traditional media storytelling, with some arguing that interactive narrative VR should be considered a form in its own right, like theatre, video games or screen (Aylett & Louchart, 2003). Virtual reality draws from screen and theatre traditions of act structures (Grambart, 2015). Although VR is similar to computer and video games in that the narrative needs to consider user's adjustment to and exploration of the experience itself, this acclimatisation needs to become part of the narrative or a narrative aid (Jerald, 2015; Dolley, 2017). The significant difference is that of interactivity and the dynamic emergent creation of story by the participant rather than the linear storytelling based in the Greek traditions (Aylett & Louchart, 2003).

There is a debate in interactive storytelling about the tension between the narrative and player's agency. This debate is called the problem, Aylett and Louchart put it this way:

> *…on the one hand, an author seeks control over the direction of a narrative in order to give it a satisfying structure. On the other hand, a participating user demands the autonomy to act and react without explicit authorial constraints.*
> (Louchart and Aylett, 2004: 25)

Wood (2016) challenges this binary, taking a Bourdieusian conception of the interrelationship between agent and structure, where each influences and responds to the other (Bourdieu, 1977). Thereby VR creators and users act together more in concert, co-storytelling, sidestepping the 'problem'. However, VR directors need to think differently compared to when directing film. Creating the narrative for a piece is challenging for creators as they also need to direct inside the VR and/or 360 film experience. Agency of users also means that "the audience can ignore your story" (Grambart, 2015). Therefore, creators need to think through where the action is taking place or going to take place and where the user is likely to be looking and if necessary, use flashing lights or audio cues to draw attention to another part of the 360 film sphere, such as looking behind you (Jerald 2015; Edwards 2017). The manner in which VR expresses its emergence as a media form is through the changes to conceptualising traditional film storytelling for VR and 360 film, dimensionality and 360 viewpoints and problems directing both inside and outside of the experience, while keeping in mind the centredness of the experience upon the VR participant.

The user experience: immersion, presence, empathy and embodiment

This section describes the user experience of VR, how users can be overwhelmed by the VR experience, and the emergent properties of immersion, presence, embodiment and empathy. The common factor that ties the attributes of VR together is the sense of immersion or 'being there' in the virtual environment that users' experience (McGloin, Farrar, & Fishlock, 2015). The broadly accepted definition of immersion by Witmer and Stinger (1998) is a "psychological state characterised by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences" (p. 227). Immersion in VR is temporal and linked to a sense of presence (Jennet et al., 2008). Presence is the degree to which participants feel they exist in the virtual environment. When a user becomes present in a virtual environment, a process of embodiment occurs, in which a user's mind creates a 'virtual body' as an analogy of their biological body (Kliteni, Groten, & Salter, 2012; Turk, Bailenson, Beall, Blascovish & Guidagno, 2004). Embodiment might be through an avatar the participant has control over or encouraged where there is no avatar by providing comfort props for the participant. For example, in Figure 6, an office meeting scene I created, the embodiment the 360-camera viewpoint is on an office chair, with a notepad and coffee immediately in front. The viewer feels as if they are there because they are given the visual cues of the perspective of sitting in the chair with a coffee in reach. To some extent they feel they are sitting in the chair and, moreover, I directed the actors to talk to the camera, which encourages viewers

to feel that they are part of the conversation, even if it is impossible for them to converse back.

Figure 6: Office meeting scene

Virtual reality producers often refer to VR as an empathy machine (Milk, 2015). They refer to affective empathy where a VR user can experience the same emotion as a VR character and cognitive empathy where the user can determine the emotions of a character and their likely motivations.

Affective empathy within a VRLE can be a user experiencing the sensory input of another, leading to a greater emotional understanding of the individual's experience. For example, the Autism Association's video (figure 7) illustrates a user embodied in an autistic person's body (Autism TMI Virtual Reality Experience, 2016). Users experience the confusion and frustration arising from the way autistic people experience reality, thereby fostering empathy.

Figure 7: Example frame from the National Autistic Society, the VR video affords viewers the sensory experience of a young autistic person.

Cognitive empathy is the ability to understand the emotions and motivations of others (Eisenberg & Strayer, 1990). An example would be observing the body language of a VR character who indicates an emotional state such as anger and weighing up the likelihood of a violent situation occurring.

The ability to cognitively empathise is associated in some contexts with reduced aggression in potentially violent situations (Day, Mohr, Howells, Gerace, & Lim, 2012). Importantly for this study, Ang and Goh (2010) suggest that adolescent males who can empathise both affectively and cognitively are likely to exhibit prosocial anti-bullying behaviours.

Figure 8: The human experience of entering immersive virtual reality

Figure 8 illustrates the human experience when entering an immersive VR experience. The stages are immersion in the environment, becoming present in that environment and, if available, becoming embodied in an avatar or feeling embodied via props such as seats (where a user's POV is sitting in a chair) (van Loon, Bailenson, Zaki, Bostick, Willer, 2018; McGloin, Farrar, & Fishlock, 2015).

Meeting other characters can afford an empathetic reaction (Milk, 2017), although some argue that empathy in immersive VR experiences is also linked to sensory restriction. The affordance of immersive virtual experiences is unique in enabling embodied perspective-taking, where the POV can be switched between characters and foster empathy. The production 'Party's Over', (Decisions: Party's Over (Jasmine's Perspective), 2018) addresses the issue of alcohol and sexualised violence through the VR affordances of perspective taking and empathy, when viewers can choose which character to be embodied in during the experience (figure 9).

Figure 9: Jaunt VR's interactive perspective-taking production 'Party's Over'

However, for these emergent properties to arise requires production values that keep the 'outside world out' of a VR experience. For example, reducing external sounds else a user's immersion, a sense of being in a virtual environment can be broken (Dede, 2009; Lee, Kim, & Kim, 2017). The overwhelming nature of the VR experience, when users first use VR can be similar, depending on the experience, to the positive activating emotion of awe (Hall, 2016) and risks cognitively overloading users, so they may not always enjoy or learn from the VR experience (Dong-Hee Shin, 2017). A process of onboarding users reduces these risks by introducing a familiar, or limited environment to participants first before the more intensive part of that experience (Jerald, 2015; Dolley, 2017).

Virtual reality is a unique medium in being able to foster a sense of 'being there' and participants feeling that they are experiencing an environment through an avatar of the disembodied camera. Moreover, this sense of being there can include becoming aware of the emotions and possible future actions of others.

Virtual reality in education

Virtual reality is popular with students who see VRLEs as fun, enjoyable and more engaging than other digital learning platforms (Sullivan et al., 2011). Virtual reality can simulate experiences, often more cheaply (depending upon production values) and richly than other currently available methods. For instance, there is no need to travel to experience far away cultures and VR is more immersive and interactive than reading textbooks (Fiore, Harrison, Hughes and Rustrom, 2009). The use of VR in education can support the 2001 update of Bloom's (1956) original learning domains, that of factual, conceptual, procedural and meta-cognitive knowledge (Anderson & Krathwohl et al., 2001). Examples of VR in education:

- a geographic exploratory tool, for instance, the virtual tour of the Titanic (Titanic VR, 2018), which takes students on an undersea adventure. (Figure 10.)

Figure 10: Titanic in VR

- To situate students in experiences specific to the curriculum of skills they are studying; an example being surgical training (Surgical Training in Virtual Reality with Medoptic, 2020) (figure 11). Interactivity is important in an educative experience as it affects users' satisfaction and how immersed they feel in the virtual experience (Mütterlein, 2018).

Figure 11: Surgical Training in VR

- To encourage empathy by seeing through other's eyes; an example is an embodiment in the body of another race (Ip, 2018) (figure 12).

Figure 12: Embodiment in another race

The present use of VR in education is based upon a constructivist educative paradigm, where interactive simulations of the real world encourage deep learning (Dalgrano & Lee, 2010; Duffy & Johanssen, 1992). Students experience the VR objects, systems and characters to construct meaning and knowledge (Dede, 1995). Moreover, learners control their learning; they complete activities at their own pace and make meaning from synthesising their 'lived experience' with new learning. The use of VR in education is becoming more widespread and can provide experiences that go further than exploring hard to reach places; it can encourage an empathetic response in students to help them understand the lives of others (Bambury, 2018).

So far in this section, we have explored VR and 360 film and their unique affordances. We have also reviewed the application of VR to education. However, to be useful for this study, we need to consider how VR could be used as learning content for VPPs. A critical part of successful VPPs is contextualisation to local masculinities and fostering critical reflection. Heutagogy, a learner-centric and transformative approach to education, provides a learning framework suitable for the digital age that includes learner-centric contextualisation and transformation through reflection (Narayan & Herrington, 2014).

Heutagogy, virtual reality and self-directed learning

Heutagogy is a teaching approach for the digital age and emergent technologies, in contrast to traditional teaching practices, which do not leverage the opportunities of new media technologies (McLoughlin & Lee, 2008). Hase and Kenyon (2000) produced seminal work which defined the heutagogical approach point to it being learner-centric, future-focused and transformative. Learners have agency in what and how a topic is being taught, and a role in defining assessments. Heutagogy also includes a reflective component to foster

transformation. Heutagogy draws from a design-based approach where learning designers seek input to the design of learning content (Herrington & Reeves, 2011). It also draws from transformative pedagogies such as those described by John Dewey where learners have the opportunity to reflect on their learning and the manner in which the learning occurred in relation to self (Dewey, 1934). Heutagogy teaches students how to learn and gain the competencies and skills they need for their selected field, a more holistic approach than either pedagogy or andragogy, which can be seen as faculty-centred, student-centred rather than self-directed and transformative (Halupa, 2015).

The process of creating heuatagogic learning content starts with identifying the topic, how it will be delivered, what curricula it is based upon (if any), and what learning objectives are to be achieved. This work is then presented to a sample of learners to work with the learning designers to generate content that aligns with any curricula, break down content into meaningful 'chunks', and generate assessments. Also, a reflective component must be included that provides learners with an opportunity for meta reflection as to what they learnt and how and how this content is meaningful to them.

Narayan & Herrington (2014) proposed heutagological design principles for use in mobile learning, based on McLoughlin & Lee's (2008) learning and teaching processes of participation, productivity and personalisation. Reviewing and amending Narayan and Herrington's (2014) approach by removing its focus on mobile devices, produces design principles that are relevant to producers of educative VR and 360 film experiences, as shown in Table 2: Design principles for a heutalogical approach below. Because a heutagological approach is aligned with a fundamental principle of VR, that of agency and self-direction, where a learner in VR can choose what objects they interact with, where they go and what they experience subject to the limitations the environment or hardware used, these experiences can include those that appear to be be real and granular if created using 360 film.

Table 2: Design principles for a heutagological approach (Narayan & Herrington's, 2014)

	Design Principle	**Curriculum integration**	**How it could be used**
Participation	Design a learning environment that is community driven for social and collaborative scaffolding and learning.	Structure the learning to actively involve the learner in the process through communication, collaboration and content creation.	Pedagogical integration of the characteristics (communication, collaboration, creation and co-creation) identified in the learning.
Productivity	Include activities that encourage student participation in the learning process. Implement them in the solution.	The learner is the main agent in the learning process and learning as an individual or as a group/community.	Explore these opportunities during the design phase and implement them in the solution.
Personalisation	Situate and enable learning in 'real-world contexts' decided by the learner. Create opportunities for learner input and choice in the curriculum.	The learner creates contextually relevant content according to his/her need and knowledge, enabling 'true' collaboration between the learner and the teacher (passive scaffolding). The learner has choice in directing his/her learning path.	Present problems that bridge the formal (in class) and informal (real world) learning gap by enabling learner-generated content and context. Ensuring the design of the curriculum empowers the learner by allowing them to build on their prior knowledge and interest. For example, having the ability to negotiate a project as part of the assessment.

The elements of choice and agency of learners do interface with heutagogy and, subject to production costs, can afford designers and learners when co-designing experiences great creativity. Virtual Reality learning content can draw upon two- and three-dimensional animations and film, affording rich, interactive learning content, limited by the creators' imagination.

This section has introduced VR and 360 film, how they are presently used in education, and, importantly, has introduced the learner-centric approach of heutagogy and presented co-creative design principles that could be used to create VR and 360 film learning experiences. The previous section introduced VVPs and more success elements, including a gender transformation approach and the need to contextualise learning messages in VPPs for local and situated masculinities. This section also discussed the theories that underpin VPPs and a masculinity type – hypermasculinity – that could be used to understand and analyse violence committed by young men.

The argument of this study is that VR and 360 film can be used to create learning content for VPPs, and for this learning content to be transformative – fostering a change in young men's masculinities – it needs to follow heutagoglocigal design principles, including a reflective component. The VR and 360 film experiences created leverage the unique affordances of VR and 360 film and will provide a realistic and authentic environment for young men to safely practice de-escalating an aggressive situation.

This chapter has provided the conceptual frameworks, scaffolded VR and 360 film, pointed to a huetagolocical approach to VR and 360 film production and created the supporting argument of this study. These concepts and ideas need to be understood through the lens of an educative media producer, myself, in terms of application of the VR form and 360 film and content, learning content for VPPs, which is discussed in the next chapter.

Chapter 3: Learning to sculpt Virtual Reality for Violence Prevention Programs

This chapter builds upon the knowledge outlined in chapter 2. It provides an in-depth discussion of the relationship between the form – VR and 360 film – and the content of this study; the Island as VPP learning content. The chapter starts by defining form and content attributes, then explores the original concept's ideation, discussing the 'why' of each element. I use a sculptor metaphor to understand the tools, form, content and creative process of VR and their application to this study. Design principles that this study uncovers/uses are parenthesis coded in this, chapter 4 and 5 then referenced later in chapter 5. This chapter concludes with a discussion of the constraints of the concept and what I have learned about the tools of VR, avatars and producing embodied 360 film clips.

Form, tools, content and creative process

The form attributes, what we can think of as materials if we were a sculptor, used in this study of VR are:

- Participant agency: VR, by its very nature, is agential, with participants choosing how they interact with objects and the environment itself. This participant choice is an attribute of VR. To ensure participants are engaged in a VR experience, it is essential to accommodate this agency or else risk participants becoming bored, which will reduce the efficacy of their learning (Pekrun, 2000).

- Immersion and presence: This is a critical differentiator between VR and other media forms. Participants can become immersed in the virtual environment – providing the VR experience has sufficient production values to 'keep the outside world out'. To some extent, participants feel this environment and what they experience within it is real (Dooley, 2017).

- Perspective-taking: Participants in a VR experience can take different perspectives, such as a third-person perspective controlling and watching a character. Although overwhelmingly VR participants are embodied as a first-person character, inhabiting the body of a character or avatar and act and receive the sensory inputs of this character; a first-person perspective. Moreover, VR can afford embodied perspective-taking where a VR participant can choose or swap the perspective from different characters in the narrative.

- Interactions with objects: Whether this occurs through picking them up, inspecting, holding, drawing, painting, throwing or changing the object's properties itself, speaking or communication with others. Interactions in the virtual world are another difference between VR and other media forms; acknowledging that computer games can be interactive.

- Empathy: The ability to feel others' emotions. Milk (2017) called VR an empathy machine, where fostering an empathetic response in a participant is can be achieved.

- Realism: 360 film provides a form attribute of realism, a first-person embodied perspective places a participant in a real-to-life and familiar or imagined familiar world.

- Interactive 360 film: Provides limited interactivity through menu choices and 'hotspots', and through these choices a branching narrative scene can be created.
- Soundscapes: The use of sound can also be considered a form attribute, as it can guide a narrative scene provoking participants to focus and interact with objects or characters.

The tools of VR

To explore the creative process used in this study, I use the metaphor of the Sculptor, their tools, materials and creative thoughts which guide them. A sculptor uses their hands and palette knives to create, while creating VR is technical and complex, the creative process also uses tools. These tools are the software packages and hardware used to create and present the VR experience. The software used to create the Island included the VR game editor Unity 2018 to create the environment and manage the interaction between the participants and objects/characters and the environment itself. Unity also manages the attributes of objects, for example, in the case of the Island, Unity managed the physic attributes of gravity for objects.

Several pre-made assets were used in the creation of and to populate the Island, some of these objects, such as tents and a shipwreck, were edited using other software including Maxon Cinema4D Version 23.110, Blender Version 2.80, and Paint.NET Version 3.5. Unity 2019 hosted and managed the interactions between 360 film clips including programming scripts which provided a menu system allowing a branching narrative experience to be presented to participants, whereby they make a choice that determined the next scene they experienced. Creating the 360 film clips required the following workflow: filming the clip using an 360 film camera with six lenses and four microphones; importing this footage into the stitching program, which created the 360 film sphere; editing this sphere in Adobe Premier Pro CC Version 12.1.2; and editing the audio in Adobe Premiere Audition CC Version 12.1.2 to create focus points in the narrative, whereby a sound would attract attention to an object or character. Learning content was also created using Magix Vegas Pro 13 for two-dimensional instructive video media, which included flat talking head film and animations.

The content and creative process

Taking the perspective of a sculptor, we have the form and the tools, the content is what we are attempting to create. Looking closely at VPPs, the more successful ones are gender transformational. Drawing from these curricula elements to guide our content, the VR experience needs to include the following: scaffolding of participants into 'different ways of being a man' – breaking the societal imposed orthodoxy of traditional masculinity – drawing from critical masculinity theory; providing opportunities for participants to experience different types of masculine performances, including hypermasculine and complicit masculinities; providing an opportunity to practice responding to a realistic aggressive situation; and, importantly, a reflective component that seeks to foster personal transformation of the masculinity the participants hold.

Using the VR form and tools to sculpt the content requirements produced a number of concepts, which were changed as the form (VR) and its weaknesses or opportunities to provide a more efficacious way of creating that content were explored. In some cases, these changes were due to technical limitations, some aesthetics and other concerns for ease of use for participants. I detail how the original 'ideation' became the initial concept below. This conception was then further amended based on the results of the research (detailed in chapter 4). The creative process is iterative, and many experiments were conducted, especially around trying to include as much aesthetic and narrative components when the VR tools would not readily accept them. An example was the inability to create richer scenes with more narrative elements due to the load Unity placed on the hardware, resulting in stuttering and lower frame rates likely to induce nausea in participant viewers. While creating VR itself is well supported in terms of communities of practice, implementing and coding the experience was challenging. Unity is complex and is itself a work in progress with many new releases and revisions released during this study, often scenes would not import correctly to a newer version, or features would not work in same the manner.

Ideation and construction of the concept VR experience

Virtual Reality itself is a new paradigm in media, drawing from film theory, gaming theory and, when applied to education, it can draw from educative theories such as authentic education, which relies upon places and narratives that participants recognise as either imagined or real. Storytelling ties experience to the participant. Using a storying narrative approach ties the form (VR) and content (parts of VPP curricula) together to create the VR experience, the completed sculpture, for the participant.

Curriculum topics in such VPPs include: challenging masculinities and violence; social skills training such as managing feelings; assertiveness training; encouraging empathy; and violence prevention strategies. Pedagogies to encourage learning from these programs include role-plays, use of videos, group work and participant reflection. An example of such curricula elements is the VPP Boys-talk: a program for young men about masculinities, non-violence and relationships (Friedman, 2001).

The original ideation in the research proposal for this study was for three artefacts that could be used as support resources for gender transformational VPPs. Each artefact might comprise more than one piece or type of VR media, such as 360 film sequences. These three artefacts were tied together as onboarding, challenging and encouraging reflection, with a broad narrative of experiencing and reflecting upon these experiences. This ideation did not contain any scaffolding of participants into other ways of them expressing their masculinities. Nor did this ideation contain or point to any environment, except a cinematic type experience, where a lobby onboarded participants before they experienced aggressive situations and then reflected upon their response.

The initial concept had three distinct scenes: an onboarding experience, an authentic learning experience, and a reflective experience, and these scenes were tied together as a narrative story; a narrative real enough to be pertinent when they were asked to reflect upon the type of man they wanted to become. The first-person perspective (FPV) was intended to leverage the unique properties of VR, specifically that of being

immersed and present in the experience, through "the sense of self-location, the sense of agency, and the sense of ownership of the virtual body" (Gorisse, Christmann, Amato, & Richir, 2017). Moreover, this approach is grounded in constructivist experiential learning (Herrington & Herrington, 2008; Aiello, D'Elia, Di Tore & Sibilio, 2012). Where learning is fostered through directly experiencing a situation, that participant perceives it as a real representation of that situation, which is thereby meaningful to them and provides enhanced relevance through practising responses. Table 3 illustrates this concept and describes the three scenes, their purpose, relationship to a VVP curricula topic, and how these scenes were informed by theory.

Table 3: Overview of concept scenes and relationships to curricula and theory

Scenes	Description and purpose	VPP curricula topic	Informed by theory
Welcoming lobby.	To 'onboard' young males by providing a welcoming, comfortable environment in which young males can explore and interact with objects that they recognise from their daily or aspirational masculine practices.		Game and VR theory regarding onboarding and not overwhelming participants. Masculinity theory regarding objects used to help onboard.
The second artefact contains authentic, challenging experiences that require a response from the participant.	These will include the night-time economy: a pub and nightclub, public transport and house party experiences. Participants will experience noisy, boisterous environments, being pushed, observe reactions to spilled drinks and being 'looked at' and provoked. Not all of the experiences will be violent, though there will be at least one confrontation. Participants will experience the pre-cursors to violence, the antagonist, their body language, and speech. Each experience will have multiple scenes and interactivity as responses to situations and confrontations, including movement to different locations within a scene and choices as responses. There will be both first-person (participant responds) and objective (participant observes) viewpoints. These experiences will be created using 360 film using traditional filmmaking practices mediated for the emerging form of 360 film, include programmed elements, and last no more than five minutes each.	Recognise when violent situations might occur. Participants will experience a confrontation and associated feelings; they will be provided the opportunity to manage their feelings, such as slight anxiety and/or anger activated by the perceived threat of violence. Observe and interact with men exhibiting different masculine practices, including hypermasculinity and non-violent masculinities. Opportunity to practice strategies of non-violence when confronted.	Microsociological theory of interpersonal violence. Night-time economy risk factors. VPP curricula. Masculinity theory. Experiential learning. VPP curricula. VR and film theory.
The third artefact will encourage reflection.	This artefact will encourage young males to reflect on what they have just experienced in the second artefact. 'Flashbacks' of experiences will be used to aid memory. Participants will be asked what they would do differently and what it is to be a man in these experiences. They will also be encouraged to question the exercise of male power and masculine practices they have witnessed and experienced.	Challenging violent masculinities and men's power.	Masculinity theory. Transformational education theory.

Creating a VR concept experience

I took the initial concept, of three scenes, and started to use the form and tools of VR to create the experience. I was guided by a storying approach and wanted to create rich and engaging learning experiences to encourage engagement and critical reflection (Moon & Fowler, 2007). The aggressive scene storyline needed to accommodate practising de-escalation and provide a source for reflection. Specifically, allow for critical reflection by participants on the behaviour of the 'hypermasculine' men who would act aggressively in this scene. I also wanted the narrative to encourage young men to externalise any violent masculinity they might hold, thereby giving them the opportunity, if so desired, to create new masculine spaces for themselves and future selves to inhabit (White, & Epston, 1990). This transformative reflection approach is grounded in the work of Jonh Dewey (1933), Jack Merizow (2003) and Donald Schöns' (1983) 'reflection upon action', in this case, following externalisation reflecting upon future benefits of non-violent masculinity. However, on commencing the creative process, the logic error of not having any scaffolding learning content became apparent; how could young men reflect upon their masculinities if they did not know any other ways of being a man or had not even considered it? Therefore, by drawing from VPP curricula, I decided to create learning content that addressed masculinities. This content aligned with VPP curricula and explained to young men the reasons why men become disconnected from their communities, why some men have a singular way of being a man, how media present men's and masculinities and how these cultural ways of being a man feed into a sense of disconnect from communities, often leading to violence as a performative mark of being a 'man'; a hyper-masculine trait. To create this content, I reflected upon the form and experimented with a speaking avatar; this approach to me was not real. It did not produce a sense of connection with a robotic voice, creating the sort of disconnect between reality and games. Therefore, I asked Associate Professor Ben Wadham, an expert in masculinities and men, to speak to the topic of violence and young men and created a 'flattie' (two dimensional video). I could use the video direct or use the audio and attach it to another object. This approach provided me with scaffolding masculinity content that I needed. Sculpting this content into the experience required a screen that could play flat screen video. I thought about creating an outdoor cinema. Outdoor cinemas and screenings are culturally commonplace in South Australia, so an outdoor cinema screen would be recognisable to participants.

Creating an environment that would onboard participants and their objects yet to be defined, was difficult, I eventually settled on an outdoors area that contained a screen. I experimented with a number of villages, but it was very easy to get lost and lose focus. The environment needed a boundary, and the sea seemed a natural solution, and is also culturally relevant, given that South Australia and Adelaide have an extensive coastline with many beaches accessible from the suburbs. The environment chosen was an island, with a mountain in the middle. I believed that as progressing to manhood is a journey and Australia, like many other colonised countries, started out as frontiers where men could explore, be independent, stoic, tough, aggressive, live as the provider (very much hegemonic and hypermasculine values), and gain riches as they added to the growth of the colony or looking at colonisation through another lens, the exploitation of

Australia. This Australian frontier and colonising fortress masculinities conception drew from the works of Winton (2018) and Volkmann (2001). Downing (2014) talks of these masculine values being exported by 'Restless Men' from the mother country in 'Restless Men: Masculinity and Robinson Crusoe'. These types of masculinities are still represented and present in media and sport (Marks, 2019) in Australia. Figure 13: 'The Island initial concept' shows a representation of the interior of the Island. The Island also included a fishing village, some huts and some wild-life; a goat and two crocodiles. The mountain in the middle of the Island could be readily explored. It included flowers and woods, and climbing on top of the mountain provided viewpoints across the Island and seascape. Adding in wind and movement in the flora gave more realism. My original idea then changed. Rather than having an outdoor metro cinema, that would have been jarringly out of place, I created a screen next to a fishing hut. This screen was large and I programmed it to play on touch, which meant that a participant then had to move back to fully appreciate the video playing. It was during the playback of this video that the performance of the experience started to degrade. I was reaching the hardware limits of the laptop I was using to create the Island and its contents. The scenes were becoming too complex, too many individual items each requiring re-rendering and many moving, for exmaple, flowers and trees blowing in the breeze, and goats jumping on the side of the mountain. Therefore I needed to reduce the size of the Island and rethink how the experiences would build into a narrative. Shrinking the Island, removing the fishing village, goats, crocodiles and many plants improved the performance. However, there was no narrative to guide participants and no connections between the planned experiences: a learning experience, and a 'West End' type nightclub strip that was planned to be on the far side of the Island.

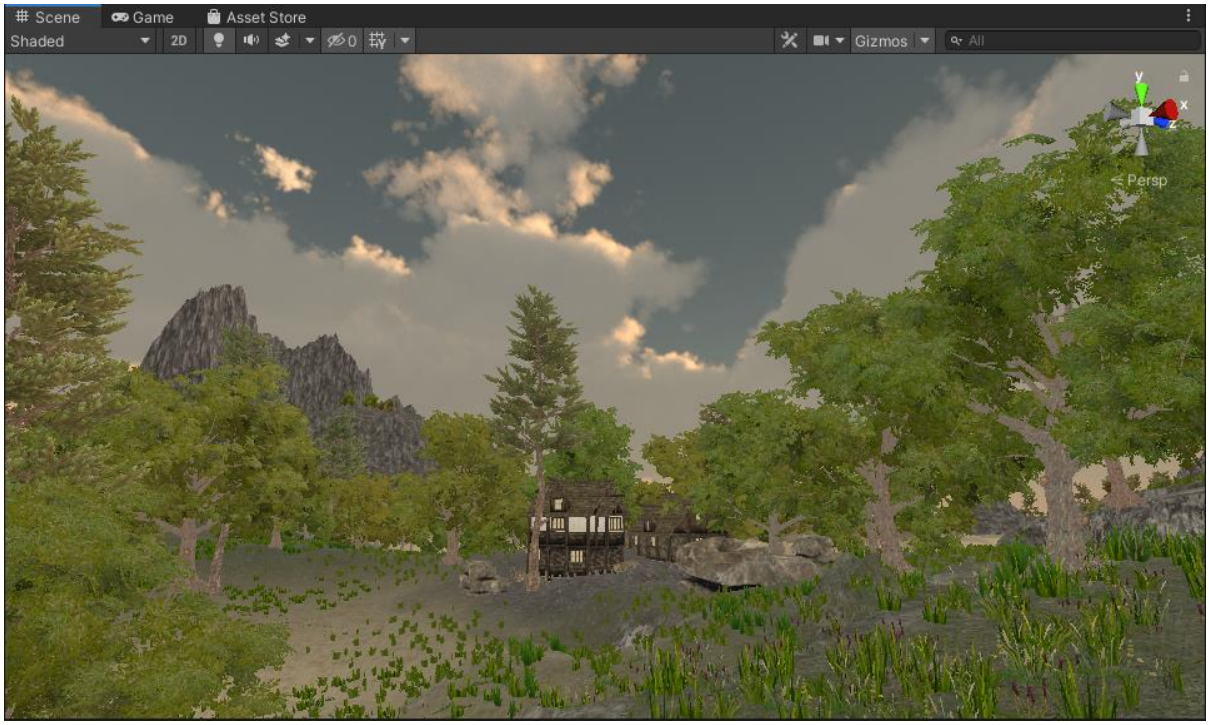

Figure 13: The Island initial concept

To mould a narrative for the Island **[DP1]**, I drew from the concept of the masculine right of passage or, in Austalia for white urban males, the lack of one (Winton, 2018), creating more of a journey to experience learning about masculinities, then experiencing an aggressive scene than trying to make sense of it and a participant's masculinity. Therefore, I decided to use a pathway as a tool to guide participants to these different experiences **[DP2]**, which would lead them up the mountain with experiential stops along the way **[DP3]**. A journey to understand masculinities and to foster improving the masculinity of participants of this experience.

What was missing from this idea was defining the 'aggressive scene' and how it was presented/experienced. While I was sure about the form attribute of realism that 360 film could provide, I lacked its narrative detail and where along the path the experience would occur. It became apparent that my original idea of a 'West End' nightclub type strip would be unrealistic in terms of technical production and, it would also be hard to integrate this 'strip' into the narrative. Also missing was the transformative component. While I had an idea about the mountain top being a place of reflection **[DP4]**, climbing the mountain in VR took a long-time. While 'teleportation' – pointing at another area, then appearing there – is a common method of movement in VR, I still felt uncertain as to the destination and the narrative.

The idea of the Island was produced using the form of VR and applying it to the content. This construct, while informed by theory and VPP, lacked the nuance and understanding of the participants it was designed for. This idea had produced a concept that was ready to be informed by research which should confirm or refute and fill in gaps of the Island experience. In effect, the sculpture lacks the nuance of being based upon a real-human model. The experience lacked the input of young men, an understanding of local masculine

cultural archetypes, and a heutagolocial approach to make the experience relevant and transformative for young men.

Limitations of the initial concept Island

There were a number of limitations of the VR conceptualisation of the Island. These limitations constrain each other and can be categorised as theory-based, performance-based, narrative-based and resource-constrained. Moreover, sculpting the Island was always going to lead to compromises between the aesthetic and the narrative and the technical implementation.

The theory drew from critical masculinities and authentic learning and emerging theory from VR. While masculinity theory was embedded in curricula elements of VPP and planned to be included, the nuance of local masculine culture as discussed was not present. Importantly for this study, was the effect of alcohol or other substances on the planned aggressive scene. Alcohol has a role to play in night-time economy violence, where perpetrators who already have a predisposition to violent behaviour are often affected by alcohol and that alcohol can be viewed as an accelerant for violence, where violent perpetrators act in a more aggressive manner after drinking alcohol (Roche et al., 2009). The relationship between alcohol and violence is assumed as part of this study and considered a theory limitation.

The technology system adopted for this study was the Oculus Rift, because of its 6DOF capabilities in VR mode and ability to play 360 film clips. However, the Rift HMD itself is limited due to its field of view of 110-degrees and a resolution of 2160 x 1200. During this study, an Oculus Rift S was acquired, which improved the resolution to 2560 x 1440. The 360 film clips produced for this study were recorded in 8K (7680 × 4320) in 3D. The increased resolution of the Rift S did improve the experience, compared to Oculus Rift. The implications for this research project was not to over-produce and be mindful that the resulting 360 film would suffer from the reduced resolution of the Rift S playback device. For instance, 360 film scenes are 3DOF and while you can choose where you look, your interactivity is limited to menu choices, while 6DOF affords more interactions, though still limited to 'room-scale' or specific design limitations, an example being a barrier restricting you to an area, while you might be free to interact in that area.

Reflections on what I learned

Learning how to use the tools of VR and the 360 film was challenging, while there is a community of practice to support the creation of experiences (the how), there was no guide to the 'why'. I discovered the 'why' through iteration. An example was my avatar-based approach, where the avatar would be a host and facilitator for the learning content. I used Amazon Sumerian, a cloud-based VR creation package.

I started by creating Christine (figure 14) and then created Jack, who takes on the role of a violence prevention mentor, using a storying approach **[DP5]** to engage young men.

Figure 14: Christine an Amazon Sumerian avatar

His narrative is local, telling tales of how he grew up going to a local school, and there is a picture of the local shopping mall behind him, recognising that masculinities are embedded in the local culture, and that 'Jack' is a member of that group. I learned a lot from creating Jack and Christine, while they both could have been given artificial intelligence speech capabilities, putting them in context to answer queries from young men as to their masculinities and violence would have been difficult. While there is debate concerning whether VPPs should be gender agnostic, I decided, agreeing with Micheal Flood (2006) that young men would feel more comfortable with a male facilitator, so I created Jack after Christine. I also felt that Jack was too detached as an avatar to be taken seriously by VPP participants, causing me to reflect upon the nature of digital characters, their realism, and roles as mentors. While film has many examples including characters such as Yoda, these are fantasy figures set in fantasy, in a similar way to computer gaming being experienced as not real, while VR and the 360 film is felt to be real. Therefore, I decided to suspend my work with Jack (Figure 15) while awaiting the results of the stage 1 interviews which would guide me in using an avatar-based approach or not. I specifically, therefore, decided to include a question about what sort of object young men would feel comfortable with when discussion and learning about masculinities.

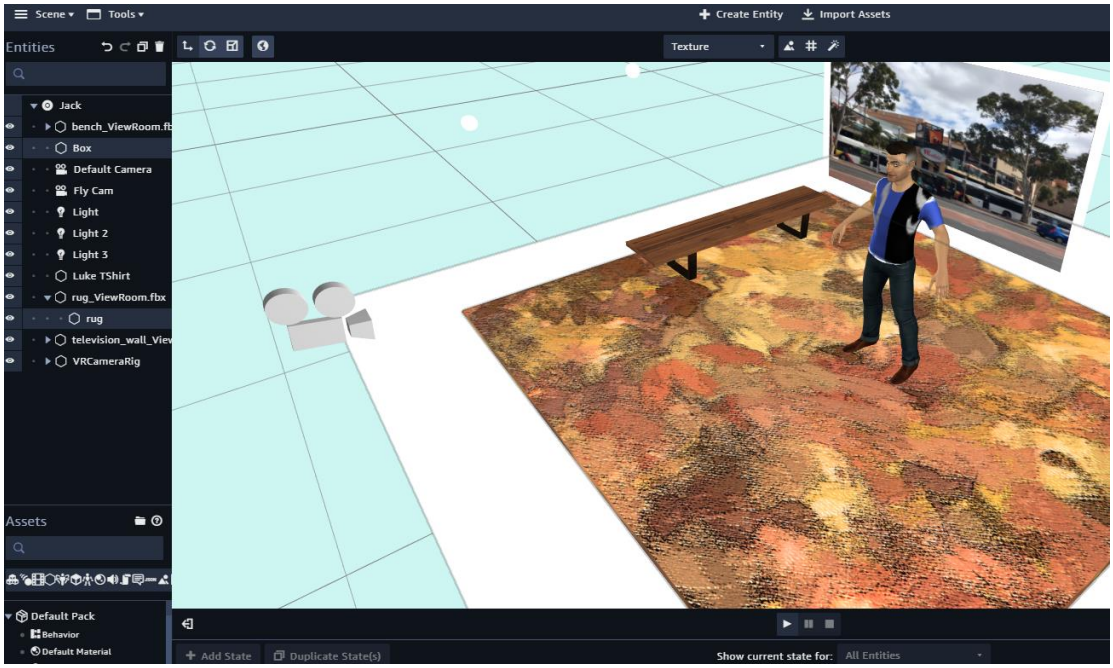

Figure 15: Jack a Amazon Sumerian avatar

The other lessons I learned with Sumerian was its limitations in the generation of world-scapes and reliance upon bandwidth to deliver experiences. I felt that the learning content I wanted to make would need much more complexity than Sumerian could deliver.

Other significant learnings during this stage of the research were the use of 360 film, and its natural first-person perspective **[DP6]**. I soon learned that embodiment needed to be supported with props **[DP7]** or else when experiencing 360 film, you are just suspended in space. Therefore, I practised creating embodied viewpoints with props. I also practised directing, getting volunteers to treat the camera as a person, talking directly to it and including it in conversations. I found this approach to embodiment, using props and talking directly to the camera produced a much more immersive first-person-perspective, than a disembodied viewpoint.

Figure 16: Embodied camera in a round table discussion

Figure 16: Embodied camera in a round table discussion is a still capture illustrating this approach. The camera was situated on a chair, the table props of a pen, pencil, notebook and coffee designed to increase immersion. Those taking part in this round table lunchtime discussion were asked to treat the camera as a quiet participant. Also, what was prominent is the curvature of the table, due to the distortion of the focal lengths of the lens recording in 3D where the camera is too close to the table. This also meant that recording close-ups would be problematic, not to distort the background or foreground objects. Recording in panoramic 2D would not cause this distortion. Using the 360 camera in this way, I learned to embody participants, some directing skills for 360 film and thinking about the distance to objects and not to distort them when recording in 3D.

This section of the exegesis, section A, has established the context for this study, the methodology, research questions, and co-creative approach. More successful VPPs and the critical masculinity theory on which they are based were reviewed. Virtual Reality and its unique affordances and its application of education were described. Heutagogy and editing Narayan and Herrington's (2014) principles of a heutagological approach and applying them to VR VPPs was detailed. Further detailed was how I created the initial concept of the Island, including how the theory was embedded, and the transformative component included in the pre-prototype design. This section concluded with a discussion on some of the content constraints and learnings from experimentation with avatars and recording in 3D 360 film. The next section continues with how I implemented a co-creative approach and the creation of the final prototype.

PART B
The Island

Chapter 4: Co-creativity and the Island

This chapter details the co-creative process which is part of a heutagological approach that informed the creation of the Island prototype moving it from a concept to being culturally and educationally meaningful to a cohort of young men from the Adelaide area. The objective of the Island was to provide evidence to answer the research questions: (1) can VR provide opportunities for young men to practice violence prevention strategies safely?; and (2) can VR help foster pro-social masculinities in young men? To provide this evidence, the Island needed to include a realistic violence prevention scenario with several different outcomes based upon a participant's choice. The Island also needed to scaffold young men's understanding of masculinities, allowing them to reflect upon this understanding and the men they virtually meet as part of the experience.

To create the experience to meet these goals required considering the human elements, specifically making the experience meaningful by employing a co-creativity approach which informed the content. Planning the content production included being mindful of the technical constraints of hardware and software. Notably, the limitations of the HMD and how too complex scenes and high frame rates and resolutions would cause stuttering and make the experience uncomfortable for participants. The implementation also needed to accommodate the ethics approval requirements for this study, including careful monitoring of participants for VR sickness, no violence to be experienced, and each scene being less than ten minutes long.

Qualitative interviews - Co-creativity

The objective of the qualitative interviews was to gather data to inform the development of the Island. To build upon the original concept by adding in the voices of young men, their perspectives, experiences of violence and what they believed a VR experience that could be used in VPP would contain a co-creative approach. Common methods of data collection used in qualitative studies are interviews and focus groups. These interviews with young males provided an in-depth perspective suited to studies focused on subjective experiences (Catterall & Maclaran, 1997; Patton 2002) in this case, the local masculinities. Moreover, conducting interviews rather than focus groups reduced the risk of young males feeling pressured to conform to a type of masculinity which is not their own, which is more likely to occur in a focus group situation.

This design approach drew from a heutagological approach of designing transformative learning, whereby learners have input into the design of learning content, and its assessment and reflective (transformative) component. This was informed by my practice of creating the Island (stage1), and its evaluation (stage4).

Sampling and interviewing

I recruited a random purposive sample via a Facebook 'boosted' page post. These advertisement, targetted young males in the Adelaide area, aged 18-24, including the northern and southern suburbs. This approach reached 9194 young males with 200 of them engaging with the advertisement. Of these 200 males, 63 chose

to seek further information and were sent the information sheet consent form and contact details via Facebook messenger, including a website link to the principal supervisor. From the 63 inquires, 14 qualitative interviews with young males, aged 18 to 24 years old who live in suburban Adelaide were undertaken during the period of late November to early February 2019. Guest, Bunce & Johnson (2006) suggest this number of interviews is sufficient for a qualitative study. Ensuring that 'rich descriptions' (p.79) are being uncovered and there is enough "depth rather than spread" (Baum, 2008, p. 193) of views and opinions for meaningful conclusions to be drawn from the interview data. No interviewees were known to or had any connection to the researcher. Two participants had not experienced male on male violence. Twelve participants had directly experienced male on male violence, either in their homes, in the night-time economy and/or at school. Their friendship groups were a mix of genders and including a number of participants reporting having gay friends. Figure 17 shows the Facebook advertising summary.

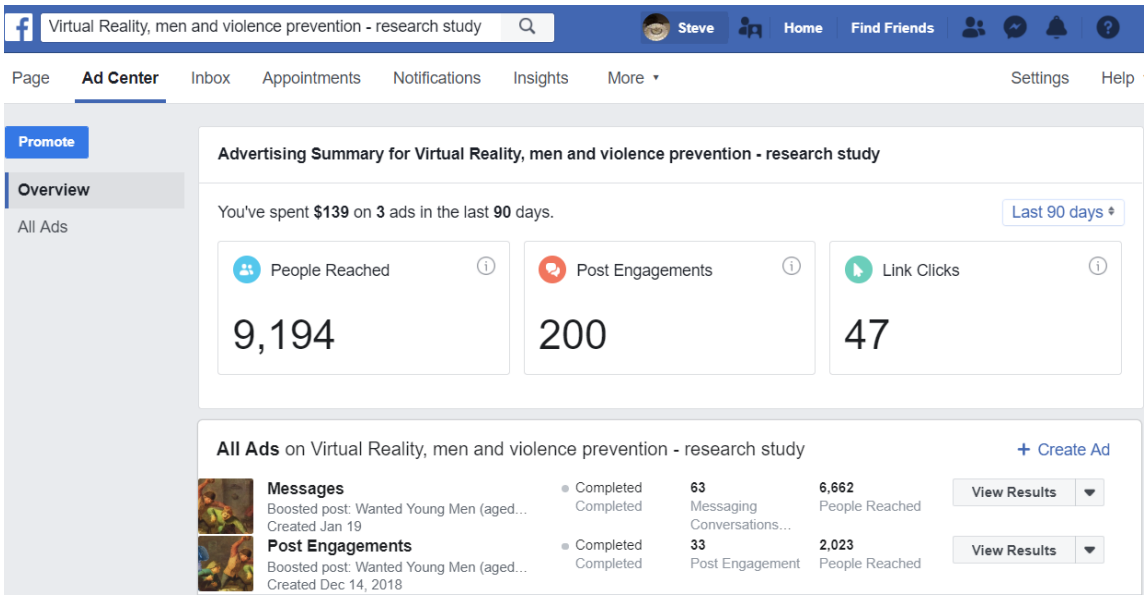

Figure 17: Summary of responses to Facebook advertisement

There was a payment of $30 to cover any costs associated with this interview and for any inconvenience, I did not believe that $30 itself was a motivation. Interview participants were paid directly after interviewing via PayPal to their email accounts; this process was detailed in the participant information sheet.

I interviewed face-to-face using Skype, and, for each interview, I used a semi-structured approach with open questions and probing with follow up questions to garner further detail, especially useful when unanticipated items were raised during the interviews (Patton, 2002).

The broad questions I asked were:

- What do you think it is to be a man? With a follow-up question, how do you think being a man has changed today, compared to your father's and grandfather's generations?

- What violence have you experienced? With a follow up question, what do you think or what did the perpetrators look like, how did they act, and what sort of men do you think they were?'
- Where do you go to reflect on what it is to be a man? This was followed up with: what would that environment be like in VR and what sort of masculine objects would make you feel comfortable if you were to 'wake up' in a VR environment?
- Describe what a facilitator in VR would look like, who need not be human, but who you would feel comfortable talking to about being a man.
- What sort learning experiences should a violence prevention program contain?

The rationale for these questions was to uncover what sort of beliefs the participants had about masculinity and being a man, thereby situating participants in critical masculinity theory which I could then use to inform the creation of the Island environment and objects to help acclimatise and onboard participants. I needed to discover what learning content should be included and who or what (avatar?) should deliver it. I also needed to discover the body language, look and actions of the antagonist in the aggressive scene. Importantly, I also needed to discover in what environment young men undertake the reflective practices. This approach aligns with a heutagological approach of co-creating learning experiences with participants.

Analysis of interview questions

I chose to summarise the interview data instead of conducting a thematic analysis because the questions required simple descriptive responses that could be used to create the Island experience, for instance, young men describing a place where they go to reflect and what this reflective place would be like in VR. However, that is not to say a thematic analysis would uncover greater insights into these young men's lives, their attitudes towards masculinity, the masculinity they hold, and their journey into manhood, which would be useful in other studies.

The first question I asked was 'what do you think it is to be a man?' and I prompted the participants to use adjectives as an aid to annunciate their thoughts. Six out of the fourteen participants spoke of inclusiveness of others, specifically, acceptance of other males who may have different gender orientations to themselves. Those who had more experience of violence commented about manhood being about 'self-sufficiency, discipline and supporting family'. Three participants who were living in households where domestic violence was or is present talked of 'protecting family', 'fighting for what you believe in' and being 'courageous'. A common way of being a man was seen to be able to stand up for yourself and defend family and friends. Interestingly, another masculine trait was seen to be 'masculinity through mastery', where these young men were undertaking such 'masculine' activities such as mending cars. Participant 7 commented "I love the feel of being a man, when I go out with friends and like working on the car, and I guess building computers and just learning how to do new things".

The implications for the VR experiences from this question concern 'self-sufficiency and mastery' in the environment and the ability to 'stand up' for themselves.

I followed up the first question by asking "how do you think being a man has changed today compared to your father's and grandfather's generations?". The answers highlighted four broad areas, changing roles from previous generations, the deficits of the present generation, stoicism and inclusivity. The participants were quite clear that they thought it was simpler being a man for the previous generations, especially their grandfathers' generation, where male roles were defined as being the provider, hunter-gatherer and women stayed at home. One participant described a regular family outing to the beach: "Grandfather would catch the crabs, and the women would boil the water and cook them" (Participant 5).

Inclusivity was seen to be lacking in the previous generations. One participant describing how his father would react if he saw him being a 'wingman' to his gay mate when going out clubbing: "my father would call me 'queer' and throw me into the Torrens" (Participant 4). Some of the participants had negative views of their fathers, saying they were unable to cope with their feeling and emotions. "He is just an angry man, a violent idiot," participant 4 said as he described his experience of living in a household with domestic violence. The stoicism and 'digger masculinities' of the participants' grandfathers were respected, even though these traits were at odds with participants' more emotional traits. From this interview question, the critical points were: emotionality and how it is part of this generation's masculinity, representing a break with the past, including the acceptance of gay males. Another point is how violence impacts others, and the confusion and difficulty that surrounds young men in understanding how to 'be a man', where there is a lack of role models in their lives.

The third question was about violence and the participant's experience of it. I asked "What violence have you experienced?" This was followed up with "What do you think or what did the perpetrators look like and what sort of men do you think they are?" This question saw all but one participant experiencing violence in more than one situation, the most extreme experience was a stabbing when the participant confronted the drunk father of a girlfriend over his abusive comments at a barbeque. Seven experienced bullying and violence at school, four lived in violent or previously violent households, three of these being domestic violence. The night-time economy accounted for four of the older participants experiencing violence. The comments made by participants suggest that those from low-income homes and living in the disadvantaged northern and southern suburbs experienced more violence during their upbringing. Although of the two participants who attended a private school, one was extensively bullied.

These responses also inform the development of the confrontational experiences within VR through the descriptions and actions of the perpetrators of real-world interactions. The follow-up question explored the perpetrators in more detail. Participants talked of 'bravado of jocks' and 'gangs trying to assert their dominance'. Participants also talked about how anger and frustration played a role. For example, one

participant described a perpetrator as having pent up anger, flared nostrils, protruding chest, ego, arrogance, wanting to take it out on others, and swaggering around, eyes darting about, hands by sides then they stare and attack. Views of what sort of men the perpetrators were included: jealous males; insecure; drunk; influenced by media; very primal; and trying to prove themselves. In addition, the look of aggressive drug addicts being thin and toothless. These rich descriptions confirm the antagonistic body language described by Collin's (2008) microsociological theory, albeit his sample was from the night-time economy in the UK.

The fourth interview question asked participants where they go to reflect upon what it is to be a man and what this environment would look like in VR. This question was followed by asking what sort of objects they would like to have with them, which was framed as objects that connected with their masculinity to help them feel comfortable and assist in onboarding them into the VR environment.

All but two of the participants described the opening VR environment as being outdoors, with one participant saying a penthouse with a country view. Participants described the environment as having a beach, forest, grassland and sandhills, and two participants talked of camping in this environment. The objects they talked of reflected their masculine needs for self-sufficiency and protection. Five participants described knives and swords; two participants described guns. Interestingly, one participant wanted the challenge of assembling and disassembling the weapon rather than firing it, which linked to his thoughts around mastery and masculinity. Other everyday objects included sports gear, motor vehicles and books. There was only two mentions of alcohol, one participant mentioned a woman, and one participant wanted a puppy.

Participants described a place of personal reflection being nature-based, either close to water or sitting on a hill looking at the stars. Participant 6 said "To reflect, I go to the lookout especially at night, I love how beautiful it is, a great place to sit down and just get a sense that it will all be okay in the grand scheme of things". However, one participant talked of St Francis Xavier's Cathedral in Victoria Square as a place to reflect and another said the pub drinking beer. The answers to these questions revealed a natural environment where participants would go to reflect upon their masculinity and, within this, their need for security through supportive objects, including weapons.

The fifth question asked participants to describe a facilitator who would talk to them about being a man. This facilitator did not need to be human. Six participants described a bearded older male who was not judgemental, one described historical characters including Marcus Aurelius or Nicola Tesla. Two participants described a 'ball of light' that spoke to them and another described an emotionless humanoid. One participant asked for ideally his grandmother or his dog.

The final question asked the participants what sort learning experiences should be in a violence prevention program. A common theme was the consequences of actions by perpetrators, to help them stop and think in the moment before they become violent. Suggestions were to remind them of the impacts of a criminal

record and ending up in jail or hospital. Also, how to accept and manage anger, how to negotiate a potentially violent scene, and how to identify the 'red flags' so participants can change the direction or the flow of a situation. They described needing to know how one could and should and act when confronted with an aggressive situation.

Summary

In summary, the qualitative interviews revealed the following objects, characters and environments to be included in the Island:

- the VR environment should be nature-based, including trees and beaches, and the reflective space should be a natural place with a view;
- the objects used to help onboard participants to include sports equipment, music devices, books and weapons, including knives;
- the antagonist in the aggressive scene should 'sneer', pace about with shifty eyes, and stare before attacking;
- a guide to facilitate discussions regarding masculinities should be an older male with a beard **[DP7].** This choice of facilitator was unexpected and fortuitous as I had already recorded scaffolding learning content concerning men, masculinities and violence with Associate Professor Ben Wadham who is a mature, bearded male; and
- identification of 'red flags' indicating when a potentially violent situation is escalating towards violence.

The interviews also revealed what participants thought should be included as learning content in violence prevention programs. This included consequences for perpetrators and learning focussed on the pre-cursors to violent situations and de-escalation strategies. The knowledge I gained from this stage was used to inform the creation of the Island by using this knowledge to amend the initial concept.

Participant safety

When conceptualising the Island, I took participant safety as a primary consideration. Cyber-sickness, which is like motion sickness, is a known effect of VR, especially impacting new users. Jerald (2015) defines possible adverse health effects impacting upon VR users as "any problem caused by a VR system or application that degrades a user's health, such as nausea, eye strain, headache, vertigo, physical injury, and transmitted disease" (159). Taking this advice onboard, I added the following requirements to the prototype:

- Ability to carefully onboard participants to not cause anxiety by overwhelming their senses when becoming present in the VR experience.
- The Island's narrative to be episodic and split into scenes that are not longer than 10 minutes.

- For CGI VR scenes: ensuring a fluid experience by reducing the graphical complexity to about 80 frames per second; ensuring that participants cannot experience falling; and carefully onboarding new scenes or locations through a gentle fade-up or using a darkened initial viewpoint.
- The requirement for scenes created using 360 film, was that of reducing camera movement and ensuring fade-downs and fade-ups for any changes to user position within that scene, for example, in a narrative choice leading to a different perspective.

Putting the concept together with the results of qualitative interviews and participant safety requirements provided me with a clear idea of what the prototype should achieve and what participants should feel, learn and interact with when experiencing the Island.

Ethical approach

Gaining ethics approval for conducting this study was complex due to discussion of the sensitive topic of violence that participants might have experienced and the possibility of triggering an adverse reaction. Approval for these qualitative interviews with young men was sought from and approved by the Flinders University Behavioural Ethics Committee. There were several issues that were deemed to be of 'low risk' and needed to be addressed, which included likely anxiety of participants when discussing violent situations, they might have experienced as a victim, perpetrator or bystander. While strategies to manage this anxiety are common in interview situations, managing anxiety when participants are experiencing a VR aggressive scene was novel.

The ethics approach I adopted for the qualitative interviews included being mindful of this research's potentially sensitive nature and the potential impact on those young males participating in interviews when asked to describe lived experience of or perceptions of violent situations or to discuss their masculine practices or violent masculinities. I did expect interview participants to have experienced low-level violence from their school and family lives; however, I did not expect this to be a cause of overwhelming anxiety. During the interviews, it became apparent that there were much greater violence levels being experienced by participants living in the Northern and Southern suburbs than those in more central Adelaide locations. These included domestic, high school and night-time economy violence and illustrated theories of intersectionality where poverty is co-present with higher levels of young male and domestic violence. (Mcara & Mcvie, 2016; Slabbert, Traube & Rice, 2017), in this case, the poorer Northern and Southern suburbs of Adelaide (ABS, 2006).

In this research project, my relationship with the 'researched' was one of an 'insider', being a mature male who has witnessed and been part of young school-based and night-time violence, which I consider normal for a male of my generation. I am also cognizant that I was in a position of authority through being endorsed by the University and was aware of how this might impact interviewees who might feel influenced and just want to please (Qu & Dumay, 2011). These factors describe some of the challenges of this research project, where it was important for me to consider the ambiguities that my role represented to the researched and the potential this creates for harm (Costley, Elliott & Gibbs, 2010, p. 57). To prepare for the possibility of

anxious interviewees, I drew from Fahie's (2014) experiences of interviewing victims of bullying. He described strategies to overcome sensitive research issues around violence. These strategies included being mindful and sensitive when interviewing and prepared with a procedure to ameliorate any harm caused; in this case using an informed consent form which includes the contact details of counselling services. To reduce the risk of harm to myself, the researcher, I adopted a reflexive approach through journaling my feelings after each participant interview as an aid to understanding my emotions, how they were impacting me and my place as a qualitative researcher (Meyer & Willis, 2019).

The strategies I employed to reduce the risks of harm to project participants from the first stage of this project (qualitative interviews) were the use of an information sheet and informed consent forms which I emailed to each prospective participant. The consent form required a 'sign-off' to indicate that they have read and understood both forms. I also narrated the content of both forms before a participant undertook the interview. These forms pointed out to participants the steps I took to protect their privacy through de-identification of interview transcripts and recordings, keeping data on secure University systems and not using any identifiable data, for example names, email addresses or schools attended or workplaces, in the outputs of this study. I pointed out the possible risks to the participants of anxiety and emotional discomfort that might occur when discussing violence, whether experienced or perceived, how I would be monitoring them during the interview for signs of anxiety, and their and my option for withdrawing from the interview for any reason.

I also included on the forms the telephone number of counselling services for referral of participants who became anxious and/or disturbed when discussing violence. The contact name of my supervisor and the ethics committee was included for participants use if they so wished. In addition to monitoring participants during interview for possible anxiety, I also ensured my questions and follow up questions solely focussed on the topic at hand and did not wander into otherwise possibly uncomfortable areas for the interviewee. Participants were paid $30 for the qualitative interview. This payment was made to cover any transport, internet costs, and reimburse participants for any inconvenience that they might have experienced in participating in this study. Payments were made via PayPal to the participants' email addresses. I did not want to collect and store bank account details.

This chapter has detailed the qualitative interviews undertaken in this co-creative approach, including participant recruitment, interview content and the resulting analysis which produced a list of features and objects for inclusion into the next prototype. The findings of this stage of the research project were insightful and provided a deeper understanding of the masculinities and beliefs about 'what is a man' that this cohort of young men held. Importantly for this study, they detailed the types of violent situations they encountered on their journey to manhood, from schoolyard conflict to witnessing domestic violence and night-time economy violence, including the body language of night-time economy aggressors. The initial concept of the VR experience lacked this detailed situated cultural information, which also included the participants' definitions of masculine onboarding objects, the person or object who they would feel

comfortable talking to about masculinity and confirming the importance of nature as an environmental aid to reflection upon actions and self. These findings augmented the initial concept Island experience I created by creating additional requirements, triggering the next stage of producing the prototype experience.

Chapter 5: Producing and experiencing the 'Island.'

This chapter details the how and why of producing the Island. It starts by discussing the creation of the pre-prototype from the concept VR experience, an overview of the pilot testing, and then continues with the details of the final prototype Island VR experience. Figure 18: Production process of the Island, shows the relationship between the concept, the results of the qualitative interviews, the pre-prototype and the final production of the Island, where steps one, two and three are considered pre-production. I start by describing further lessons I learnt in VR and 360 film production because they impacted upon this study. I then continue with an outline of key influences upon the Island moving from concept to pre-prototype, then detail each scene, paying attention to 'why' rather than the 'how'. I finish by discussing design principles and their application, the narrative devices used across the scenes, challenges to my practice and insights from practice.

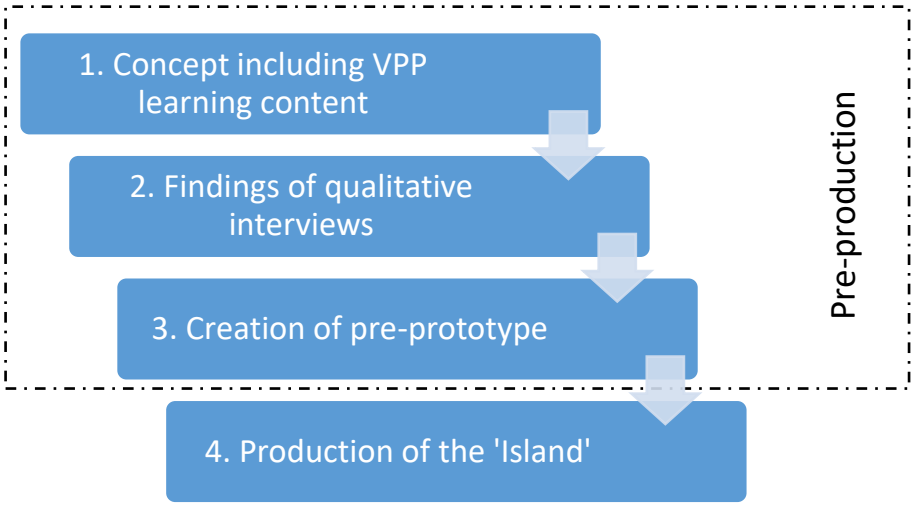

Figure 18: Production process of the Island

I started with a concept and some expertise in using the tools of VR to create VR environments, objects and interactions, and narrative productions drawing from my practice and newly acquired skills as a producer and director of 360 film experiences. I now had the outputs of the qualitative interviews (chapter 4) which provided me with some conformation of the use of nature to help foster reflection; the types of objects that would help participants become acclimatised in the VR environment. These include sports, music, some art objects, and what a protagonist would look and act like, including their body language. I also knew that my facilitator should be based upon an older human male with a beard. During this period, my familiarity with using VR with participants in an educational context increased through being a demonstrator of an Oculus Rift VR experience called Virtual Verdict for the university open day. My role was to introduce users to the experience, onboard them, and ensure their safety. Subsequently, I produced a debriefing document, detailing how to use VR safely in an educational setting (Appendix A). Creating this document made me aware of the technical requirements to reduce VR sickness through, using 'fade ups', limiting camera movements when producing 360 film, and restrictions within VR environments to stop

triggering vertigo, such as restricting VR participants from falling down cliffs. Prior to the open day, I created a branching narrative 360 film experience showcasing a campus of the university for use at the open day and outreach in local schools. I learned valuable lessons from these experiences, in terms of having participants safely negotiate a VR experience, directing a 360 film experience, and understanding the required coding in the Unity game engine to create a branching narrative. This is in addition to creating VR experiences optimised for the low graphics power of the Oculus Go.

These lessons allowed me to visualise what was possible with the equipment and resources I had. They also pointed me away from a more ambitious production for this study, lessening the risk that I could not complete the Island.

Table 4 details the requirements of the Island, moving it from concept and exploratory prototype to the final prototype.

Table 4: Moving from concept to prototype requirements

VVP curricula topics	Heutagological principles: curriculum integration	WHS requirements applied	Results of research
Understanding self and anger, regulating your emotions, understanding other's emotions and empathy for victims. Build young men's reflective capacities through mindfulness associated with self-regulation to mitigate conflict and promote peace and safety. The local cultural context situations and places young men might find themselves in is part of the program. Pedagogies commonly employed include 'role-plays', discussion of video clips to aid young males in understanding the precursors to violence, and practice deescalating potentially violent situations. Reflection on future, critical dialogue and reflection. Young males can start to imagine and act on alternate ways of being. Interventions with men and boys address masculinity, explicitly addressing the norms, behaviours, and relationships associated with ideals of manhood including positive masculinities. Training including conflict resolution and bystander strategies.	Structure the learning to actively involve the learner in the process through communication, collaboration and content creation. The learner is the main agent in the learning process and learning as an individual or as a group/community. The learner creates contextually relevant content according to his/her needs and knowledge, enabling 'true' collaboration between the learner and the teacher (passive scaffolding). The learner has choice in directing his/her learning path.	Ability to carefully onboard participants to not cause anxiety by overwhelming their senses when becoming present in the VR experience. The Island's narrative to be episodic; split into scenes that are not more than 10 minutes duration each scene. For CGI VR scenes ensuring a fluid experience by reducing the graphical complexity to about 80 frames a second, ensuring that participants cannot experience falling, carefully onboarding new scenes or locations through a gentle fade-up or using a darkened initial viewpoint. The requirement for scenes created using 360 film was that of reducing camera movement and ensuring fade-downs and fade-ups for any changes to user position within that scene, for instance, a narrative choice leading to a different perspective.	VR environment to be nature-based, including trees and beaches, with the reflective space being a place with a view. Objects used to help onboard participants to include sports equipment, music devices, books and weapons, including knives. The protagonist in the aggressive scene to 'sneer', pace about with shifty eyes, and stare before attacking. A guide to facilitating discussions regarding masculinities to be an older male with a beard.

Pilot Testing

The results of pre-prototyping, which included multiple revision to scenes, created a stable version which did not crash and met the content requirements of the qualitative interviews, initial concept, participant safety, and technological and resource limitations. I pilot tested this version with a twenty-one-year-old male and three middle aged adults with experience in the topic area and VR. I used their feedback to reflect on the experiences and how they could be improved. The following commentary discusses these changes.

The meta-narrative of the experiences needed to be improved. The initial concept's narrative implementation was fractured and cumbersome. What I needed to do was review the experiences and tie them together using narrative devices. I also needed to think about the agency of learners regarding how learning content was delivered. It became clear that I needed to rethink my approach to learning in VR, to consider its unique qualities, meaning that I needed to think through learner agency, learning, reflective spaces and the process of onboarding participants. This rethink resulted in the approach of creating five distinct scenes which were: exploration; two learning scenes; experiencing; and reflecting. The result was short (less than 10 minute) scenes of an episodic nature. I voiced the learning content and created invisible barriers to keep participants within boundaries to stop them from getting lost in the experience.

During this pilot testing stage, I struggled to create part of the experience that would allow for externalisation and foster reflection apart from participants being able to reflect upon the aggressive experience, the actions of the aggressive hypermasculine male and the participant's own responses to the narrative challenges and how they felt. Eventually, the 'penny dropped' and I decided to adopt the 'mask' metaphor, with VR affording the opportunity for participants to learn about the 'mask', being able to see and interact with a 'mask', to hold it and, in the reflective component, throw it off the edge of the mountain to fly gently away **[DP8]**. Thereby metaphorically giving the participant freedom to think about what sort of man they might want to be without the societal limitations of the 'mask'. This approach drew from externalising problematic parts of self (a narrative therapy approach) (White, 2000), holding those problematic parts and casting them away. Importantly, holding the 'mask' and throwing it away used one of virtual reality's unique affordances of object interactivity. Though to achieve this, the mask itself needed to be created and scaffolded as learning content, thereby giving meaning when the participants were invited to grab the mask and cast it away in the final scene as a reflective tool.

Other changes made from the original concept included dropping the city 'West End', nightscape due to its complexity, and replacing it with one hotel that had two bars: the Crazy Dog Hotel. Another necessary change was dropping the concept of a gaol where a violent preparator would reflect upon their violence. I did this in order not to foster empathy or valorise the perpetrator, despite the results of the qualitative interviews where participants requested seeing 'consequences' for aggressive actions.

I also chose a locomotion method of simulated walking rather than transporting to a 'hot spot' or pre-defined area as is common in many other VR experiences. I wanted to increase the sense of immersion by

allowing participants to stop and inspect the plants and trees and connect with nature. Table 5: Change log final amendments captures the changes I needed to address to create the final prototype Island.

Table 5 : Change log final amendments

Learning and environment	**Scene(s)**	**Purpose**	**Changes**
Explore – CGI VR	Island camp	Onboarding and exploration	This scene added. Interactive objects are more stable and consistent. Music enabled on guitar amplifier. 'Learning tents' removed. Sea barriers enabled to stop access to the shipwreck and participants getting lost at sea.
Learn 1 – Primary violence prevention – CGI VR	Island camp	Scaffolding about men and masculinities. Introduces the societal imposed 'man' Mask.	One learning tent only: the 'Mask.' Mask height increased, allowing a complete inspection including looking through the eyes. Mask triggers audio description of blackboard messages. Blackboard and table moved to the rear of tent, behind the mask.
Learn 2 – Primary violence prevention – CGI VR	Island camp	Scaffolding about men and masculinities. Discusses men, relationships, communities and different ways of being a man.	Learning tent added – 2D video about society, men and communities. Trigger of video now more stable and efficient.
Learn 3 – Secondary violence prevention – CGI VR	Island camp to Crazy Dog Hotel saloon bar	Scaffolding about deescalating potentially violent confrontations.	Transition to Crazy Dog Hotel saloon, more stable. Voice-over added to scaffolding video.
Experience – Secondary violence prevention –360 film	Crazy Dog Hotel Front Bar	Practising deescalating a potentially violent situation.	Addition of 'Welcome' sign to infer the location of future messages/decision points. Hospital bed shot, addition of a doctor talking (360 film) replacing the low resolution 360 image.
Reflect – Primary violence prevention – CGI VR	Island mountain top	To encourage transformation in young men concerning their masculinity through reflecting on the learning messages and the men encountered in the Crazy Dog Hotel. Also employed is a haptic device of throwing away a societally imposed 'man' Mask.	Addition of voice-over added to video that encourages reflection. Changes to content that encourage reflection. Mask moved about blackboard. The lighting changed to match base camp scenes.

The Island

This section details and contextualises the 'why' of the five scenes – Explore, Learn1, Learn2, Experience and Reflect – created for this study, including descriptions of scene and story elements. Each scene section includes a link to a video that can be viewed on a non-VR device. These videos, while not affording immersion, do demonstrate the environment and narrative flow of the Island. To access the video, click on the link under the first picture of each scene.

Scene 1: Explore

This scene is the opening scene of the Island. Its primary purpose is to onboard participants to the environment, allowing them to express their agency in VR by freely exploring and the how and the method they can use to interact with some objects, allowing them to freely explore and acclimatise themselves to the environment so they can overcome any initial overwhelming feelings. It onboards participants by providing interactivity with objects and allowing for exploration, climbing trees, virtual paddling including going underwater but limited to close into shore, and walking around inspecting objects.

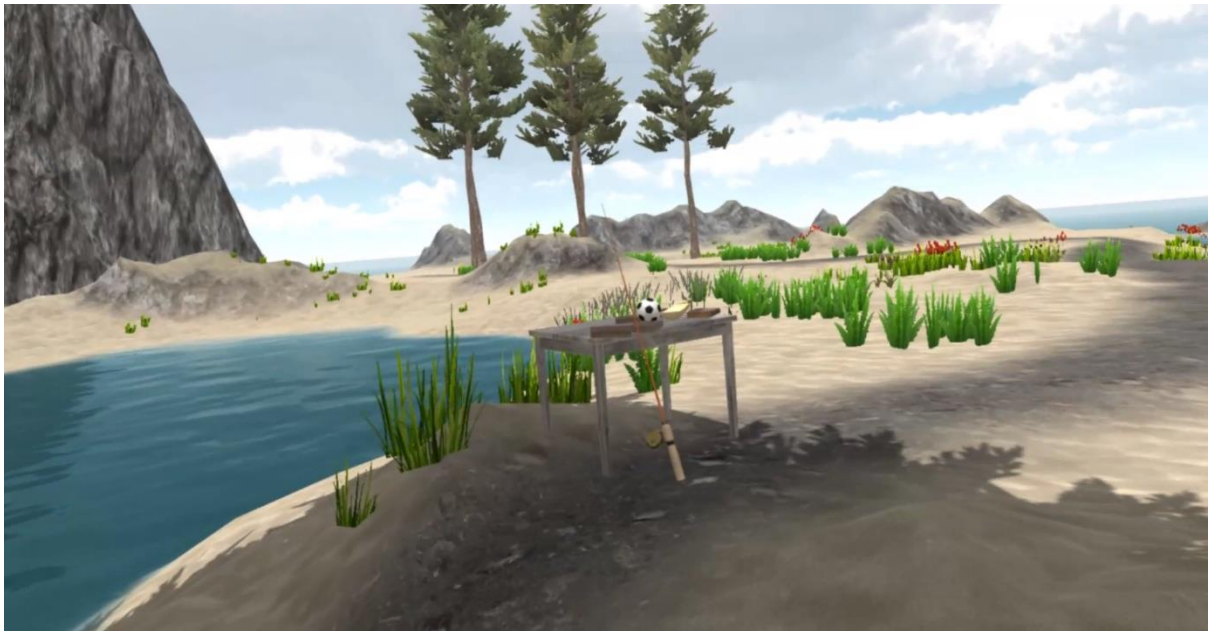

Figure 19: The first scene 'Explore.'

Link to scene video: https://flinders-my.sharepoint.com/:v:/g/personal/hall0613_flinders_edu_au/EXmnIBwlCBNLpqSjGCVZiucBqgxTcMd0-tJ9rTBWkgQ?e=jL7XzF

Analysing the precis from the interviews pointed to a reflective place set in a natural setting, which reinforced the Island idea I created as part of the concept VR. Informed by Participant #8's comments of "I would love to wake up in a tent", I implemented a tent on the island setting. This was drawn from the outdoors, fishing, camping and character of reflection and independence that the participants talked about during their interviews when describing their versions of what such an experience would be like (Figure

19). I contextualised it, using onboarding aids of objects drawn from the interview findings: music, sports equipment, fishing equipment and creative art objects. However, I did not include objects associated with violence that the research participants suggested, which included knives and a gun. To contextualise further and make recognisable to local young men, I drew from the ecology of South Australian coastal fringes, which includes sand, scrub and Norfolk Pine trees. Moreover, the Island concept also drew from the 'Island Masculinities' specific to Anglo-Australian cultures, traditional masculinity of adventure, self-reliance as a hunter-gather, and returning to civilisation with riches (Downing, 2014). The island concept also resonated with the writings of Tim Winton in Breath (2009), where masculinities value independence and exploration (Bonnett, 1996; Downing, 2014). On the island, I created a pathway both as a guide for participants to follow and additionally as a metaphorical device to signify a journey; an adventure to discover a different type of manhood. The pathway is for participants to follow throughout their island experience, though they are free to wander from the path, as I wanted the respect their agency in the VR environment.

Upon entering the scene, participants become present in the tent and look out on a small bay on the Island. I was conscious to leave the tents as neutral, not wanting to use militaristic colours and designs that could influence the participants' views of being a man. Close to the tent are the objects that participants described at interview whose purpose was to acclimatise participants to the island. They included a fishing rod, football, books, and a guitar amplifier. Also, outside of the tent on the beach is a wrecked rowing boat, the metaphor is sea, island, shipwrecked and independence. Following pilot testing, I improved the interactivity of these objects. I used a guitar amplifier to play an instrumental song when touched and used this same song as a narrative device across all of the scenes **[DP9],** the rationale being to encourage familiarity hence immersion in the other scenes. Another device I used was gravity, the interactive objects, the cricket bat, fishing rod, ball and guitar amplifier all had assigned gravity of one – that of earth, their interactive behaviour being nominal – which would be expected outside of VR. I took the opportunity to assign a gravity rating of zero to two books, meaning when picked up and let go the book would drift away, it had a component that interacted with the gradient breeze blowing on the Island. The objective of this device was fostering in participants the idea that some objects behave in an almost 'magical' manner and that things could happen in the experience that are not expected **[DP10].** This would scaffold them for change and, importantly, they would be familiar in the final scene – Reflect – with the mask flying up into the sky when cast away. This scene did not include any scaffolding learning experiences; its sole purpose was to introduce the environment; onboarding and familiarisation, encouraging participants to explore their agency and scaffold them in how to interact with objects with actions such as picking them up or throwing them.

Scene 2: Learn about masculinities and the 'Mask'

The objective of this scene was to scaffold participants' understanding of masculinities, drawing from VVP curricula. Through two learning experiences 'about men' and 'the mask'. The scene commenced from the same tent on the Island, where participants started from in scene 1 Explore.

Figure 20: The second scene ' Learn about men'

Link to scene video: https://flinders-my.sharepoint.com/:v:/g/personal/hall0613_flinders_edu_au/ETeJJUqBEONMjZP4y7MS6PsB0nxgx-1p_11D4Xl6LuDyrg?e=5mMUv7

On the Island, I planned a learning experience that would scaffold learners' understanding of masculinities. Originally it was planned to be an outdoor cinema, showing a learning video – again reflecting the local cultural activity of attending a 'drive-in cinema' – however, due to the environment lighting in VR which mirrored lighting conditions in the 'real world', playing a learning video became problematic from both a lighting and positional perspective, such as standing too close. Therefore, I changed to using a tent to host the learning experience, which allowed me to control the environmental lighting. I also needed to introduce the 'mask' concept. To do this, I needed two tents, the first tent along the pathway contained the 'mask' (Figure 20). When a participant approached the 'mask', an audio clip played which described the 'mask' and how society imposes a mask of masculinity upon young men, making them see the world in a singular light, drawing from masculinity theory and the training program 'The Mask You Live In'. In addition to the audio message, I created a blackboard contained a summary of the masks' learning messages.

A short way along the path was another tent, with an easel to the right containing a generic YouTube play button. The easel was used as the participants from the qualitative stage identified with arts and music. The canvas is a two-dimensional video player activated when the 'play' button is touched. It played a short

'talking head' video that discusses masculinities, the challenges of what it is to be a man, respect, community, relationships, drugs and violence. Associate Professor Ben Wadham delivered this experience **[DP11].** Ben is an expert in masculinities, whose appearance matches the description provided by participants that informed the study of 'what sort of object or person' you would imagine could talk to you about being a man: a mature bearded male (Figure 21). The content of these learning experiences drew from existing curricula in addressing: how media portrays masculinity; how young men can choose what sort of man they want to be; how masculinities have changed over time; how certain types of masculinity are troublesome, leading to anti-social behaviours and harming the young men that carry these masculinities, relationships; and masculinities and counter-stories to traditional masculinities.

Figure 21: Scaffolding video – About Men

I thought quite deeply about different learning modalities for delivering this learning content. Virtual reality affords many options, however, I deliberately chose video, an interactive object and a blackboard with text. Video has been shown to be a highly effective educational tool that can enhance learning (Brame, 2015). Moreover, in the VR environment, it could be treated as a podcast, an efficacious learning tool (Aliotta, Bates, Brunton & Stevens. 2008), where learners could 'sit' and watch the video or to listen it as they further explored the environment. The interactive object, the 'mask', spoke to the participant when touched, leveraging the immersive affordance of simulated touch in the VR environment **[DP12].** Furthermore, delivering learning content using 'traditional' methods of video/podcast and a blackboard are familiar learning tools, allowing participants to cognitively engage with the content rather than being surprised or need scaffolding concerning the delivery mode, even though a 'talking' mask was rather novel. To trigger the learning content to start, I drew from iconography, specifically an icon that would be readily recognisable by YouTube users: an icon of the YouTube 'play' button, so that when 'touched' the learning content would play.

This scene was designed to scaffold young men's understanding of masculinities and start to encourage them to think about their own masculinities and what sort of masculinity they wanted to hold in the future. This construct drew from masculinity theory where masculinities are able to change and is grounded in curricula of gender transformational VPPs.

Scene 3: Learn about de-escalation strategies

Figure 22: Teleporting to the Crazy Dog Hotel from the island

Link to scene video: https://flinders-my.sharepoint.com/:v:/g/personal/hall0613_flinders_edu_au/Ebk2QRz_DzxMjkIkQWCKF28BlEbl-LXQ4-9iQ7K4i7o9Dw?e=JRAfzw

The objective of this scene was to scaffold participants' understanding of men and masculinities, with a focus on informing participants that there is a multitude of ways of being a man. They did not need to follow a societal orthodoxy and media views of manhood, where stoicism and violence is part of manhood, and participants have agency in creating their own version of masculinity.

The scene opens with the participant 'coming to' in the tent on the Island. Another tent with an easel that transports or teleports the participant to the 'Crazy Dog Hotel Saloon' bar (Figure 22).

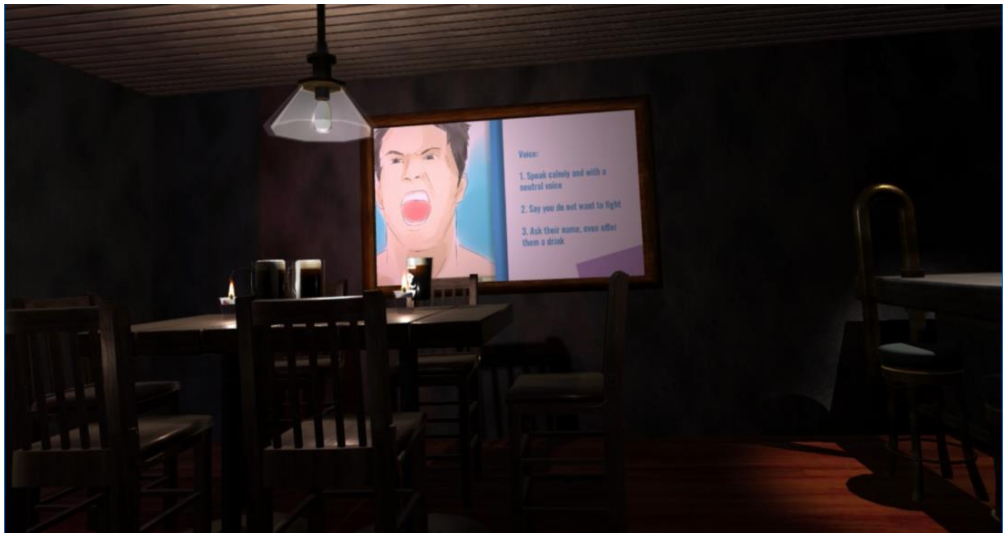

Figure 23: Aggressive situation de-escalation strategies scaffolding video

This bar has been named after the 'Crazy Horse Saloon' on the infamous Hindley Street in Adelaide, known for night-time economy violence including deaths and one-punch attacks. I have called the bar this to contextualise and localise this experience. After touching the easel, participants become present standing at the saloon bar with a drink in front of them (Figure 23). This saloon bar is shut and devoid of people, on the wall a video plays, scaffolding the participant as to how to de-escalate a potentially violent situation. This learning content draws from de-escalation strategies aimed at reducing the risk of harm when confronted by an aggressive protagonist. The learning content of this video scaffolds the participants for the next scene and is drawn from contemporary de-escalation practice (Skolnik-Acker E, 2008; Milofsky, 2011; Scully, 2017).

Figure 24: Interacting with a zero-gravity beer glass

Participants are free to roam the bar and interact with objects, giving agency to how they learn from the video presentation which loops twice and is voiced so they can treat it as a podcast **[DP13]**. Two glasses in the salon bar are interactive. They can be picked up, virtually drunk from and spun in mid-air (Figure 24).

I did not attach a gravity component to them, to scaffold them for the type of object interaction that would be required in the last scene, Reflect.

This section described the de-escalation scaffolding scene, where learning content was delivered inside the VR experience, using 'flattie' 2D video and animation. Also described was how I used the de-escalation strategies video set within a hotel environment and used a story device of 'no gravity' assigned to an object. This scene prepared participants to experience an aggressive situation, the next scene, and using de-escalation strategies.

Scene 4: Experience

This section describes the objective of the aggressive scene where participants get to practice their de-escalation skills in a realistic and granular 360 film environment. I also describe the production process and the technical challenges and changes in directorial thinking I need to accept to produce this challenging scene.

This scene's goal was to create an authentic learning experience comprising an authentic context, task and articulation to enable tacit knowledge to be made explicit (Herrington, Reeves & Oliver, 2010). Furthermore, to provide experiences for "reflections to enable abstractions to be formed" (Wood,2014, p146) by providing the experience for participants to reflect upon in the next scene. The scene draws from the results of qualitative interviews conducted in the first stage of this study, which informed the behaviour, including body language, of the antagonist, in addition to those described by Ellis (2016) in Men, masculinities and violence: An ethnographic study. Moreover, this scene is grounded in situated cognition theories (Brown, Collins & Dugiud, 1989), where learning is fundamentally connected to the activity, context and culture in which it occurs.

The specific objectives of this scene set in the Crazy Dog Hotel front bar were:

- firstly, to provide an authentic aggressive situation for participants to practice non-violent responses to an aggressive situation, explicitly using the knowledge they gained from the de-escalation strategies scaffolded in the previous scene, the closed saloon bar of the Crazy Dog Hotel;
- secondly, to provoke in participants through the 'real' to life aggressiveness of the antagonist, one or more of the negative activating emotions of anger, fear and anxiety in participants (Hall & Walsh, 2015), thereby allowing them to practice emotional regulation as part of their de-escalation strategies, which includes staying calm and not responding violently;
- thirdly, to provide a critical reference point for participants to reflect upon a hypermasculine man and his behaviour of using violence as a performative activity to impress his mates in order to support his place in the masculine hierarchy; and
- fourthly, to support the Islands's narrative of the 'mask' which was employed in the next scene – where a picture of the protagonist is shown wearing a 'mask'.

I chose to implement this scene using 360 film, due to its granular realism, with interactive hotspots, affording participants the ability to choose from a limited set of choices. In this branching narrative, users had agency and choice as to how and if they responded to the authentic aggressive situation. Secondly, to employ an intense, first-person perspective where the participant is embodied in the 360 camera's field of view, so they are immersed and feel they are present at the bar and when interacting with the protagonist.

Figure 25: The antagonist in the aggressive scene

Link to scene video: https://flinders-my.sharepoint.com/:v:/g/personal/hall0613_flinders_edu_au/EQpGF4Z8_-ZMub2T6t4NYQcB-hh0gt0f28qfgG4_EnwVdg?e=4joCCc

These narrative choices are consistent with the de-escalation actions detailed in the media played in the previous scene the saloon bar of the Crazy Dog Hotel. The aggressive situation drew from research concerning bar fights: the types of bars (Tomsen & Homel, 1993; Taylor, Keatley et al., 2017), and men involved (Beesley & McGuire, 2009; Collins, 2008). It also drew from the experiences and antagonist, including their body language described by the interview participants during the co-creative stage of this study.

This scene starts from the saloon bar in the previous scene; there is a 'hot spot' which when 'gazed at' takes participants to the front bar. Becoming present in this bar, participants are sitting at the bar, when an unkempt bartender walks up and takes an order for a drink. Behind the participant, there is a loud pool game being played. One of these players is very loud and aggressive. The bartender points out that things can get ugly – likely aggression – when these players are about, and they are drunk. The participant has a choice to leave to a safer area of the bar or stay. The aggressive individual then approaches the participant, being jeered on by his mates (Figure 25). He is looking for a fight, as a performance of his masculinity in front of his mates. Two choices are presented to the participant: to use their de-escalation skills, or tell the protagonist to 'go jump' which results in the participant then waking up in a hospital bed with a doctor and nurse standing over him (Figure 26).

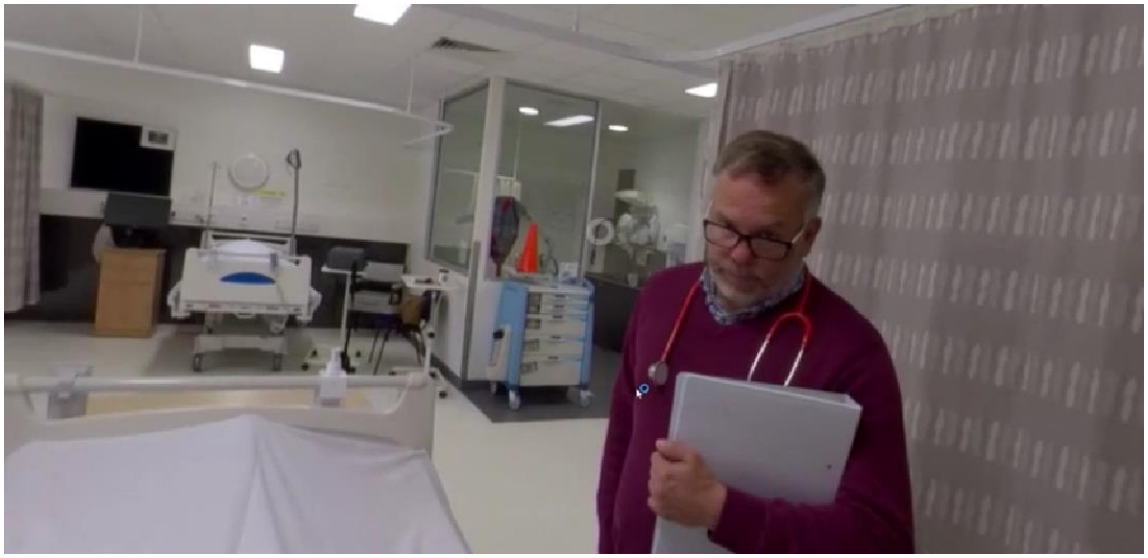

Figure 26: Waking up in hospital

The words used by the protagonist were aimed at provoking a strong emotional response, calling the participant a "faggot". The rationale for this was to represent the homophobia of the antagonist's hyper-masculine performance by him using a gay slur to reinforce his masculinity (Kimmel 1994: McCormack, 2011). This is commonly used by young people in school settings (Fulcher, 2017) to provoke an emotional response in the participant: anger, fear and anxiety. If choosing to deescalate the situation, the antagonist accepts the de-escalation choice by saying to the participant "you are not worth my time, wanker" and spitting at them while walking back to his laughing mates; a successful performance of his hyper-masculine role and reinforcing Connell's (1995) gender hierarchy **[DP14].** The exit points of the scene are either choosing to take the barman's advice or choosing de-escalation as the experience repeats if the participant does not choose to de-escalate **[DP15].**

Pre-production

Pre-production of this scene was complex drawing from traditional filmmaking and gaming production practice by creating a storyboard, branching narrative chart and breaking the scene down into story beats. The starting point for the production was a first-person perspective, and how other actors treat the camera (the embodied participant). The immersed viewer's experience can either become part of a scene with actors talking directly to them in the first-person, or vicariously as a scene from a third-person perspective, where the actors and narrative effectively ignore them. Leveraging this first-person perspective and including the camera (the participant viewpoint) as an actor in the scene increases the sense of embodiment, immersion and, when combined with embodied props like car keys and a beer, gave a strong sense of self-location and ownership of the perspective, as if owning a body (Gorisse et., al., 2017). Moreover, this approach can be considered story-living; inside the narrative due to agency to look around and embodied as the scene protagonist (Jones & Dawkins, 2018).

For pre-production, I started with the act and narrative (Figure 27: Production notes) then scouted a venue, producing a storyboard from the embodied perspective of the camera, and planning where the antagonist

would be located (Figure 28: Storyboard shots)It became apparent that the venue would have a number of lighting issues, and we would have to film after sunset, due to the large windows. Shooting would also require lighting to be either hidden and/or that there would have to be careful camera placement, due to the lack of dynamic range of the camera sensors, not wanting to wash out one of the camera's six lenses, therefore an even light was needed.

Production notes – Crazy Dog Hotel Public Bar – Aggressive Scene

Purpose: To allow VR participants to safely practice deescalating strategies to a realistic potentially violent situation. Requires interactivity and a limited branching narrative. There is no violence filmed, just the lead up.

Scene Description: *Setting:* This scene is set in a bar, with a drunk group of men, loudly playing pool. The leader of this group is an aggressive individual called 'Col' who provides 'entertainment' to his mates and confirms his role by bashing weaker individuals. The barman is more interested in his phone and gambling on the 'TAB'. The bar is run down and dirty.

Overview: A young man enters the bar, chooses where to sit or leave – at the bar or a table, and is given a drink ("on the house as we do not get many visitors here"). There is music playing and a pool table. A bunch of drunk men are playing, one (Col) is getting frustrated and angry, then suddenly quits the game and approaches Sam. Col calls out to Sam as he approaches trying to impress his mates and have a laugh; Col is looking for a fight. He looks back at his mates who are egging him on. Sam has choices to leave without engaging with Col, or talk to him. Col is showing signs of aggression. How Sam responds will result in a fight or will de-escalate the situation.

Objective: The objective of the scene is for VR participants to recognise 'red flags' in a potentially violent scenario and choose a course of action, based upon their learnings from the previous scene. Also, to recognise the type of man 'Col' is and his hypermasculine performance to provide a reflective counterpoint to a participant's own masculinity. The scene seeks to provoke an emotional response through challenging a participant's masculinity, requiring emotional regulation in order to deescalate the scenario.

Shooting window: 15th to 19th July (uni break time), early evening sunset is 5:10pm with civil twilight ending at 5:38pm – dark. Expected running time: less than two hours. This scene will last less than 5 minutes.

Venue: The 'Tav' if possible
Perspective: First-person perspective of Sam the target of the aggressor, with various props to encourage embodiment.
Lighting: Normal lighting with further lights hidden behind pillars, also a lamp on the Bar / Table.
Camera: Filmed in 360, the camera will need to be placed in different locations reflecting the branching narrative, therefore the scene will need to be repeated a number of times.
The Saloon: Somewhat dirty and unkempt with paper on the floor, dirty plates, chips and pizza on the menu, and chairs and tables in some disarray. This is a low-comfort bar and violence regularly occurs.

Character description – Col: Col is an aggressive drunk and regularly gets into 'blues' when drinking with his mates. He is insecure and expresses his masculinity through violence towards what he considers weaker males. He likes to impress his mates by confronting, dominating and bashing young men he does not recognise; this, he reckons, legitimises his position as the leader of his mates; his gang. When he becomes aggressive, he adopts a 'rooster stance', shouting with clenched fists and jaw, his eyes darting around the place. They focus on his target just prior to bashing them. Col enjoys his aggressive reputation and the power he feels over his mates and the victim during and after the bashing.

Character description – Barman: A mature male, Mike. He is unkempt and feels he is underpaid, he does not like the customers, who he thinks are idiots for coming to such a dump, and he hates the boss. He prefers to watch TV when the football is on or look at his phone rather than cleaning the place up. As far as he is concerned, he does not really care too much about customers fighting, a bit of 'biff' is okay, providing there are no weapons and the police are not called as the boss gets really angry about that.

Character description – Mates: There are 3 to 5 mates (some can be female). A motley bunch who like a laugh and drink, they know Col is an idiot, but he is good fun, though often goes too far. They will step in to help him out if it looks like someone he has picked on is getting the better of him. Unless they have mates too, in that case they will slink off. They like to think they are the tough gang of the neighbourhood.

Figure 27: Production notes

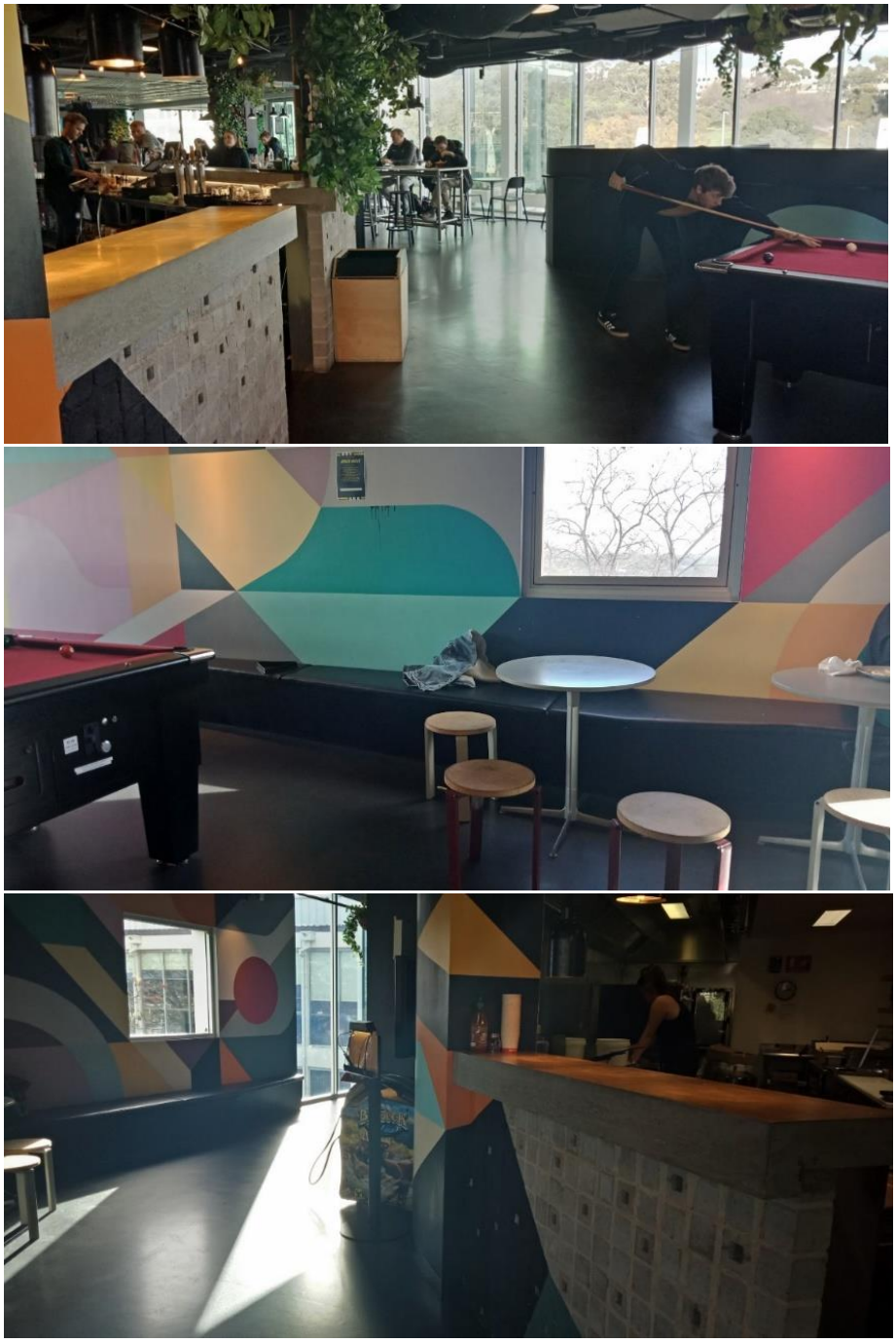

Figure 28: Storyboard shots

I created a textual storyboard (Table 6: Storyboard), then the branching narrative points (Figure 29: Branching narrative flow) as a directorial aid, rather than creating a shot list. The camera had two positions: by the bar and off to a distant table. These documents provided me with pre-production notes necessary to shoot the scene.

Table 6: Storyboard

Storyboard		
Storybeat	Title	Description
1	Scene onboarding	The Scene opens, with the participant becoming present sitting at the front bar of the Crazy Dog Hotel. The participant is given time to assimilate the environment, including the pool playing group. There are a number of onboarding objects – car keys, chip packet – to aid immersion. The music playing is the same as from the guitar amplifier in the first 'Island scene' explored.
2	Choice	The barman approaches and gives no choice to the participant, getting him VB, "because that is all we have". Then encourages the participant to move away, saying "Ooh them, they're always good for a laugh, but can get real mean when they've had too much. So, I'd watch myself if I was you."
3	Move away	The participant then has a choice to stay or move away. If moving away, the participant is 'teleported' to a table away from the noisy pool players. They are then prompted to take the alternative and stay.
4	Stay	If staying, the participant is confronted by 'Col' saying "what you looking at?", when staring directly at the participant, then approaching and adopting an aggressive stance, waving his pool cue at the participant, saying "Are you some sort of 'poofter'? "
5	Choice	The participant then has a choice: to tell 'Col' to 'Go Jump', or 'Apologise and say they do not want to fight'.
6	Go Jump	If the participant chooses to tell 'Col' to 'Go Jump', they are 'teleported' to a hospital ward and 'come to' immersed in a hospital bed with a doctor and nurse commenting on violent choices. They are then encouraged to take the other course of action and are returned to the bar scene.
6.1	Retry	
7	Apologise	Choosing to apologise to 'Col' triggers 'Col' to say, "You are not worth my time, you wanker", and returning to his laughing mates. 'Col' the spits at the participant when walking away.
8	Exit	The barman then approaches, telling the participant how lucky they are to survive the "known hardcase" 'Col'. The participant is then transported back to the other bar.

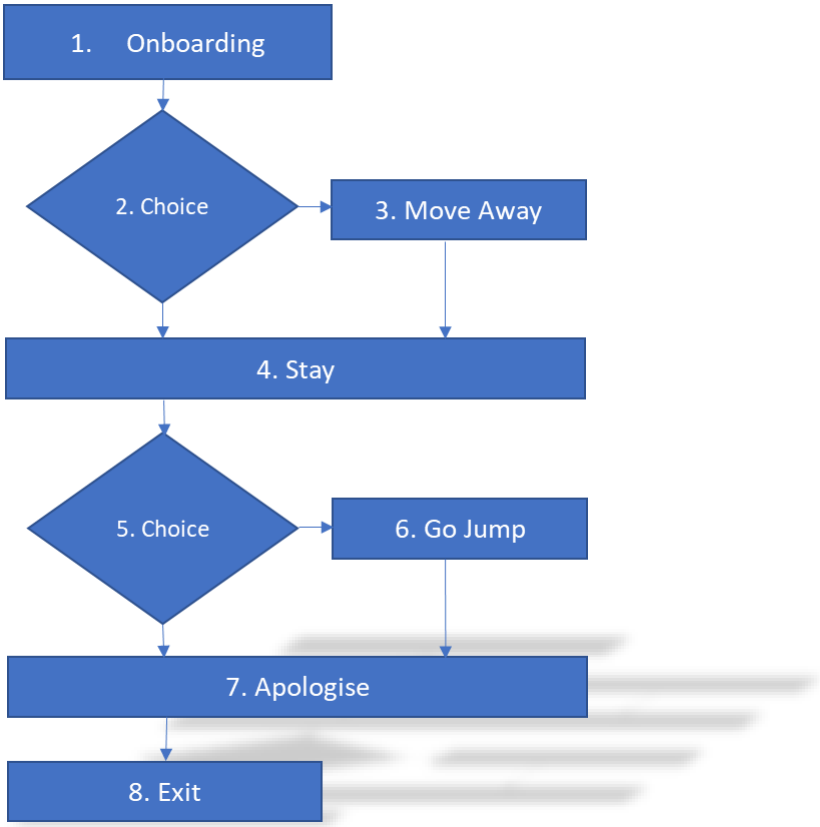

Figure 29: Branching narrative flow

Challenges to my practice as filmmaker

Producing this 360 film scene required a very different approach to my normal practice of 2D film production. For a small training video-based production, I start with a concept and then create a storyboard which will include master shots, medium (dialogue) and close-ups, for example figure 30: Storyboard for Manual Handling production. Then scout for a location, arrange for the talent, provide them with scripts, then make arrangements with my regular crew.

Figure 30: Storyboard for Manual Handling production

Go shoot the footage, including setting up lighting and sound and direct from behind the camera, an example showing the crew of 'Bugman' a food hygiene film I shot. Figure 31: On set 'Bugman'. I direct by blocking the actors; instructing them where to stand and their movements and monitoring their performances and approving or rejecting any changes to dialogue or action.

Figure 31: On set 'Bugman'

Then I edit the footage to the storyboard, using all the different shots, often from multiple cameras, add in graphics and titles to finalise the production, an example being Figure 32: Editing 'First Aid the Movie'.

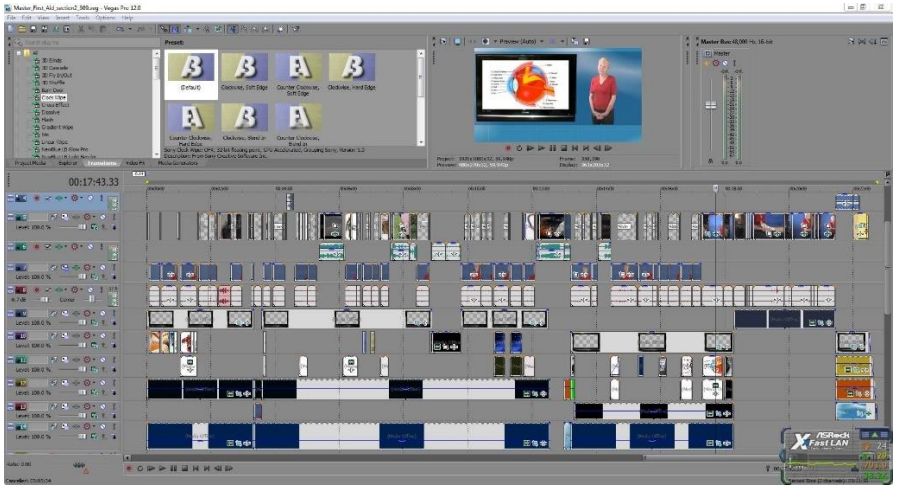

Figure 32: Editing 'First Aid the Movie'

The differences to my practice were based on the challenges of directing the scene from the 'inside and out', taking care to respect the participants' agency, while I envisioned the scene as embodied in the 360 camera and how to use audio cues to direct attention (Dooley, 2017). 360 filmmaking, which is natively FPV, requires an understanding of the viewers from a directorial perspective and to what level are they embodied, and if additional props are employed to aid their sense of immersion. Production of this scene was complicated and problematic; however, due to the audio and resolution limitations of the target platform, the Rift S, production issues did not impact upon the participant experience. Moreover, 360 filmmaking challenges how mise-en-scene – what is in front of the camera – is implemented, as everything

is in shot, leading to challenges in lighting, how to light a scene without the lights showing, or using natural light and issues with the low-light camera performance. Also, from a director's perspective, how to direct talent when recording a scene. While blocking talent and practising takes is straightforward, monitoring performances while not being in shot is problematic.

In summary the challenges to my practice from producing 360 film were:

- Firstly in pre-production, the use of storyboard was limited to camera placement, using different shots was also no longer needed. Master shots, closeups, and medium shots are storying tools, and these are replaced in 360 film through talent placement; moving closer to the camera if close ups are needed.
- Secondly, hiding the equipment and crew members, behind objects out of the field of view of the 360 camera, in this case behind pillars and furnishings.
- Thirdly the challenge of shooting in low light, by ensuring the six-lenses captured as much light as possible, without too much light entering one lens, which would have created problems when stitching the output of the lens together to make the video sphere. Traditionally, light can be directed and bounced if necessary, to even up lighting and illuminate the talent. I chose the camera placement very carefully, using the downlighting of the venue to illuminate the antagonist, while not shining down on the camara. The antagonist was blocked – where they are positioned and how they move in the scene – using a visual cue on the floor to ensure they stood in the correct spot when delivering their dialogue.
- Fourthly, monitoring the scene was challenging. Where I would normally stand alongside the camera, I was forced to monitor via a mobile phone app, while standing behind a pillar, so I could not see the antagonist directly, therefore, I reshot the scene a number of times so I could evaluate and use the best version when editing. I shot both in panoramic 360 at 60fps (frames per second) and 3D 360 at 30fps. It was very hard to imagine the camera's 360 field of view from the camera app; the VR participant's viewpoint. A better approach would be to direct while wearing a headset and embodying in the camera's perspective; this is an approach I would use in the future. I also needed to consider where and when the branching narrative points would appear in the scene, ensuring there was a 'pause' in the narrative to make a smoother experience, rather than the scene just halting and the branching narrative choices appearing.
- Fifthly, while directing the audio and foley (sound effects), the dialogue considered an embodied immersed viewer who could not completely interact with the objects and people encountered, however, could interact via gaze and make narrative choices, to overcome this challenge. I took the following approach. The participant enters the scene by becoming present at the bar. The bartender assumes they want a beer to drink, giving them no choice to respond to the question "What are you going to have mate?" and "Never mind, all we have is VB." The barman proceeds serve a VB to the embodied participant. I also used the 360 film technique of directing the VR participant's attention by using dialogue; sound cues, the antagonist's initial callout to the VR participant is "Hey you, hey you at the bar, what are you looking at?" The objective

is for the embodied participant to recognise that they are at the bar, and it is them to whom the antagonist is calling out, so they turn to face to the antagonist, ready for the aggressive beat to commence.

Directing from the 'inside and out' is challenging for directors and requires a different approach including, directing talent, hiding crew, and sound.

Creating a branching 360 narrative piece within the gaming engine Unity provoked more challenges. The production workflow for the immersive interactive film scenario was complex. The 360 film camera employed was the Insta Pro 2; it has 6 lens and 4 microphones and uses proprietary software to stitch the video from each lens together to make a video sphere. The sound was recorded in an ambisonic sound sphere format, which allows viewers wearing a headset to hear sounds that change when they turn their head around. However, the sound systems on the Rift S, while able to play ambisonic sounds, are not high quality. Producing sound for the VR experience for the 360 film scenario was problematic, due to background noise and difficulty with the microphones facing the talent not being audio limited, thereby distorting the audio. To reduce the 'hum' of the pub's fridges and to remove distortion, each audio track was edited to reduce noise, then recombined in an ambisonic format. To add atmosphere, the background music track was added, it also helped to mask the weaknesses in the audio. I used the same soundtrack which featured in every scene. The workflow was firstly to take the footage off the camera, use the stitching program to create video spheres for each part of the branching narrative, encoding these for the highest resolution possible to be shown on the Rift S, while at the same time encoding to a bit rate of 200mbs. These clips were then imported into Adobe Premiere Pro and the vision enhanced with a noise reduction program to reduce low-light artefacts. The audio was also enhanced to ensure background noise was reduced and that ambisonic sound did vector to the correct person speaking; sound came from the direction of the actor. These clips were then exported at 20mbs in 4K to be used in Unity where I created the branching narrative and then exported as a complete scene to the headset. Producing this scene was complex and difficult.

The major changes to my directorial practice spanned across pre-production, directing and editing / producing the clips for viewing on headsets. However, the biggest challenge was to keep focusing on the centeredness of the VR participant across all of these production stages. This ensured that the 360 film scene was much more than a role play as used in VPPs where you are not in an authentic setting and often know the antagonist as a class member, but an authentic embodied experience, giving the participant choice in how they respond to an aggressive stranger, a real-to-life scenario.

Scene 5: Reflect

The objectives of this scene were, firstly to provide a place of quiet relaxation for participants so they could recover from the previous aggressive experience scene. Secondly, as part of a reflective learning experience, to use the 'mask' metaphor and the physical act of throwing the mask away as a powerful method – through externalisation – of fostering participant reflection on the masculinity they hold and the masculinity they might want to hold in the future. And thirdly, to meaningfully tie all the scenes together and finish the narrative completing the experience.

Figure 33: The reflective experience – guided reflection and the 'Mask'

Link to scene video: https://flinders-my.sharepoint.com/:v:/g/personal/hall0613_flinders_edu_au/EeFH44_u9g1OgN17RiuuOZIBoxk-aTOHlmpJgij3DchQtg?e=LqbqGr

The environment for this scene, Reflect, was informed by the interview participants in stage 1, where they defined a place of reflection upon masculinities as a natural place. Participants spoke of sitting high up in nature when asked where they would go to reflect upon being a man, with an example being Mt Lofty. Moreover, this type of natural environment is supported as a place of relaxation.

> *We have a kind of biologically prepared disposition to respond favourably to nature because we evolved in nature. Nature was good to us, and we tend to respond positively to environments that were favourable to us.* Ulrich et. al., (1991)

Exposure to nature quickly improves mood and physical stress markers (Mooney and Nicell, 1992; Nakamurea and Fujii, 1992). Therefore, a natural setting would meet the scene objectives of an environment conducive to reflection and relaxation.

I created this scene on top of the small mountain on the Island. When entering the scene, participants became present at the top of the small mountain on the Island. While they cannot fall off, they can look over the edge and see the features of the Island below, including the tents and pathway. I was hoping to trigger memories of the learning experiences through reminding participants of the features and their sense of where they were, their journey along the pathway and their spatial orientation (Frumkin 2001,2003). In addition, I also wanted to trigger the positive emotion of awe in participants to prepare them for their reflective experience, as positive emotions are known to support learning (Pekrun, 1992).

I created another short, learning animated video to guide participants in reflecting upon the masculinities they had experienced in the previous scene (the antagonist and his mates) as a pre-cursor to participants reflecting upon their own masculinity. This experience was set upon an easel with a YouTube play button which, when pressed, welcomes them using text and audio to 'a place of quiet reflection', then prompts the participant to grab the mask. The participant is then asked to reflect upon what sort of man 'Col' was, the video shows a picture of 'Col' wearing a mask, placing the mask into the storyline to overtly make the connection between 'Col's' aggressive hypermasculinity and the 'mask' the participant holds. Next, the participant is asked if they ever wear a mask, and then they are encouraged to throw the 'mask away' and watch it fly away. Thereby externalising and separating the participant from what the mask represents and giving them space, when prompted, to think about the type of man they would like to become. This allows them to consider changing their relationship with the 'mask' and their masculinity (Carey & Russell, 2004). The video clip then stops and the participant is left with the ambient sounds of the Island, watching the mask disappear into the sky. This gives the participant a clear, natural space to consider and reflect upon their masculinity and what changes if any they would like to make to a possible future. This scene completes the experience.

Narrative devices used across the scenes

I used several narrative devices across the scenes to tie the story together with a distinct act structure: beginning, middle and end. The first device was an instrumental rock music song, which played in the opening scene when participants touched the guitar amplifier, in the second scene as a backing track for the masculinity scaffolding piece, and in the third and fourth scenes it was played in the bars.

The second device was the use of gravity on interactive objects. In the first scene, two of the books on the table did not have gravity attached to them, triggering a more surreal, magical feeling to the experiences where anything was possible. These books appeared on the Island in the first two scenes. In the third scene, in which participants were scaffolded around violence de-escalation strategies, two glasses were interactive and both sans gravity, meaning that when released, the glasses bounced around the bar in slow-motion.

The third device was the 'mask' which I introduced in the second scene and used to externalise and give space to the participants to reimagine a future of non-violent masculinity. Additionally, I also employed

gravity, or the lack of it, to aid reimaging something different; an altered state. Participants were encouraged to throw away the 'mask'. There was no gravity assigned, allowing the 'mask' to catch the gradient breeze and fly away. What I had done was to create an object-based metaphor replacing language as an externalising tool, and as a method to give space for a participant to reimagine masculinity.

> *Metaphorical language is a helpful way to externalise a problem and can facilitate a new problem perspective. Using metaphorical language, the problem can be directly personified and becomes an entity in itself, with its own actions, feelings, and resulting influences on the individual.* (Wolter, DiLollo, & Apel, 2006; p171)

These storying devices tied the scenes together to create a learning narrative for the participants. Doing this changed and challenged my practice.

Design principles and their application

This section summarises the locations of the design principles used in the Island. The principles emerged from participant interviews, practice, the literature and in response to the technical limitations when creating the Island. These principles have been referenced in chapters 3, 4 and 5. Note that some design principles emerged when creating the Island and so only appear in chapter 5 (Table 7: Design principles employed).

Table 7: Design principles employed

Design principle	Page	Description
DP1	47	A narrative, journeying Island experience
DP2	47	Pathway to guide participants
DP3	47	Experiential stops on pathway
DP4	47	Mountain top as a natural place of reflection
DP5	48	Storying approach to violence prevention - vignette
DP6	50	360 film and first-person perspective
DP7	58	Mature bearded male discussing masculinities
DP8	65	Externalisation using the mask
DP9	69	Common music across the scenes
DP10	69	Assigning zero gravity to objects
DP11	71	Use of 2D video to scaffold learning in VR
DP12	71	Talking mask
DP13	73	Podcast approach to learning
DP14	77	Hypermasculine performance
DP	15	Branching narrative

Challenges to my practice creating VR scenes.

I developed the Island using the Unity platform. This platform is under continuous development. Its development cycle is managed for each release, with a long-term support version, with no added features released which is the end of the cycle for that version. Unity is a complex piece of software and represents the complexity of the VR paradigm. It draws from 2D gaming, animation and, more recently, filmmaking. While it is well supported with third-party assets, interactions require coding using the C# language. Therefore, to create VR experiences, I needed to draw from game, animation, film and programming competencies. The Island was created using the Unity 2018.4.10f1 version, with several plug-ins and assets. The branching narrative 360 film scenario used Unity 2019.2.81f version with a plug-in asset to help manage the implementation of the interactive narrative. Unity and the similar Unreal engine are used by most developers to create VR experiences, so when I ran into problems, there was a known self-support resource from programmers' forums such as 'Discord' to 'YouTube' clips and the help manuals. Creating these scenes was challenging using the Unity software, which has a development cycle meaning that some of the software add-in tools did not work in different versions of that cycle.

Producing VR is quite different to creating short, scenario-based learning films. Project management is important when the platform you are using is itself developing. Finding out when upgrading to the latest release that many errors and items no longer work is immensely frustrating and time-wasting. A change of mindset is needed, similar to what I needed when producing the 360 film spheres: one of centredness on the participant, which is much more difficult in CGI VR, where the participant has agency and can move through the scene, therefore, as a producer you need to place yourself in many different positions in the scene, devices such as pathways and signs are helpful. Another challenge is lighting scenes and objects with different light sources, some of which, while making a pleasing aesthetic, cause performance problems. Similarly, the complexity of the materials and meshes you are using can cause performance issues. Different lighting styles and the complexity of objects need to be trialled and optimised for the Island to operate with a high enough frame rate to not stutter and induce VR sickness in participants. There was always a tension between creating sophisticated scenes with many interactive objects and using more realistic lighting and complex objects and the performance of the scene.

Unity is a complex piece of software, used along with Adobe Premiere to edit 360 film clips and Adobe Audition to create and edit ambisonic soundscapes. The challenges to my practice were from a conceptual change to directing and production to a participant-centric view and learning the complex and somewhat unreliable software.

Insights from practice

This chapter has reviewed the Island and my reflexive notes, uncovering the challenges of creating using a co-creative approach and producing using complex software. What this chapter has uncovered is the challenges to my practice and, importantly, four areas that emerged from employing a practice-based approach.

- Firstly, the usage of a hybrid approach, using 360 film and CGI VR combined together to create a narrative which, while complex, was blended together the strengths of both VR genres: CGI VR and 360 film; interactivity and granular realism.
- Secondly, using a visual metaphor, the 'mask', as a storytelling device and, just as importantly, the haptic act of discarding it as an aid to externalisation – drawing from narrative theory – and using the major strength of VR: interactivity.
- Thirdly, sequencing the scenes, in the order of explore, learn, experience and reflect. Ensuring that participants are not overwhelmed and ready to learn, then applying that knowledge in an authentic setting, then reflecting upon their actions and what meaning the scene and its contents/characters has for them.
- Fourthly, the use of different learning modalities, using 2D learning videos in VR that could be treated as podcasts, blackboards with text, animations and interactive 'speaking' objects. Thereby respecting the agency of the participants to learn in whatever modality they found more suitable for themselves when embodied.
- Fifthly, the use of the story device of gravity, assigning different values to suggest to participants that the Island world, while culturally familiar, did allow for other forms and ways of being, by using the metaphor of gravity being variable and able to change.

These five items emerged from my practice and are evaluated in Part C of this exegesis as part of this study's contribution to knowledge.

PART C
Evaluation, findings and conclusion

Chapter 6 – Evaluation

This chapter details how the Island was evaluated and the results used to inform the findings of this study.

Sampling and data collection

To evaluate the Island, a mixed methods approach of semi-structured interviews was taken, supported by a reliable survey, albeit with a small sample size, to uncover the amount of immersion and usability the experience afforded. The original sample of 14 young men, who informed the Island in the first co-creative stage were invited to participate in the evaluation, two of whom chose to do so. Another 11 young men, aged between 18 and 24, from the Adelaide area were recruited via a boosted Facebook advertisement. Figure 34 shows the boosted post and its performance.

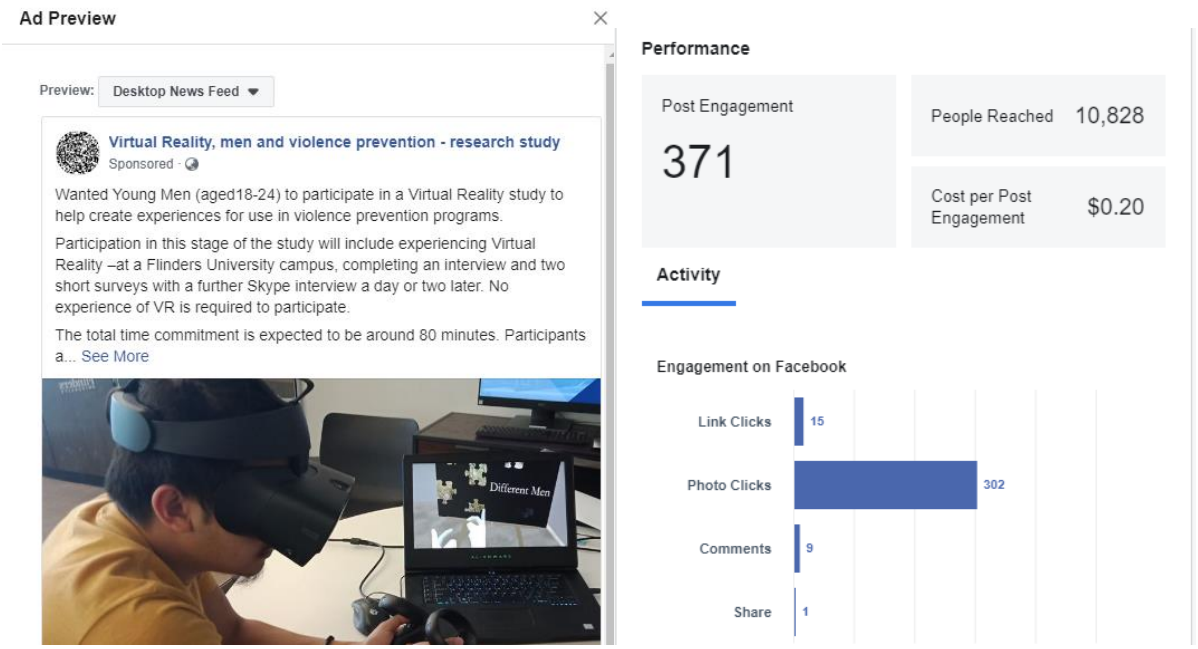

Figure 34: Facebook boosted post and results

There were 4 stages in evaluating the Island (Figure 35). The participants experienced the Island in VR, then completed a short face-to-face interview, followed by a survey using two known, reliable survey instruments. The two survey instruments, Witmer and Singer's (1998) Presence Questionnaire and the System Usability Scale (SUS) (Brooke, 1996), were used as an aid to supporting participants' interview responses by evaluating the level to which participants were immersed and became present in the Island. Finally, participants were followed up via a Skype interview one to two days later and provided with the opportunity to reflect on their experiences after having some time away from the data collection session.

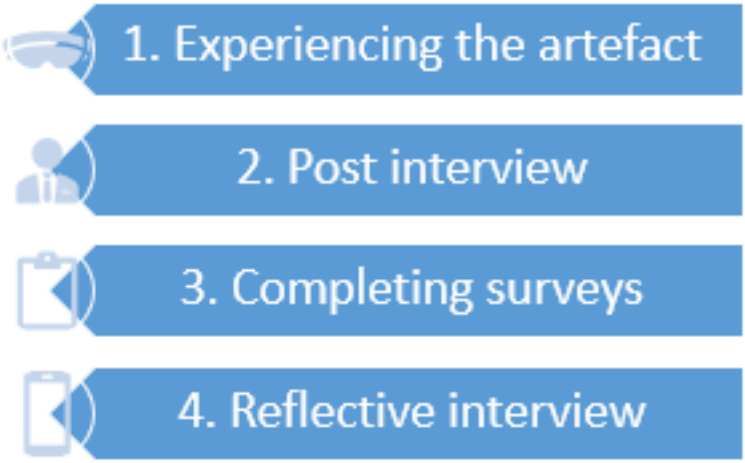

Figure 35: Stages in evaluating the island

The first stage of the evaluation was a sample of young men experiencing the Island. Those young men who chose to participate in this stage of the study were invited to attend an experiential survey and interview session at Flinders University, at either the city campus in Victoria Square or the main campus in Bedford Park.

To ensure the safety of participants, the WHS VR protocols were followed which included:

- Using a swivel chair to reduce the risk of neck or back strain when looking around in VR.
- Disinfecting the head-mounted display between participant usage.
- Encouraging participants to return to the 'real' world by keeping their eyes shut when taking off the HMD, then gently opening their eyes.
- Monitoring participants during the experience to ensure they were not either becoming motion sick or suffering from anxiety due to experiencing the content itself.

Immediately after experiencing the Island, the participants completed a short interview (the second stage) which asked the following starter questions:

- How do you feel about the VR experience, and what about it did you like or not?
- Could you describe how you felt when confronted in the aggressive scene?
- How did you feel about the opportunity to practice or think about non-violent responses to the aggressive scene?
- How do you think reflecting on the aggressive scene, including its male characters, could help you think about different ways of being a man?
- In what ways did you feel that VR experience gave you the opportunity to reflect on what it is to be a pro-social man?

The third stage involved completing a survey concerning how immersive and useable the experience was and if participants were able to become present and experience embodiment. I created this survey from

two reliable tools, Witmer and Singer's (1998) Presence Questionnaire (Appendix B), which measures the 'presence' a VR user experiences, and Brook's (1996) System Usability Scale (Appendix C), which provides insights into the user's experience with technology.

The final stage was a further interview conducted via Skype a day or two later. The starter questions were:

- Thinking back on the experience, in what ways could it be improved?
- Now that you have had a chance to reflect on the VR experience, do you feel that VR could be useful in violence prevention programs, and in what way?
- What did you think about the sequence of learning: explore, learn, experience and reflect?
- Do you think the VR experience provided a realistic opportunity for you to practice de-escalation strategies?
- Do you think the experience reflected masculine cultures of Adelaide? For instance, how did the blokes seem in the pub?
- Was the island in any way familiar?
- Do you think it's important when reflecting about the type of man you want to be for any learning experience to be familiar?
- Reflecting further on your experience, do you feel that VR could help you or others to reflect and change the way that they are men?
- Did you think the mask concept worked and did throwing the mask away help you think about different ways of being a man?
- How do you think the experiences could be assessed, in terms of if young men change their views of being a man?

This section has described how I collected the data to evaluate the Island, the surveys used and rationale for their usage.

Analysis of survey data

To anlayse the data from the surveys and interviews, I started with the surveys. The responses to the questionnaires were entered into Microsoft Excel and analysed using summary statistics. To explore how usable the Island was in the context of the experience for the participants (the HMD the computer systems it was tethered to, and the Island itself), the System Usability Scale (SUS) (Brooke, 1986) was employed. This scale used for indicating the usability of a system is recognised as reliable and applicable across a range of systems and technologies (Bangor, Kortum, and Miller, 2008). The scale itself is a five-item Likert scale with the categories ranging from 'strongly disagree' to 'strongly agree'. It provides a measure of how participants perceive their experience and provides a good indicator of usability with a small sample size of 8-12 participants (Tullis & Stetson's, 2004). It was therefore suited to this study, which has a sample size of 13 (for the evaluation stage of this study). Moreover, a sample size of 13, as used in this study, is suitable for determining the usability of digital products (Hwang & Salvendy, 2010).

The instruction to calculate the SUS score uses factored respondents' scores from positively and negatively worded survey items. Specfically, Brooke (1986) instructs

> To use the SUS, present the items to participants as 5-point scales numbered from 1 (anchored with "Strongly disagree") to 5 (anchored with "Strongly agree"). If a participant fails to respond to an item, assign it a 3 (the center of the rating scale). After completion, determine each item's score contribution, which will range from 0 to 4. For positively-worded items (1, 3, 5, 7 and 9), the score contribution is the scale position minus 1. For negatively-worded items (2, 4, 6, 8 and 10), it is 5 minus the scale position. To get the overall SUS score, multiply the sum of the item score contributions by 2.5. Thus, SUS scores range from 0 to 100 in 2.5-point increments.

The SUS result for this study was 88.27, which indicates that the Island and systems used to create the experience for participants had a high degree of usability. At the same time, Lewis and Suaro (2018) warn against looking too deeply at individual scores and state that, when creating a grading scale (Table 8), "it is becoming a common industrial goal to achieve a SUS of 80 as evidence of above-average user experience."

Table 8: Grading scale for the SUS

Grade	SUS	Percentile range
A+	84.1 - 100	96 - 100
A	80.8 - 84.0	90 - 95
A-	78.9 - 80.7	85 - 89
B+	77.2 - 78.8	80 - 84
B	74.1 - 77.1	70 - 79
B-	72.6 - 74.0	65 - 69
C+	71.1 - 72.5	60 - 64
C	65.0 - 71.0	41 - 59
C-	62.7 - 64.9	35 - 40
D	51.7 - 62.6	15 - 34
F	0 - 51.6	0 - 14

The implication for this study is that the design of the Island did have a high degree of usability.

Immersion and Presence

Witmer and Singer's (1998) Presence Questionnaire was used to gauge how present and immersed participants were in the Island. The scale is a Likert scale comprising seven categories, which includes both positive and negative classes. It is a reliable indicator to what extent participants are immersed and present in a virtual environment, and is a standard tool used by developers to evaluate the virtual experiences they create from the perspective of the participant.

The results were factored into, according to the method detailed in a factoring update to the scale, Appendix B, and a simple likert graph produced for each of the factored items. These were realism, possibility to act, quality of the interface, the possibility to examine, self-evaluation of performance, sounds and haptics.

Table 9 shows the factored score responses and percentages in the table body, titles of the factors on the left-hand side, and in the header, the likert titles.

Table 9: Factored scores and percentages – presence questionnaire

Factor Ratings / Likert titles	Strongly Disagree		Disagree		Somewhat Disagree		Neutral		Somewhat Agree		Agree		Strongly Agree	
Mid_point	0.5 1		1.5 2		2.5 3		3.5 4		4.5 5		5.5 6		6.5 7	
Realism	0	0%	0.33	3%	0.33	3%	1.83	14%	3	23%	3.67	28%	3.83	29%
Possibility to act	0	0%	0.25	2%	0.75	6%	1.25	10%	3.5	27%	4.25	33%	3	23%
Quality of interface – reversed	0	0%	0	0%	0	0%	1	8%	2.67	21%	5	38%	4.33	33%
Possibility to examine	0	0%	0.33	3%	0	0%	1.67	13%	1.33	10%	4.67	36%	5	38%
Self-evaluation of performance	0	0%	0	0%	0	0%	2	15%	0	0%	4.5	35%	6.5	50%
Sounds	0	0%	0	0%	0	0%	0	0%	2.5	19%	4	31%	6.5	50%
Haptics	0	0%	0	0%	0	0%	1	8%	4	31%	6	46%	2	15%
Factor Scores and percentages														

The first factored graph, Figure 36: Realism, gives an indication of how 'real' the participants felt when experiencing the Island. This 'realism' is linked to how immersed they felt in the Island and therefore, how likely it would be for the participant to learn and be affected by the content presented (Dalgrano & Lee, 2010). The level of realism is also a reflection of production values and the segues between the scenes. The result shows that the majority of participants did ascribe feelings of realness to the Island as a whole, although not to individual scenes.

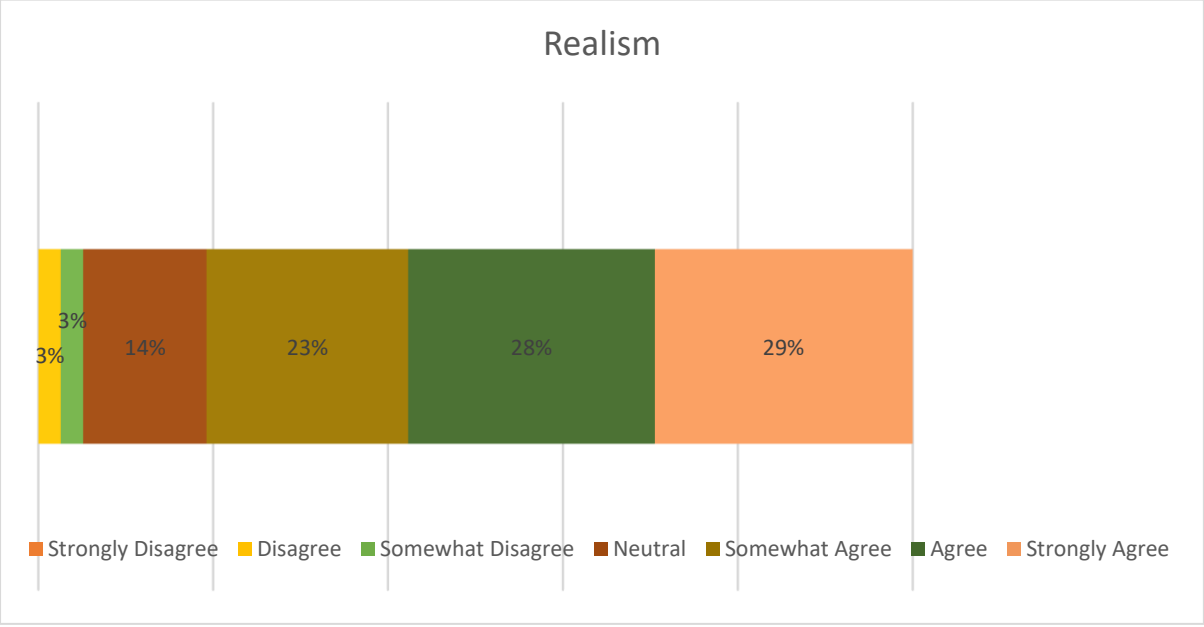

Figure 36: Realism from presence questionnaire

The second factor, Figure 37: Possibility to act, indicates whether participants believed they had agency on the Island and could act either response to cues or their own impulses.

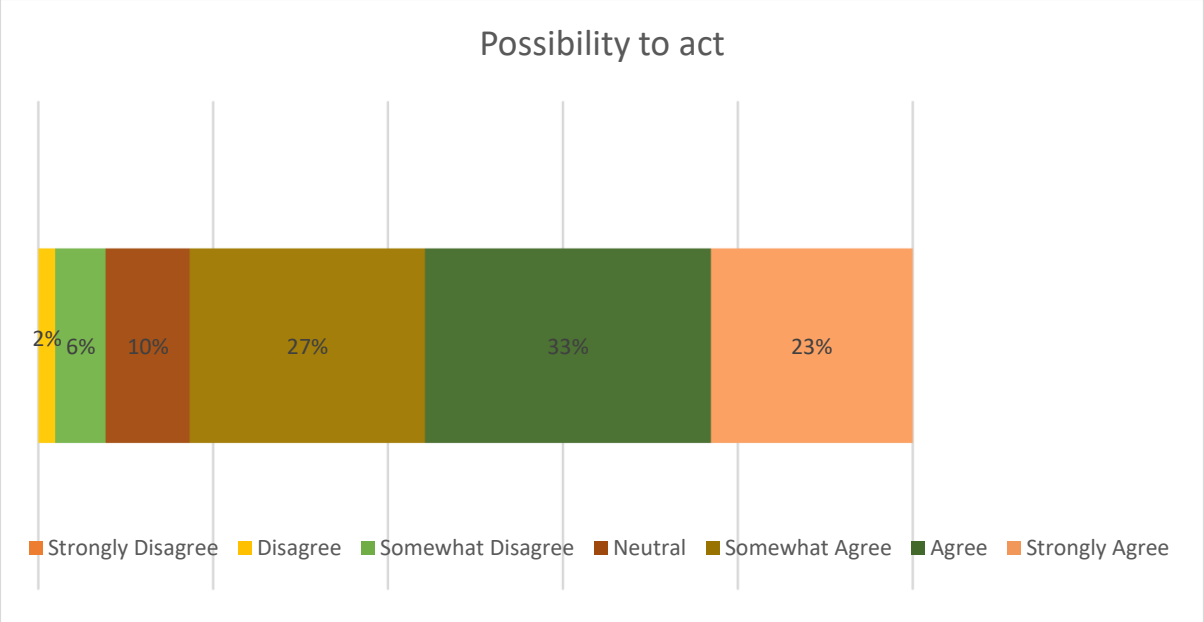

Figure 37: Possibility to act from presence questionnaire

The third factor, Figure 38: Quality of interface, shows the perceptions of the participants as to the quality of the interface, for instance, how they navigated through the scenes, used the YouTube buttons to play videos, teleported and made narrative choices in the aggressive scene experience. The result indicates that the choices made in producing the scenes were appropriate.

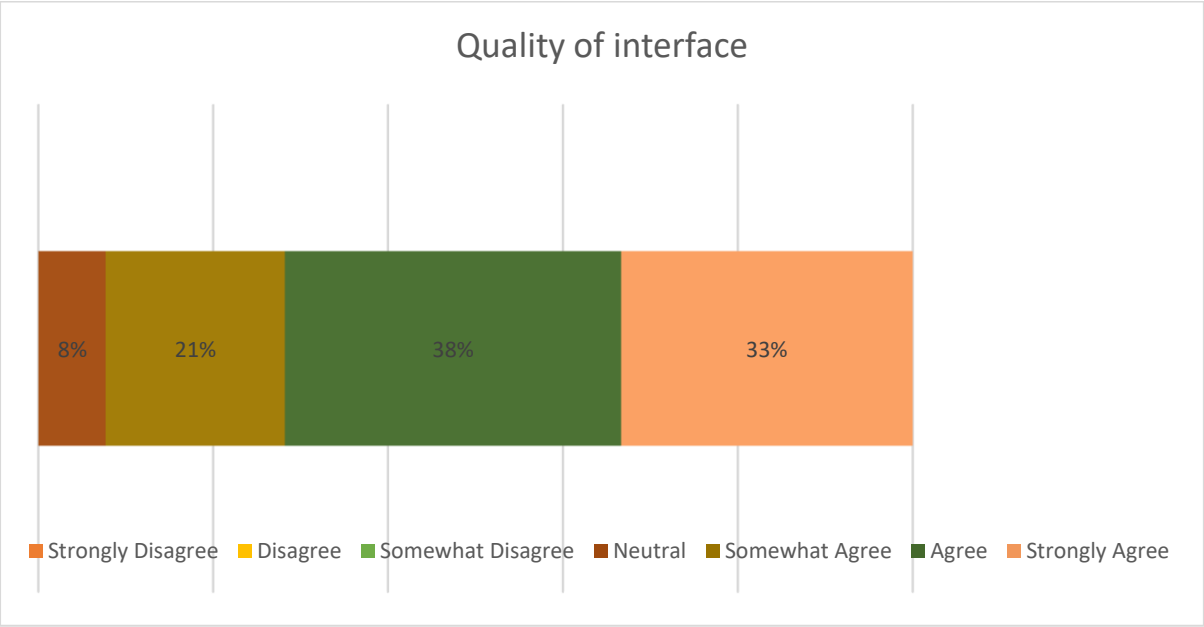

Figure 38: Quality of Interface factor from presence questionnaire

The ability to interact with objects is an integral part of the VR experience in 6DOF environments. This factor, figure 39: possibility to examine objects, is especially important in this experience where participants are requested to hold onto a 'mask' and cast this mask away, a story device, as an aid to externalisation and

fostering reflection as to the masculinity they hold. The result of this cluster provides evidence that the Island did allow participants the opportunity to interact in a meaningful manner with the objects.

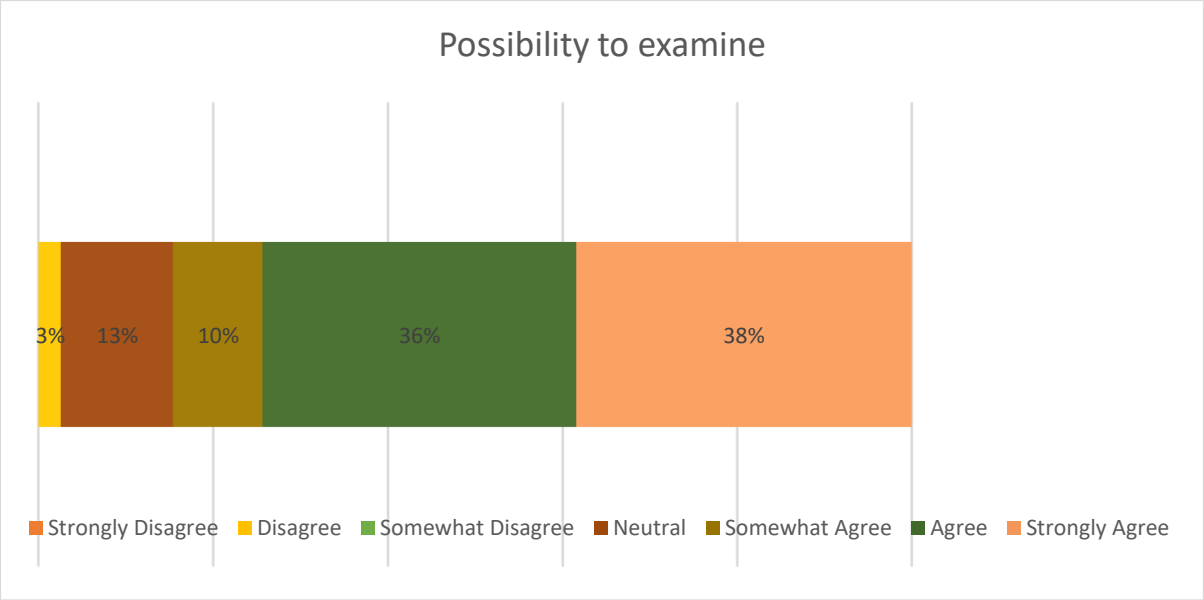

Figure 39: Possibility to examine from presence questionnaire

The fifth factor, Figure 40: Self-evaluation of performance, indicates whether participants believed they could evaluate their performance in the Island. The graph shows that they could reflect on the choices they made when immersed on the Island.

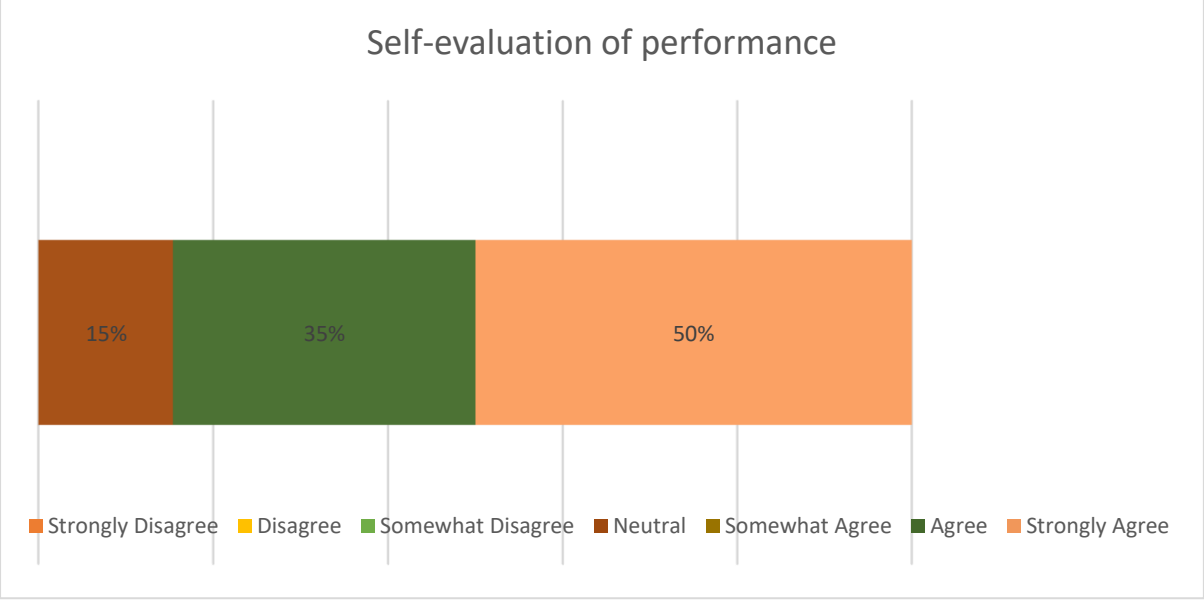

Figure 40: Self-evaluation of performance from presence questionnaire

Evaluating participants' rating of the sounds (figure 41: Sounds) meant that audio used in the Island was important. Sound in VR is vectored, and the scenes used sound as a cue for participants to interact in a certain way, for instance, the barman in the aggressive scene uses talking as a device to gain attention. Similarly, the match-up of music, which was a story device across all the scenes, when pressing play on the

guitar amplifier, and the vectoring of sound emanating from the amplifier when participant 'walked' away. Understanding the use of sound is essential when seeking to direct attention and maintain realism and immersion in VR and 360 film. The results show that the participants were satisfied with the quality of the sound in the Island experience.

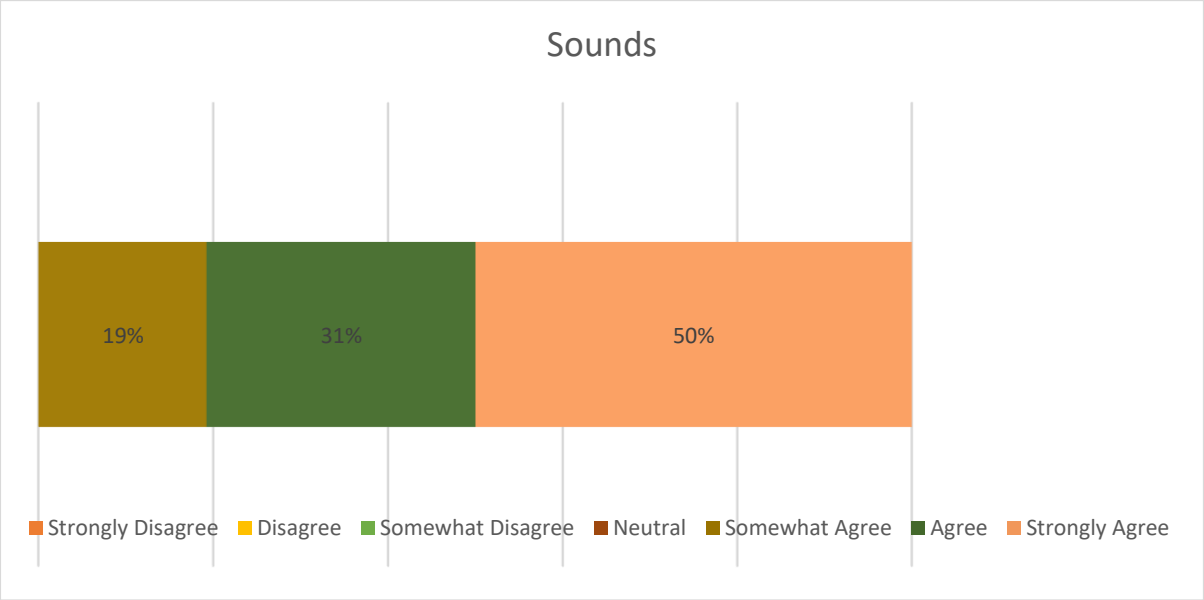

Figure 41: Sounds factor from presence questionnaire

Haptics concerns the 'sense of touch'. The Island experience did afford participants the opportunity to pick up objects and hold them, and the story line did include throwing the 'mask' away. The sense of touch in this case was caused by visual and auditory cues for the mask and guitar amplifier rather than feedback that could be felt from the hands as a weak proxy for the rich sensations that the human hand provides (Dangxiao Wang et. Al., 2019). While some participants experienced problems until they practised picking up the books, fishing rod, ball and bat used as onboarding aids in the first scene 'Explore', they were able to interact with the mask. The results shown in Figure 42: Haptics, illustrate that participants did feel some satisfaction with being able to have a 'sense of touch' with the objects on the Island.

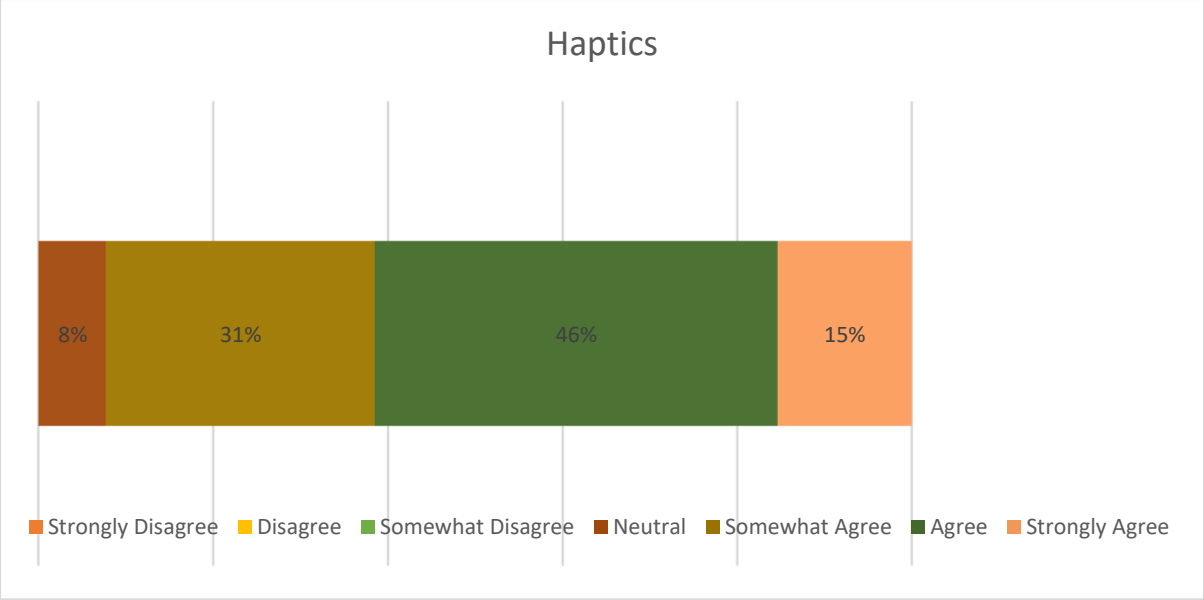

Figure 42: Haptics from presence questionnaire

The analysis of the survey responses demonstrated that the Island was useable, and the participants became immersed in the Island. They were able to interact with objects, be directed through sound cues, feel the experience was 'real', and assess their performance. These responses indicated that the Island's design and production values were good enough to not interfere with the participant experience of the content. Thereby supporting the participants' responses to the interview questions.

Findings from the interviews

This section describes the topic and sub-topics emerging from the interviews conducted after the participants experienced the Island. There were two interviews. The first was a concise interview conducted after the participant took off the HMD, which tended to focus on the aggressive scene with the participant discussing the reaction they had and the choices they took. The second participant interview was conducted a day or two later via Skype. The delay allowed participants to reflect upon each scene, and if the Island could foster reflection upon masculinities. Additionally, if the Island could provide authentic opportunities for young men to practice de-escalation strategies, these interviews were transcribed, and topics and sub-topics identified and aggregated using the thematic method detailed by Braun & Clarke (2006). Table 10: Topics and sub-topics emerging from the post-experience interviews, shows this detail. The broad topics split along the dimensions of learning, experiencing, reflecting upon the Island, and the nature of the production decisions made when creating it.

Table 10: Dimensions, topics and sub-topics emerging from the post-experience interviews

	Topics	**Sub-topics**			
Learning	Heutagogy	Learning modalities	The sequence of the experiences	Authentic learning	Engaging
Experiencing	Masculinities and local men	Local cultural stereotypes	Familiarity	The mask – reflection and externalisation	Mates in the experience
	Emotions	Emotional regulation	Empathy	Release from the mask	
Reflecting	Reflecting	Reflecting upon masculinities			
Producing	VR	Realism	Agency		
	Scene-specific	Explore	Learn about men and de-escalation	Experience	Reflect

Learning

The dimension focuses on the broad topic of learning, included the topic of heutagogy, with sub-topics of learning modalities, the sequence of learning, and engaging.

Heutagogy

Participants were prompted to talk about what they thought about how and what they learned in the Island and how this learning could be assessed. Asking learners to evaluate a learning program in this manner is part of a heutagological approach (Hase and Kenyon, 2000). Participants were generally supportive of the process of learning used in the Island, except for two participants, who thought the learning sequences contained in the 'learning' tents, about the 'Mask' and 'about Men', should have been external to the Island. "I think that it did not need to be in VR at all" (Participant Z) and this learning content could have been delivered through pre-reading:

> I feel like those could have just simply been in real life on a piece of paper or applied to a speaker. Just listen to it and then delve into the VR aspect for the more teaching aspect of it. (Participant S)

Participants were supportive of not using avatars in the aggressive scenario: "The real person in real life. That worked." (Participant S).

As part of the heutagological approach taken, participants were asked about how they could be assessed, specifically how and what an assessment would look like. Participants thought the post-Island experience reflective interview itself would be a form of assessment.

> You know, these questions are gonna be asked. So then you do actually reflect on these things and yet actually improve as a person. (Participant J)

Participants suggested much longer time frames were needed for the act of reflection to be effective. Participant M commented "I'm not sure if a couple of days is long enough. Cause being able to see if it has an effect, a significant amount of time afterwards would be good to be able to reflect." Participant Z commented

> I don't think that even if this did have an effect, you'd be able to tell within like a week like me, you might need like to give them six months to do like a lot of like so what you're trying to do is like really change the way someone knows their whole life. So might take a long time to realize it had any effect on them or if it even does at all.

Several participants suggested that a follow-up VR session, again, much later, where they were placed into another scenario would serve as an assessment and their reaction to another aggressive performative masculine experience.

> I think it'd be good to have another experience to go into that slightly different and then see how they react to that slightly different situation after going

> through the first one. I'd say a few weeks. A few months after the first one gives some time to think about, what we've gone through. (Participant K)

Generally, participants thought the process of reflection via the reflective interview was a positive one:

> The reflection you had, you know, although it made me think of how I've gone about past interactions and how I've reacted to certain things. And yeah, let me think a bit since then. (Participant W)

Learning modalities – watching, reading, listening

When creating the Island, I used a number of tools to deliver learning messages. These were a video of an interview, a video comprised of audio and graphics, a blackboard with writing on it, and audio tied to the 'mask' which activated when touched. The participants did feel that learning in VR was positive.

> Just like watching a YouTube video. But I think the information was what was good, the videos were good. Quite enjoyed the old bloke talking about what masculinity means. I had no idea that you could just walk away and listen to it. (Participant Z)

They also enjoyed the agency that they had in VR, for instance, to watch the video of 'about Men'.

> I like that it felt like a shop with a TV in it, and I was watching something, it felt natural I guess, kind of what you do in real life, if you walk past something and stop and watch it … I just stood and watched it. (Participant K)

Or using the video as a 'podcast' where they could 'walk around' and continue to learn while walking. Participant C commented

> That was good. Especially with YouTube videos… I didn't even think you could do that with, um, virtual reality... And then with the audio playing wherever you are. That was good as well, because you can walk around, explore or still have the video playing of the both videos.
>
> It was good just whether you decided to watch it or whether you could just walk around. You could still hear it. So it was good as well. Yeah. (Participant H)

Interestingly from a learning modality perspective, some participants preferred to read from the 'blackboard' rather than listening to the 'mask' which narrated the blackboard text when touched.

> I found it was good to be able to read this stuff, but I also found the video worked as well…I find that would probably be better for me personally because I like being able to read something at the same time as like listening to it. (Participant MC)

> I much prefer like reading something. It just stays in my mind a lot more when I read something than to hear it from someone. When I hear it from someone, it just goes out of one ear then goes out the other. Yeah. I've definitely preferred the reading. That's just my preference. (Participant H)

Furthermore, one participant enjoyed the de-escalation presentation in the Crazy Dog Hotel, where a mixture of voice, graphics and text was used for scaffolding learners before entering the public bar and conflict situation. Participant J suggested improving the de-escalation learning content by "having a little monologue like, 'oh, because you didn't raise your hand or because you didn't do this' " so participants can learn "what triggered the line of action". He also suggested for the de-escalation video using more animation to engage younger males, "especially if you're targeting us towards teenagers or kids. But for those ones, kind of like, you know, just doing it just because they're doing it, an animation would hit harder … they'll take it in more" (Participant J).

Participants' responses highlighted the use of different learning modalities and how they interacted with participant agency in VR. Also highlighted was the perception of using animations to engage younger learners.

The sequence of experiences

The sequence of the five experiences was a topic of an interview question. The learning sequence that I employed and split the scenes up into was that of 'explore', 'learn1 – about men', 'learn 2 – de-escalation', 'experience' and 'reflect'.

The sequence presented was:

- explore – to onboard participants;
- learning – to scaffold participants in areas of masculinity theory relevant to violence prevention programs and de-escalation strategies;
- experience – where participants had the opportunity to apply their learning in an authentic environment; and
- reflect – as a summative experience asking participants to reflect on their masculinity and that of the other in the experience.

Participants W, Z and J1 commented on the first experience, 'explore'.

> Yeah, that worked really well, actually. It was kind of easing you into the experience, getting you familiar with it. Once you're familiar with it, you're not distracted by the little things. (Participant W)

> Yeah, I think it definitely ordered pretty well. And like yeah it was good for introducing someone to it. (Participant Z)

> Got me real like adjusted because I'd never done VR before. So really adjusted me to the whole area and then how it felt with the HMD on. (Participant J1)

Two participants challenged the sequence of these experiences, suggesting putting participants in the experience scene before scaffolding their knowledge. Participant H commented "it would kind of show you what the actual person would like do before learning how to actually react in that situation … then they would be able to do what they actually would do in that situation and find out what would happen."

However, they were the exceptions. The explore, learn, experience and reflect sequences worked well, using the affordances of the interactivity of VR and the immersive realism of 360 film and storying devices to tie the experiences together in a holistic narrative.

Authentic learning

The participants were keen on the VR experience being able to support authentic learning (Herrington et al., 2007) where learning occurs in situ and is grounded in an authentic experience which requires some form of solution to a problem that is meaningful to participants' lives. The participants did believe that exposure to this authentic experience, the scene experience, did provide an opportunity to realistically practice de-escalation to the potentially violent situation. Participant E commented "…to make an impact, it had to feel like somewhat real, like a real situation. Definitely felt confronting to a point like having him walk up to you like that." Participant S commented on the explore scene "That was the most I'd say useful of these five experiences because it was obviously the real-world setting. Yeah, and using the information you've learned and applying it to a real setting."

With many participants recognising the situation and feeling that they or their mates had been in a similar situation. This authenticity affected the participants and provided a point to focus and reflect upon.

> It works very well because it looks very real and put in that situation in virtual reality and having real people with real places, even familiar places even. It kind of makes it more personal...but I think it's really a really effective way of doing it because I am familiar with the pub at Flinders and I'm thinking, hey, if I'm in that situation, that's the kind of things that can go wrong. (Participant W)

Participants felt the experience scene was 'real' to them and an authentic experience.

Engaging

Virtual reality is known as an engaging learning paradigm (Sullivan et al., 2011). The participants found the experience not to be a boring lecture, but educative and fun. "This experience is different to other programs I've been on where someone just talks to you from the front of the class" (Participant B). "Instead of just the generic violence prevention video, having places that you know and are familiar with really helps". (Participant W)

Two participants chose to interact with objects as a sort of 'virtual doodle' when watching the learning content. They decided to spin the gravity-free drink glasses in their hands while watching and seemingly paying attention to the de-escalation video. Participant J1 commented "playing with it can makes you more involved in it." This action seemed to be analogous to doodling while in a lecture and could have the same effect of encouraging learning, through fostering concentration (Andrade, 2010). Participant E commented on his interactions with the class "I tried to drink some of the beer, I grabbed two of them and was wandering around. It makes the experience fun and a learning experience". Participant J said "It was quite interesting being able to play with the physics of the beer glass and playing with it can make you more involved in it. You feel you're more immersed."

Participants found the experience to be engaging. Those who interacted with the beer glasses found that they were more immersed in the experience.

Experiencing

The dimension of how participants experience the Island, includes masculinities, with the sub-topics of local cultural stereotypes, familiarity, the 'Mask', reflection and externalisation, and mates in the experience. Also, in this dimension is emotions which contains the sub-topics of emotional regulation and empathy.

Masculinities

The Island that was co-created for this study leant into masculinity theory, specifically Connell's (1995) work which describes masculinities being situated with a local culture. It also drew from the VPP's gender transformational approach; seeking to change the way men see themselves as men. To foster this transformation, young men were encouraged to give themselves space to reimagine a different future masculinity for themselves by using casting away the 'mask' and what it represents. For this strategy to be successful, it relied upon the Island experience adopting local cultural male stereotypes, familiarity with scenes, language and body language and actions.

Local cultural stereotypes

The preparator, 'Col', in the Crazy Dog Hotel scene, was perceived by participants to be culturally South Australian; his actions and words resonating with participants. Some participants viewed him and his gang of mates to be "just like me and my mates" (Participant J). Others, while recognising 'Col' and his hypermasculine aggressive performance, did think his mates were not aggressive or loud enough and did not fully represent the 'mates' 'Col' would have with him. 'Col' was played by a talented local actor and film student and came across as authentic in playing the part.

> The swearing definitely was. That would have been part of it. So that kinda fit in with the experience. Like not like sugar-coating anything. Everything was like real, it felt real. So, yeah, cut it out. It was like an actual scenario that you somehow got a VR camera in so yeah. (Participant C)

The others were bystanders who were roped into the scene as 'mates' of 'Col'; his gang. Two participants noted their lack of authenticity/acting skills and to some extent, my lack of direction. 'Col' was perceived as projecting a hypermasculine stereotype, including his body language, which supported the authenticity of the scene. Participant J made the connection between his night-time economy experiences and hypermasculine 'Col'

> They're a little too aggressive, they're violent, you know, the one they were they want to get rowdy. Some reason like my own mates, to be honest. Participant J

Participants recognised 'Col' as a hypermasculine young male, who was exhibiting a cultural masculinity they could recognise as local and situated.

Familiarity

All but one of the participants were familiar with the night-time economy and recognised the homophobic slur that the potential perpetrator used to provoke them in the aggressive scenario. Three participants did feel the word 'faggot' was uncommon for their age cohort, however, they all agreed that the aggressive scene was culturally relevant. Moreover, they could find men acting in a similar fashion in the Adelaide night-time economy hotels and pubs.

This familiarity of local masculinity was critical in facilitating a sense of realism and valuable to participants in understanding the performative nature of the aggressive scene. While this scene was in 360 film, its was realistic enough to unsettle the participants and force them to respond with the emotions of frustration, fear and or anger.

> Like guys in the pub, hanging around the pool table like that, all super uncomfortably masculine. And I've definitely watched guys like pick fights at the bar and stuff very much like that before. (Participant E)

While the Crazy Dog Hotel scene was familiar, the Island scene itself was not so by the majority of participants. They recognised an island but did not make the connection between the flora, that I had tried to make similar to local South Australian trees and shrubs. I selected trees for the Island on local Norfolk Pines. I ensured dunes and sand were visible with only patchy low-lying scrub, very similar local environments such as Glenelg, Semaphore and Aldinga beach, away from the buildings.

The mask – reflection and externalisation

The participants said the reflective experience worked well, with the holding of the 'mask' and casting the 'mask' away, with four participants finding that this throwing away the mask produced a sense of release, "it felt like a burden had been lifted from me" (Participant J). These comments are important in recognising the affordance of VR interactivity, in terms of using it to enact a method from narrative therapy (White, 2000). Where parts of the problematic self are externalised and, in this study, projected onto an object, in this case, the 'Mask', and then cast away, thereby encourages problems to also be thrown away. In this case,

creating a new space for participants to imagine a future masculinity away from the one they presently possess. Participant J1 and E commenting on the throwing away the 'mask'

> I think it definitely would help people in being able to have that physical object seeing and reacting to it. It's a lot more, you know, than reading a piece of paper with all these things that could help you, you know ... I thought about throwing it away over the weekend and that's like especially made me look more at things I do, my mates do. (Participant J1)

> It felt really good in that that last bit to throw the mask away or like I almost felt better after that. Like, I don't want to say I sound silly thing, but it was a really cool experience. (Participant E)

> Throwing the mask away meant something because then you like you're physically you're doing something to get rid of it … I thought about it a bit more because that's sort of something that sticks in my mind: throwing the mask away. And then you think about yourself. Participant C

Virtual reality supported the holding the mask, and the virtual sensation of casting it away to fly off into the clouds in the sky. Participant K and E made a connection between the 'mask' and 'Col' the antagonist, feeling they were tossing 'Col' away. "Yeah. I felt like him because I feel like that's disgusting [spitting]" (Participant K). Participant E commented:

> I think the act of like the physical act of throwing it was important because I remember because of the confronting scene where he confronted us with I guess, I don't know what spitting counts as if that's not physical violence, but it's you know, it's not nice. So I think if he didn't spit or whatever, then throwing it away wouldn't have felt as impactful.

Participant P linked his agency and a choice to accept the metaphor of throwing away the mask and rejecting what it signified.

> I think that was really important to have the choice of throwing it away because you told it to do so, but you're not forced to do it. You kind of have to make the conscious decision to do it yourself.

While most of the participants 'got the idea' of the mask, some thought it was not important, although they all agreed that using the 'mask' metaphor would have benefits for young men in violence prevention programs. Participant E commented

> I've thought about that a fair bit over the last couple of days. I came by and spoke to my partner about it. And yeah, I thought it was just a really a perfect analogy for it, because I do feel like a lot of a lot of men put on a bit of a mask. To hide lots of

> parts of themselves. They hide that softness, that kindness to make themselves seem more like a man, a bit sad.

Participants connected with the mask metaphor, Participant H commented "I feel like there is a lot of mask people, in every bar there is a like a guy with that sort of mask on." He went onto say how the mask metaphor changed his perceptions of men: "Yeah, I mean, that's an interesting concept, I like to think that men have that mask that they just put on like I've never really thought about in that way like that, but they help me think about it from another perspective. I thought that was cool."

Other participants commented on how they need to wear a mask at times.

> I feel like I wear a mask in different environments. So I like when I'm at home, I'm all good. But if I'm hanging out with other men, I'd definitely put a mask on. And try and act a different way. (Participant E)

> I got thinking about living behind a mask, your actually wearing something its not like how you actually are. I don't know if everybody will get that. (Participant Z)

The mask was a powerful metaphor in that it provided an object for externalisation, giving participants the choice to make a new masculinity space for themselves. Participant M commented on releasing the mask.

> "I think I think the moment that you let go of it more just makes you like think about what it would be like to throw the mask away in actuality, like if you were to completely like, just say, all right. No more mask or anything like that. What it would be like to do that? So it just makes you think about it a little more than like just listening to the video where you've actually got to interact with as well."

Mates in the experience

Upon reflecting, the participants were asked about how the experience might be different if they had company in VR. Specifically, who or what would that company be? The answers were insightful in that the young men felt that discussing their masculinity and views on masculinity was 'private' Participant B commented "It would have to be by yourself because that's a bit of like a personal sort of thing … a personal choice to throw that mask away". They recognised that while some close friends might be trustworthy enough for them to expose their feelings about masculinity, others would denigrate them, and if masculinity was discussed in a group that it would not be taken seriously and would become a masculine performative activity; showing off to mates: "just make a joke at the entire time." (Participant C). However, Participant M thought that some of his mates would be useful in the experience, although he would need to work which ones.

> You'd have some mates who'd like be useful to be able to sort of figure out everything that's going on. But you've got some that would just not be much

> use at all and they just sort of distract the entire situation and piss around. (Participant M)

Having mates in the Crazy Dog Hotel aggressive scene was supported.

> I reckon it would be a bit more effective because then you could see how your friends react and then you'd be able to work off of that. And then even in the real experiences, you'd know who to look after more. But you're having more people there because like men kinda bond together, like side-by-side instead of just about themselves having people together in the experience that be good. Yeah, be really good. (Participant C)

Although Participant B thought that having mates in the experience might increase his aggressiveness: "If it I had some mates in there, it definitely would be. I think it would be like mob mentality. I don't think I ... yeah. I would be a bit more aggressive in the simulation." Participant M commented: "If with mates there's that peer pressure kind of feel, you still have that mask on if you've got your mates in there with you."

Participant C discussed a realistic scenario of attending a nightclub where violence might occur.

> There'd be more significant if it was like your friends because when you go out clubbing, obviously not by yourself all the time… I reckon it would be a bit more effective because then you could see how your friends react and then you'd be able to work off of that.

The responses to questions about discussing masculinity openly and being a private matter for discussion among close friends only to avoid ridicule is insightful; similarly, the participants views on mates and behaviours in aggressive night-time economy situations.

Emotions

Virtual reality is known for its ability to activate emotional response and also to encourage empathy in participants. Interestingly the interviews uncovered an action that resulted in a stronger response than spoken words which stressed participants' attempt at emotional regulation when confronted aggressively.

Anxiety, emotional regulation and realness

The aggressive scene managed to provoke almost all of the participants. It was designed to place participants into a situation they would perceive as real and thereby afford them the opportunity to not only practice their de-escalation responses but 'feel' anxious when they were being confronted and give them the opportunity to practice emotional regulation. The participants reported that the scene did activate anxiety in them when being confronted, and, while the words that 'Col' spoke did not create strong feelings, his act of spitting at the participants did. The spittle was a closing antagonistic gesture of disrespect, which could, if the participant was watching the perpetrator, be clearly seen flying towards them and also be heard.

This act produced a strong response of anger in participants, breaking any emotional regulation they might have been attempting. A typical response was "where is the hit button" (Participant E). Participant E commented

> The words he called me, a 'faggot' and stuff and I was like, oh yeah, I can take that. That's fine. Then he spat at me. Then I was like, yeah, I'm furious. Where's the hit button. I think that was that was perfect for what you were going for. (Participant E)

> Spat at? I felt furious, someone's done that to me before. So it was almost like a bit of a trigger moment and like, yeah, that that has definitely set off an argument for me before I find that beyond disrespectful. (Participant M)

The words spoken by 'Col' and his threatening stance were designed to provoke a reaction in participants to feel threatened, anxiety and secondly to experience anger. The objective of which was to allow participants to safely experience an authentic aggressive situation, one they might find themselves in. Some violence prevention programs include role plays to allow participants to take a big picture of the emotions they experience when threatened and allow them to practice emotional regulation. In this case, the words used to threaten was a challenge to their masculinity, by being called a 'faggot' and being told they 'not worth my time, wanker' belittling them in front of other men (Collins, 2008). This approach worked, and it became apparent as 'Col' walked off and spat at the embodied participant. The spittle was visible along with its expulsive sound. The act of spitting in VR crossed a line for all the participants who experienced it (although one missed it). While they found the words annoying, they were easier to ignore than the act of spitting which pushed them over the edge. This emotionally charged narrative tool had a significant emotional impact, increasing participants' engagement and immersion with the scene. "The emotional content transmitted by the narrative also increases the extended (reflective) presence producing a significant sense of inner presence" (Gorini, Capideville, De Leo, Mantovani, Giuseppe, 2011).

Participant Z commented on the efficaciousness of the scene "I think if you had someone who was not very good at controlling the anger, you have something." A number of participants felt an emotional response when casting the mask away in the final reflective scene, they spoke of a burden being taken off their shoulders; a sense of release and relief. However, not all had this response, "Not sure I felt much really, I still felt like kind of kicking the guy, really" (Participant M). Casting the mask away did speak of how effective the storying device of the mask was when used in VR. One participant spoke of wanting to punish the mask after casting it away to 'shoot' it down. The emotional responses from the participants clearly show how 'real' their perception of the scene was, and the ability of VR (in this case 360 film) to activate a strong emotional response of disgust, using the action of spitting, rather than the effect of abusive words.

Empathy

Interestingly, three participants did express concern for 'Col' the perpetrator in the aggressive scene. They were wondering about 'what' made him like that? They also commented on what sort of an individual 'Col' was. While activating empathy is a known trait of VR (Milk, 2015), it was surprising that the participants sought to understand his motivations; cognitive empathy. Three participants spoke of their thoughts concerning the perpetrator, empathising by querying his welfare. "I kind of feel bad for him" (Participant K). Participant Z said "obviously not very happy person or whatever, but like, yeah, it's just like he's just trying to be a dickhead and intimidating as much as he can,"

> I felt embarrassed for the guy because there's absolutely no need to be doing something like that ... I'm so embarrassed for him and if his friends sitting there and also embarrassed for the other one who was sitting there watching our situation if you like … they should have told him to stop. Yeah. Tell him that he was embarrassing himself. (Participant C)

Reflecting

The dimension of reflecting uncovers participants' reflections on masculinity after experiencing the Island. Participants found the reflective interview via Skype quite helpful to them, most had thought deeply about the Island experience. Participant W reflected upon the consequences of his actions if he decided to respond with violence.

> I didn't quite think about it the night of the of the experience. But last night, I was kind of thinking about it. But the whole experience and my initial response was after being spat on from the Crazy Dog Hotel bar, I wanted to be kind of aggressive and want the option to provoke. But after thinking about it last night, I'm thinking I could have gone so much worse than just ending up at the hospital. That would have been terrible. (Participant W)

Participant M commented

> Change how you would appear to other people a little bit. And I think there are still some situations where I would choose to have that type of mask type thing … for me was it made me think about the fact that I might actually wear a mask sometimes … But you'd also make, you know, also take more notice of when you're not wearing the mask as well and you sort of try to go more to those situations where you wouldn't have to wear that, I think.

Participant H, reflected on men wearing masks often: "I feel like there is a lot of mask people, in every bar there is a like a guy with that sort of mask on." Participant B spoke of his reflection upon stoic men

> … because after doing the experience, I was actually still thinking about what was being said in the lifestyle video. How men have their own mask and um to repress their emotions and everything. So quite important, actually.

Participant B commented on what he learned from the experience:

> Well, the mask. The mask, how people are putting on a mask when they're around other people. Yeah. And not being their genuine self. I think that's what I've learned the most from the experience.

Participant P reflected upon the transformation the experience provoked in him:

> It's definitely is going to change the way I see particularly violent men and men that wouldn't be acting that way normally as well. If I was in a situation at a pub or at a club or whatever.

Participant Z concurred and suggested that to change one's masculinity is a significant task and needed time and reflection.

> You might need like to give them six months to do like a lot of like so what you're trying to do is like really change the way someone knows their whole life. So might take a long time to realise it had any effect on them or if it even does at all.

The Island experience did have an effect on participants' masculinities; it did cause them to reflect on the type of men they and violent men are.

Production

The dimension of production includes VR with sub-topics of realism and agency. This dimension also includes the scene-specific topic with sub-topics of explore, learning about men and de-escalation, experience and reflect.

Virtual Reality

A tenet of VR is its interactivity, and for 360 film, its realness. Both are heavily reliant upon production values, the design of the experience, how participants navigate that experience and the characters, if any, they encounter. Badly designed VR experiences produce VR sickness.

Realism

The realism of the Island experience was also discussed, with the 360 film demonstrating its capability to foster immersion and a sense of presence to be real to participants. This 'real' was enhanced by, firstly, the young men's cultural backgrounds, because they recognised the types of men in the aggressive scene. The story itself and the production values of high quality 360 film and audio along with the deliberate strategy of first-person embodied perspective (sitting at the bar) and props to support that perspective (car keys, being served a beer and chip packets).

> Yeah, it was just like, ah, hey, this is this is actually real. This is actually what's happening. Oh, my gosh! I've either experienced this, I've experienced something like this or I've had a friend that seen a friend that's experienced something like this. (Participant J)

The strength of the storyline of the aggressive scene also possibly impacted on the immersion or level of 'realness' to participants, which also helped to explain a lack of VR sickness reported: "enriched narratives seem to enhance presence" (Weech, Séamas & Kenny, 2019). Interestingly, participants did find the second learning scene 'deescalate' quite realistic, although this was created in CGI VR, not 360 film. Participants enjoyed the scene and its mimicking of a real-life bar.

> Whoever made that bar did a pretty good job because it was really that was really well done with the posters and all that stuff. Everything just looks so much cooler, like you're in a bar. So it was kind of it was good. Yeah, it does well. (Participant C)

Agency

The VR affordance of agency was appreciated by all participants. Commenting on the learning experience about men and masculinities, Participant P said

> It's not kind of forced onto you. You're like, hey, watch this video, then watch this other video gave you kind of a sense of control in this situation. We can look away, walk away or go to the next one or whatever. So, yeah, I think it was a pretty good way of implementing the learning.

Participant P said how important it was to have agency when choosing what to do with the mask

> I think that was really important to have the choice of throwing it away because you told it to do so, but you're not forced to do it. You kind of have to make the conscious decision to do it yourself.

Scene specific

Participants were asked to comment upon how to improve each scene.

Explore

While for most the opening scene, Explore, did achieve its objective of 'onboarding' participants to the environment and interacting with the objects. A number of participants felt that there could be further objects to interact with and more to do.

> It was pretty good like the way it was. Being able to interact with more objects would have been a bit more immersive. But other than that, the movement was pretty good. Interactions that were available were also nice. (Participant P)

Other comments stated a need for more precise instructions: "This is how you grip, this is how you point, this is how you do this thing by getting them to run through like maybe a small tutorial beforehand"

(Participant J) and signposts to different areas as an adjunct to the pathway. Most participants thought this scene did its job.

> But to make the objects like higher to reach. Yeah. I had to reach down quite far to grab some of the things. Oh yeah. Placement. But other than that, I thought it was wicked fun. (Participant E)

Learn

Improvements suggested for the second scene – the 'Mask' and 'about Men' – were limited to learning modalities with some participants preferring to read rather than listen or view "It kind of felt like you just walk in and he was talking with you as you're walking around like just, yeah, walking through a park. Someone talking with someone" (Participant J1).

> Being able to bring the video with you, pick it up, place it down in a different scene somewhere. I'd like if it was on a laptop, pick up a laptop or like a tablet, you could walk around with it? That is actually really good because I got to walk in, they got to explore the pub right in the background was all you had was called this person, you know, engaging you on how to de-escalate violence, right? I reckon how that could be improved have a little animation, acting out what the person is saying. Like putting their hands up, like not putting their hands up and but how that is escalating and basically just having animated out. (Participant J)

This scene was supported in what it attempted to achieve in terms of scaffolding participants' understanding of masculinities and the 'mask'.

The third scene was used for scaffolding understanding of de-escalation strategies for young men to use when confronted. The content of the de-escalation scene was supported, although a telling comment critiqued the concept of offering to purchase a drink for the perpetrator, with one participant who was experienced in the night-time economy and dealing with aggressive individuals, suggesting they were 'gaspers' and offering to give them a 'smoke' instead of buying them a drink, he also mentioned that this strategy was likely to be in vain.

Experience

Participants suggested a number of ways to improve the aggressive scene in the front bar of the Crazy Dog Hotel. These included increasing the number of narrative choices and outcomes, with participants suggesting that there was a third way, rather than the binary choice to escalate or deescalate the conflict.

> I still haven't figured out like what I would have done in that situation … Obviously, there's like standing up trying to fight him and then it's like doing the opposite and just like carrying on for walking away or whatever. I feel like there's kind of like, you know, it would be some sort of like compromise maybe. (Participant Z)

> Oh, yes, I remember I said it. Would it have been nice to have an option to like look and there's like an option that has run away or something like that, because I didn't know what's going to happen. Like, obviously, nothing's happened to me. Yeah. Yeah. Yes. But that was a bit. Yeah. Especially when he spat. (Participant K)

The quality of acting was seen to be important. "You can you can feel it was quite good acting as also you could feel the tension and it made you quite uneasy" (Participant B). Improving the acting of the 'mates' of 'Col' the aggressor was suggested, as his mates were seen as not the aggressive types to be hanging around with 'Col'.

Participant M commented on bystanders.

> But like, if there were slight reactions from like bystanders, like not necessarily getting into it, like if you could see their facial expression change or something to it as well, like if it was set up so that slightly closer so you don't have to look from one way to another so much.

Another area for improvement that the participants mentioned was providing an induction to the scene so that participants would know where the 'buttons' were to make choices, despite my verbal induction prior to participants entering this scene. However, overall, participants did believe this scene achieved its objective of creating a real to life, conflict scene that allowed participants to practise de-escalation.

Reflect

The final scene was 'Reflect', which did not receive any suggestion for improvement. The only comment was that when approaching too close to the edge of the cliff, it could induce anxiety in those with a fear of heights.

> Yeah, that wasn't too bad. It was good just to be able to have a look around that area. Just have a look down. Might see what you've seen before. (Participant M)

> I live close to the beach so often. Sometimes I ride my bike along the bike track and just have a stop and a look over the sand dunes and stuff and yep, you know, relax and whatever. So it felt, you know, something I would do. Go look over a high place, look at the water and think about things, not necessarily throw something away. But yeah. (Participant K)

One of the components of the Reflect scene was a video that showed participants a picture of 'Col', the aggressor, wearing a mask. Participant P commented that "being able to visualise and see that the guy was in a mask was a very powerful tool."

The participants did feel the Reflect scene at the top of the mountain on the Island was a place where they would go to reflect.

Ethical approach

The evaluative stage of this research study comprised of four data collection points: experiencing the Island itself; a short post-experience interview; two short surveys; and a longer interview conducted online one or two days later. Potential participants were provided with information sheets and consent forms for this evaluative stage.

For the experiential stage, there were a number of ethical concerns which I addressed. The Flinders University Ethics committee required that participants had a break every ten minutes and this requirement was added into the design requirements for the Island. Also, there was a requirement that the aggressive scene would not contain any physical violence, only the pre-cursors to it. I was also required to monitor participants for any signs of motion sickness during their experience. I achieved this by carefully monitoring their body language, looking for excess swaying and any vocal sounds they made. To ameliorate any motion sickness issues, I designed the Island carefully to avoid sudden movements, falls, shakes and, in the 360 film scene, there were no camera movements and acts faded in and out. Additionally, participants were required to confirm that they did not suffer from motion sickness before commencing the experience. The information sheet contained the following detail:

> Please do not volunteer for this study if you feel discussing violence and your perceptions and or experiences will cause you discomfort or if you suffer from motion or cyber sickness. Note the Virtual Reality experiences will run for no more than 10 minutes concurrently and if you do show signs of discomfort the experience will be stopped.

In addition to the requirements from the committee, I also employed the VR workplace health and safety guidelines I encapsulated in a review document earlier in the year. This included providing participants with a swivel setting so they could turn around easily when in VR and not place stress on their necks and backs. I required a participant to practice swivelling before commencing the experience. To ensure hygiene, I wiped down the HMD before and after each participant used it, applying a sanitising solution. When entering and exiting each scene, I asked participants to close their eyes and open them again slowly after taking off the HMD, to bring them back to this reality gently.

Following on from experiencing the Island, was a short reaction interview. This interview was recorded on a phone and participants were monitored for anxiety and any lingering signs of motion sickness. Subsequently, participants completed two short interviews. The requirement of the ethics committee was for participants to fill out the surveys in private and place them in an envelope. These short Likert-based surveys focused on the technical aspects of the experience and therefore, any adverse effects of the topic of violence was unlikely.

The final evaluative stage was Skype interviews a day or two later. Participants were monitored during these interviews for any anxiety that might be triggered from experiencing the Island or discussing violence.

During the evaluative stage, participants were informed of the privacy and confidentiality protocols employed in this study.

Participants were paid $60 for participating in the evaluative data collection stage. This payment was made to cover any transport, internet costs, and to reimburse participants for any inconvenience that they might have experienced in participating in this study. Payments were made via PayPal to the participants' email address. I did not want to collect and store bank account details.

While the ethical requirements of this study were complex, only one participant withdrew due to these requirements, which, in his case, was a sore neck. While the risk of aggravating his strained neck was small, I decided the risk was too great. Unfortunately, even after postponing for a week, his neck was still causing some pain so not wishing to risk further injury, I withdrew the participant from the study.

In summary

The participants did understand the use of story devices in the Island. These devices achieved their objective of tying the story together in the VR environment. A musical theme was created for the Island by playing the same music track in each scene. Examples were the track played by the guitar amplifier in the first scene, the music embedded as part of the learning content in the second scene, and the music being played in the Crazy Dog Hotel public bar. The primary story device of using the Island was also appreciated in being a place of learning about the self in an isolated and lonely place. This concept worked well, with participants feeling that being alone in the story of a deserted Island built into the idea of exploring the island and the self at the same time.

The participants did feel that the experience scene allowed them the opportunity to regulate emotionally when the aggressive questioning stance of the perpetrator was in front of them, this emotional regulation was broken when the perpetrator spat at them. They also felt that the experience scene allowed them to practice deescalating an aggressive scene. Participant H, J1, E and J commented

> I've been to like bars where like people have like getting a bit rowdy like it. It does it does happen like that. Like where one person just confronts the other. I mean, it's good for certain people who have never been in that environment and say like might be a bit nervous about going in because of that reason. They kind of get a bit of practice in and see like. How situation like can go wrong badly, depending on what you say. (Participant H)

> I think that's a big thing that I've seen in, you know, people my age is they think they know how they will act in a situation when they haven't had any experience with that situation. And when it comes to it, they have no idea what to do. Just freeze up or something like that … like you don't know what your abilities are if you go into a fight with compared to someone else. Yes, you may win, but you very may actually end up in

> hospital. I think that a lot of people don't think about. When they do start fights. (Participant J1)
>
> …for some people it is like never been in fights. I think it would probably take some of that fear away … I feel more comfortable to walk away rather than just standing there and taking or anything like that, that makes sense. (Participant E)
>
> I've had those experiences, other times I've walked away, other times I suppose I've barked back, and it hasn't ended up so well sort of thing. It's good to reflect and have those experiences to learn from and apply them. (Participant J)

Participants were supportive of VR being used in violence prevention programs which encourage young men to think about their behaviour and the masculinity they hold. Participants E, Z and C commented

> I genuinely do (support VR being used in VPPs) maybe not everything works for every person, but I definitely think that something that would definitely make an impact and force them to take a look at themselves and their behaviour, how they act in the world. (Participant E)
>
> I think it's important that everyone, guys are told they do not have to fit into what is defined as masculinity. But I don't know. Just the view itself. We'll make them realise or help them. (Participant Z)
>
> You talk about it as much as you want, but it will never give you the full experience of like knowing how bad was some of the stuff you are doing. So that VR experience would be perfect to teach people how bad some masculinity is, and how good some of it is also. So yeah, definitely worked. (Participant C)

Suggestions for improvement

Two improvements to the experience were suggested: first, using the mask to filter the experience, or what a participant would experience when wearing the masks or not. Participant P commented:

> I thought the mask was gonna be interactive. When I first started, like if I look through the mask, things is gonna be different. Yeah. I think that would have been like a nice touch. Like you were put into a situation and you can choose to view it with the mask on with the mask off. I think that would've been nice. But other than that, everything is pretty nice.

The Island was not a social learning experience. Participant M commented on how a social version would make it applicable to a group of young men in the night-time economy.

> …to like teach people to not so much pick the fight, if you had people who were egging you on to sort of still have go. And then to like if you had people like talking to you from the sidelines. 'Go on. You can take him'. It'd be good to be able to have like that

> going on as well where you've still got to pick the option like. To avoid the fight or something like that, we have got that. But you've still got people pressuring you because like people do inherently like it; fights. It's like that when they're having a couple of drinks and it's always more entertaining.

The chapter started by describing the method used to evaluate the Island, through the use of reliable surveys to measure the useability and ability of the Island to immerse participants, thereby creating some confidence in their interview responses. The chapter continued by analysing their responses to the interviews. The next chapter focusses on what the participant responses mean when answering the research questions and detailing the contribution to knowledge that this study makes.

Chapter 7 – Conclusion

This chapter concludes this exegesis by reviewing the limitations of this study, answering the research questions, detailing the contributions to knowledge and practice, implications for further research that this study has opened up, and concludes with my final comments. The practice-based methodology this study employed provided for an artefact, the Island, and a written exegesis. Its implementation allowed for experimentation in the emerging paradigm of VR and flexibility in supporting a learner-centric, co-creative and evaluative component. However, while this study has been complex and challenging, it is important to understand its limitations and how they impacted the study.

Study limitations

When evaluating the answers to the research questions and contributions, there are a number of limitations to this study that need to be considered.

- Firstly, the Island experience tried to deliver transformative change to participants from five short experiences that took approximately 50 minutes to complete and a reflective interview a day or so later. Participants commented that further reflection was needed and follow up to assess if any change had occurred. This needed to be undertaken after a longer period of time because reflecting and possibly transforming an intrinsic part of the self (masculinity) requires more time than this study could provide,

- Secondly, the Island was produced, directed, written, coded, edited and technically designed by one person. While this was done over time, the skillsets required to create a polished result were not available. Notwithstanding the participant's scores from their post-experience evaluative surveys which demonstrated the immersive nature of the Island, more could have been done to improve the production values and possibly this might have impacted upon the participants' experience.

- Thirdly, the participants all had an interest in the study. Recruitment was via Facebook and required them to complete forms, attend the University and avail themselves for online and face-to-face interviews. A limitation is that their responses might have been more positive than they revealed.

- Fourthly, many of the participants were new to the VR technology adopted in the Oculus Rift S. This might have influenced how they experienced VR, compared to others who had experienced VR before.

- Finally, qualitative research informed this exploratory study as part of a heutagological approach, which provided evidence as to how a cohort of young Adelaide men with their situated masculinity, co-created and evaluated the Island. While this form of research provides rich responses to research questions and was suited to this study, their responses are not generalisable. Those familiar with more empirical methods might see this as a limitation.

While these limitations did have a slight impact upon participants' experience of the Island and any possible transformation they might have experienced, participants were still able to provide sufficient qualitative evidence to answer the research questions.

The two research questions for this study were:

- How could a VR based learning experience be used to foster critical reflection in young men as to their own and non-violent masculinities?
- How could a VR based learning experience be used to provide authentic, safe opportunities to practise de-escalating aggressive situations?

Answers to the research questions

Insights from practice and the results of the heutagological approach employed, notwithstanding the exploratory and qualitative nature of this study, have generated the answers to the research questions.

Research Question number 1: How could a VR based learning experience be used to foster critical reflection in young men as to their own and non-violent masculinities?

This research project adopted a heutagological approach which includes asking learners to reflect on what and how they have learned. The Island included a reflective scene, which asked young men, via a video, to reflect on what sort of man they wanted to be. This reflective experience was a summative learning experience at the top of a mountain overlooking the Island; it was a conclusion to the experience. It finished the story of 'Col' the aggressor, showing him in a 'mask' and asking participants to reflect upon their masculinity. The visual and haptic metaphor of the 'Mask' was used as an aid to externalise what the 'mask' represented; specifically, violent behaviour. The video prompted the participant to reflect on what sort of man they wanted to be after they threw away the 'mask' and were no longer constrained by it.

The findings of this study indicate that participants did think about the masculinity they hold after experiencing the Island. However, they also found the follow up reflective interviews, that were conducted a day or so later, encouraged further reflection. Participants thought that changing one's masculinity required more time and further VR intervention than experiencing the Island and one reflective interview. Notwithstanding, these findings and (assuming further reflective interventions) VR can act as an aid, a prompt to help transform young men's masculinities. However, this prompt needs to be grounded in a culturally relevant story and use the agential and haptic affordances that VR can aid for participant transformation. Reflection using VR as an aid for transformation to non-violent masculinities needs to be accommodated over time and included in a broader violence prevention curriculum.

Research question 2: How could a VR based learning experience be used to provide authentic, safe opportunities to practise de-escalating aggressive situations?

Virtual reality can be used in young men's VPPs to create authentic opportunities to practice de-escalation strategies. However, there are a number of issues that need to be accommodated, including believable characters and narratives. "It was just like that" said Participant J when commenting on the aggressive scene, drawing from his experience confronting violent perpetrators in the night-time economy. This realism was achieved through a co-creative approach that also drew from masculinity theory, that of situated masculinities, where participants informed how the preparator looked and acted, allowing participants to

recognise the masculinities enacted in the aggressive scene. The culture of the antagonist 'Col' was a South Australian, hypermasculine male. 'Col' uses the same vernacular as expected by participants. "Are you some sort of faggot", "you're not worth my time, wanker" he said, demonstrating the success of this co-creative approach. Moreover, the first punch was 'spittle'. "Then I was like: yeah, I'm furious. Where's the hit button?" (Participant E). Demonstrating the ability of 360 film to be 'real' enough to activate strong emotions and allow participants to practice de-escalating an aggressive situation when they are emotionally charged as in a real-life encounter.

Importantly, VR producers need to consider production values not exceeding the technical capabilities of VR HMDs to ensure that productions are completed and that time is not wasted on needless complexities of workflows, which can overwhelm productions. In summary: to create VR scenario experiences that allow participants to safely practice violence de-escalation strategies in VPPs, the following needs to be taken into account:

- settings need to be authentic;
- the masculinities of local, aggressive males need to be understood, including their verbal and body language, and these attributes included as character traits if using an antagonistic character;
- use visual metaphors as storying aids to activate stronger emotions than words alone, if needed;
- the realism that 360 film can afford needs to be employed, or use more advanced VR real-to-life graphics than are presently available; and
- branching narratives need to give a choice to and respect the agency of participants in practising their responses.

Contribution to knowledge and practice

The contributions to knowledge and practice from this study draw from the research findings and the insights from practice generated by producing the Island. These contributions will help inform VR producers who seek to create educative experiences. Producers that seek to transform participants by encouraging participants to see themselves in different ways will find the contributions insightful, along with those who design and deliver young men's violence prevention programs.

The contributions of this study are:

- The scene structure of the Island – Explore, Learn, Experience and Reflect – provided participants, especially those who were new to VR, with a possible transformational experience that built upon the self-directed nature of VR. This structure is useful for producers wishing to create transformational experiences.
- Transformation using VR can be fostered by taking a narrative therapy approach by externalising to an object and using visual metaphors.
- The effectiveness of words in VR interactions was reduced in the Island. Producers wishing to create authentic experiences need to consider the use of embodied physical interactions.

- Virtual reality provides the affordance of presenting learning content in different modalities. A tenet of VR is the agency of learners, the use of video content that can be used as a 'podcast' accommodates learners' agency in the virtual environment. Additionally, props can be used as 'virtual doodles' as an aid to concentration.

- The use of 360 film affords a realism that VR based solely on CGI VR presently cannot. This is important because the greater the realism, the more participants are likely to learn. Using real people rather than avatars is important for authentic educative settings that seek to activate participants' emotions. Notwithstanding, effective VR learning experiences can be created that use a hybrid approach of 6DOF CGI and affective 3DOF 360 film.

- During this study, Narayan and Herrington's (2014) heutagological mobile content tool was amended for VR. Educative VR producers can use this tool as a production aid.

- Researchers of digitally based education can use the approach this study took of heutagogy embedded within a practice-based methodology.

- Creators and facilitators of VPPs can, if necessary, change the delivery of their programs to account for young men's preference to discuss their masculinity in a confidential, intimate and trusting environment.

This study produced answers to the research questions, but also its nature of drawing from both practice and research generated other insights that contribute to this study's outputs.

Implications of this study

The contributions of this study open up future research spaces in three broad areas that use VR in education and therapy, and the methodology employed in VPPs.

- Firstly, this study is timely as education is at a critical juncture where online learning is seen to be deficit and not an effective replacement for face-to-face learning. The contributions of this study demonstrate that VR can be an effective and affective teaching resource that can leverage different learning modalities. While this study has been focussed on an individual's experience, as VR technology becomes increasingly social, research spaces open up that build from this study to reach into social learning. For instance, what would group interactions look like when faced with challenging experiences? Would actions such as 'Col's' 'spitting', in the aggressive scene, still have a more powerful effect than words of supportive mates?

- Secondly, with advances in technology now including the ability to create a realistic avatar of a participant, would VR could afford the opportunity to take a third-person view upon one's self. Seeing yourself in a situation and observing from a variety embodied and non-embodied viewpoints. Using the example of a VPP, placing such participant-avatars in aggressive situations would, I believe, foster a more reflective space upon the actions of the virtual self-avatar. Going further and building upon a realistic, self-avatar perspective could include being the perpetrator, as well as the victim. Research questions could be asked,

such as: would seeing an authentic representation of yourself as either a victim or a perpetrator in an aggressive scenario help foster non-violent masculinities?

- Thirdly, this study leveraged 6DOF VR, using the mask metaphor to encourage young men to think about change and letting go of what the 'mask' represents by throwing it away, giving themselves space to create a future story for themselves. This throwing away was visceral for participants, affecting some, who described a burden being lifted. The use of visual and haptic metaphors for understanding concepts and expressing these concepts in a virtual environment builds upon the affordances of VR, through providing objects and experiences not available in real-life. The use of externalisation that this study employed opens up research spaces where narrative therapy practitioners can investigate using VR, in the same manner, as this study.

Concluding comments

This study has been challenging from both a technical and personal perspective. The technical components of creating the Island were a stretch for me. Firstly, learning new ways of working with 360 filmmaking from an 'inside-outside' directorial perspective then, secondly, wrestling with the complex workflows to achieve a creative output that leveraged the affordances of VR; 6 DOF and 360 film 3DOF. While undertaking this study and its co-creative approach was enjoyable, it was personally challenging when confronting the violence that those from marginalised backgrounds faced, and will face. I hope those young men who participated in this study avoid a life marred by violence.

I have learned many lessons during this study, from exploring my masculinity and the cultures that created it, to the remarkable technology that is VR. Virtual reality software and hardware is continuously changing. What works one day is redundant the next. To finish a VR project requires keeping a focus on the objective of the scenes and not getting lost in technical detail. Another lesson was understanding my limitations. While producing the Island was relatively easy to conceptualise and experiment with, it was much more complicated when creating a version that immersed participants and could be reliably used for this study. Producing the Island required me to develop technical skillsets in unfamiliar, complex software. In hindsight, I should have limited the production scope and outsourced parts to experienced practitioners.

For my future productions, I will be drawing from this study. Virtual reality is grounded in self-direction. The approach of heutagogy is complementary and suited for learning experiences that seek to transform participants' views of themselves. Moreover, VR objects can be metaphors and used as externalisation aids to create rich, meaningful learning experiences. The future of immersive education will allow participants to see themselves vicariously in different scenarios, which I believe will create profound learning and transformation.

Virtual reality is a transformative technology and affords society with options to help tackle major societal problems. I believe that VR used in this manner will help tackle societal violence and will afford young men a different way of being men, which would be a wonderful contribution of this study.

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Appendix A – Debrief notes – Virtual Verdict

Debrief notes – Virtual Verdict

Virtual Verdict

A short VR Oculus Rift based experience that relies on gazed based decision making to challenge participants cognitively. Its objective is to encourage perspective-taking on an incident with a drone and asks participants to decide who is responsible. There are four choices – the drone flyer, a victim who gets distracted and falls over injuring herself, her employer and no-one. There is no right or wrong answer. The experience leads to a discussion of considerations that lawyers need to think about when taking different perspectives – the drone flyer, or the victim or their employer when arguing possible responsibilities.

The VV experience is in 3DOF- three degrees of freedom, participants can look around, but they cannot move from their static position. Choices are facilitated by gazing at a yellow 'orb' which triggers text boxes to appear, giving further information/evidence. There are four 'orbs', and two positioned behind the opening gaze position. The experience starts by scaffolding the laws concerning drone flying, then continues with the 3D low-poly scene and ends with a menu appearing asking for a choice.

Virtual Verdict is time-bound to three minutes and loops, thereby requiring little intervention from the operator of the Rift. The experience for participants who have not experienced VR before can be slightly over-whelming they require some guidance and support. Specifically, ensuring they become used to the experience before selecting 'orbs' and making the choice. Participants who had used VR before are easily able to complete VV.

VR sickness

Virtual Verdict is a gentle VR experience with high-frame rates ensuring smooth flowing graphics, and there is no movement apart from gaze. The risk of motion sickness (VR sickness) is limited to those with a propensity; exposure to VR does reduce motion sickness.

WHS considerations

While the risk of VR sickness is limited, I suggest participant use a swivel chair – to avoid neck strain and the following procedure when running VV

Prior and onboarding

(i) wipe down the headset with a sanitiser or use a hygiene mask,

Ask potential participants

(ii) if they have experienced VR before,
(iii) if they suffer from motion sickness or epilepsy and if so to excuses themselves,
(iv) ask them to practice rotating on the chair before donning the headset,
(v) tell them it's a gazed based, and there will be 'orbs' they need to look at, and,
(vi) suggest if they are new to VR to get used to the experience before gazing at the 'orbs.'

During

(vii) monitor those not experienced in VR to for any signs of anxiety or being unable to find the 'orbs' and getting stuck

Outboarding

(viii) encourage participants to shut their eyes when removing the headset and remain seated until they 'come to' in this world, and,
(ix) provide a printed list of choices they could have made and a debriefing sheet or access to a person with legal knowledge.

Virtual Verdict -debrief – Stephen Hall, 21 Aug 2019

Appendix B – Presence Questionnaire

Removed due to copyright restriction.

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Appendix C – System Usability Scale

Removed due to copyright restriction.