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THE PROJECT TO END
DOMESTIC VIOLENCE

**Using Virtual Reality and
Immersive Storytelling to Engage
and Mobilize Men for Violence
Prevention and the Advancement
of Gender Equality, Diversity,
Justice, and Inclusion:
Rapid Evidence Review**

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Author's Note

We, the authors, would like to take this opportunity to situate ourselves in relation to this research and flag some of the tensions that we continue to navigate as feminists working to advance gender and social justice. First, we are white settlers, trained in the Western scientific tradition, with extensive experience working with feminist issues from an intersectional perspective. Each of us has over a decade of experience working directly with men in the areas of violence prevention and gender equality. Based on our experience, we firmly believe that gender and social inequality is inextricably linked with rates of male violence against all genders and our interventions must focus on all forms of violence to stop violence before it starts.

We are also white feminists committed to advancing racial justice and are on an ongoing journey to understand and learn more about where and how we can be most useful in this work. At Shift, we have been integrating approaches that aim to call *in* rather than *out*, while also reflecting on our own practices and building creative and innovative skills, so that we can maximize our capacity to hold people accountable in ways that generate healing, recovery, repair, and prosocial change. We believe it is imperative to ask hard questions and think strategically about what is and is not working in efforts to achieve social change across anti-violence, gender equality, and justice, diversity, and inclusion fields so that we can build momentum for bigger and more impactful movements.

In completing this review, our methods and analysis used an intersectional approach which allowed us to clearly see the dearth of research on strategies to engage and mobilize men at the intersections of gender equality, violence prevention, and advancing equity, diversity, justice, and inclusion. We worked diligently to name and map the ways in which these gaps need to be addressed, but we recognize that our analysis may have shortcomings as we continue the process of learning and unlearning in relation to our own positionality and context in this work. We welcome those who want to call us *in* so that we may continue to make our work stronger, more relevant, and more impactful across a wider audience.

In solidarity,
Laura, Lana, and Elena

Executive Summary

CallinMen: Mobilizing More Men for Violence Prevention and Gender Equality in Canada is a knowledge synthesis research project led by Shift: The Project to End Domestic Violence, a primary research hub with the goal to stop violence before it starts. Shift is based out of the Faculty of Social Work at the University of Calgary (Shift/UCalgary). As part of the *CallinMen* project, nine rapid evidence reviews were conducted on evidence-informed *primary prevention* approaches to engage and mobilize men to prevent and disrupt violence and inequalities, with the goal to share these findings with those funding and working with men and male-identified people to prevent violence and advance equity. To support and advance work to engage and mobilize men, both well-known and emergent approaches that show promise in engaging and mobilizing men were identified for review. This review synthesizes the findings on using virtual reality to engage and mobilize men to prevent violence and advance equity.

Definition of virtual reality: Immersive, virtual, and simulated environments that provide sensory information for users to see, hear, and feel as if they are in a physical world, thus creating a sense of “being there” in the virtual environment. Immersive storytelling uses cutting edge technologies to “create a compelling sense of presence”¹ in order to impact behaviour.

Other related terms include virtual reality perspective taking, 360-degree videos, immersive storytelling, and cinematic virtual reality.

What does the evidence say?

Virtual reality (VR) interventions show promise as a tool to engage and mobilize men for violence prevention, gender equality, and/or diversity, justice, and inclusion. However, this research is still in its infancy and there is still much to learn about this approach, particularly as it relates to engaging and mobilizing men. None of the studies reviewed measured for or were able to provide evidence of impact on VR interventions on social norms and/or culture and/or systems change.

Findings suggested that virtual reality was able to:

- Increase empathy (e.g., towards racial minorities, victims of sexual harassment).
- Decrease violent attitudes.
- Positively influence beliefs.
- Raise awareness (e.g., about gender inequality).
- Behaviour changes:
 - Improve communication.
 - Prevent male-identified anti-social behaviours that occur due to group pressure.
 - Increased likelihood of showing support for social change initiatives (e.g., signing a petition to support housing initiatives for those living unhoused).

However, some studies did not find that VR significantly increased empathy and changed attitudes, and one study found that the increase in empathy from the intervention did not result in increased prosocial behaviour.

Why is virtual reality effective?

VR can be considered a priming strategy, which is a form of nudging, as it can direct people's behaviour to certain sights, words, or sensations that can alter their subsequent behaviour. For example, research demonstrates that when VR shows people future negative consequences of their present behaviour, it can lead people instead to choose more desired behaviours.

VR, particularly immersive and perspective-taking VR, also offers an opportunity for people to practice prosocial behaviour in a safe environment so that they are better prepared to do so when situations arise in daily life.

VR can also prime people by helping them become more attuned to another's experience. Research shows, for example, that EVR (immersive embodied virtual reality, or the experience of embodying another individual in an immersive VR experience) has resulted in a decrease of implicit bias, significant plasticity of empathic abilities, increase in altruistic intentions, and shows promise in building skills of empathy among participants.

Insights from research on virtual reality

1. The positive impact of VR could be maximized by integrating VR into broader violence prevention or equality interventions as way to build skills and reinforce desired behaviour and/or social norms.
2. VR interventions can be brief, but still result in substantial impact.
3. This approach shows promise in being replicable and translatable to addressing a variety of prejudices, biases, and discrimination, including homophobia, transphobia, and ableism.

Examples of promising ways to use virtual reality to engage and mobilize men:

- Perspective-taking, including embodied victim perspective-taking.
- Practicing prosocial behaviours.
- For topics/issues that often ignite tension and defensiveness.
- Building empathy.
- Cultivating and strengthening desired social norms.
- To augment other interventions to engage and mobilize men.

1.0 Introduction

In 2020, Shift/UCalgary was awarded a research grant from Women and Gender Equality Canada (WAGE) for a knowledge synthesis research project entitled *CallinMen: Mobilizing More Men for Violence Prevention and Gender Equality in Canada*. Little knowledge synthesis work has been done to date to increase understanding of what strategies and approaches meaningfully engage and mobilize men to prevent violence and advance gender equality, diversity, justice, and inclusion in Canada; this research fills that gap. Specifically, CallinMen advances the state of knowledge by identifying and reviewing the evidence base for key strategies and approaches that show promise in engaging and mobilizing men to prevent violence and advance gender equality, diversity, justice, and inclusion in Canada, and develops an evidence-informed “behaviour change toolbox” that consolidates these strategies and approaches.

Therefore, to identify and review promising approaches to engaging and mobilizing men to prevent violence and advance gender equality, diversity, justice, and inclusion, nine rapid evidence reviewsⁱ of the academic and grey literature were conductedⁱⁱ in 2021 with the goal to share these findings with those funding and working with men and male-identified people to prevent violence and advance equity. This document reports on the findings for how virtual reality has been used with men to prevent violence and advance gender equality, diversity, justice, and inclusion.

Virtual Reality describes “simulated experiences that are intended to be immersive—hiding the physical world and replacing it with a virtual experience”²; while Augmented Reality “refers to interactive experiences in which real-world environments and objects are overlaid with virtual enhancements.”³ Mixed Reality creates a hybrid experience, increasing “user interactivity with both real and virtual objects.”⁴

Immersive storytelling is uses cutting edge technologies to “create a compelling sense of presence.”⁵ Its aim is to give people the feeling of really “being there,” calling on 3D gaming, virtual and augmented reality technologies in the process.

It is important to note that this research project is focused on advancing *primary prevention* approaches, meaning that we are focused on identifying strategies that change the root causes which drive violence, discrimination, and gender inequality in order to prevent initial perpetration and victimization of violence, harassment, discrimination, and inequities⁶ In line with this focus, our research seeks to understand strategies and approaches that incubate and catalyze male-identified prosocial behaviours and systems that prevent violence, harassment, discrimination, and inequality before they begin.

ⁱ A rapid evidence reviews is a process that synthesizes knowledge through the steps of a systematic review, but components of the process are simplified or excluded in order to shorten the length of time required to complete the review. The process includes identifying specific research questions, searching for, accessing the most applicable and relevant sources of evidence, and synthesizing the evidence.

ⁱⁱ Rapid evidence reviews were conducted on: bystander approach, social norms approach, nudge approach, virtual reality, gamification, data science, fatherhood, calling in, and community justice.

The specific research questions that guided the current rapid evidence review were:

1. How has virtual reality been used to engage and mobilize men for violence prevention and/or to advance gender equality, justice, diversity, and/or inclusion, including to increase empathy in men towards minority populations, those who are suffering, and/or victims of violence?
2. Based on Question 1, what impact does virtual reality and/or immersive storytelling have on empathy, attitudes, behaviours, social norms, culture, and/or systems?
3. What are the key strengths, challenges, gaps, and lessons learned from using virtual reality based on Questions 1 and 2, and how can this inform the use of virtual reality to engage and mobilize men in male-oriented settingsⁱⁱⁱ for the purposes of violence prevention and to advance gender equality, justice, diversity, and inclusion?

2.0 Methods

A rapid evidence synthesis/review (RES) was conducted in May 2021. RES is “a form of knowledge synthesis that follows the systematic review process, but components of the process are simplified or omitted to produce information in a timely manner.”⁷ The process includes identifying specific research questions, searching for and accessing most applicable and relevant sources of evidence, and synthesizing the evidence.

A systematic search strategy was performed using a combination of keywords. The first set was: (“virtual reality” or “augmented reality” or “mixed reality” or “immersive storytelling” or “360°-video-based VR” or “360-degree” or “immersive technology”) AND (“men or male or masculin* or dad or father) AND (“gender-based violence” or “gender based violence” or GBV or “family violence” or “domestic violence” or “domestic abuse” or “intimate partner violence” or IPV or “violence against women” or VAW or rape or “sexual assault” or “sexual violence” or “sexual abuse” or “sexual harassment” or “workplace harassment” or “sexual misconduct” or “consent” or “gender equality” or “gender equity” or “gender justice” or “gender parity” or “gender transformative” or bullying or alcohol or empathy or belonging or addiction or “harm reduction” or discrimination or bias or prejudice or justice or diversity or equity or inclusion or “racism” or “anti-racism*” or antiracism* or Indigenous or “First Nations” or Inuit or Metis) AND (Prevent* or “chang*” or impact* or advanc* or address* or evaluat* or promot* or build* or structure* or system* organi?ation* or enabl* or intervention or initiative or program*); the second set, to cross-check the findings on immersive storytelling were: “immersive storytelling” AND (Men OR male OR masculin* or dad or father) AND (Prevent* or “chang*” or impact* or advanc* or address* or evaluat* or promot* or build* or structure* or system* organi?ation* or enabl* or intervention or initiative or program* or norms or cultur*). Searches were conducted in the following academic databases: EBSCO (All

ⁱⁱⁱ **Settings are** environments (e.g., a sports setting like a hockey rink) and/or sociocultural environments (e.g., a peer network, a workplace), basically where people naturally congregate. We use the term “male-oriented” to specify the settings in which men often congregate, with or without folks of other genders (e.g., workplace, bars, sports venues, etc). Male-oriented means settings that are biased towards, dominated by, and/or designed for men (Male-oriented. *In Lexico powered by Oxford*. Retrieved from <https://www.lexico.com/en/definition/male-oriented>).

databases, including Academic Search Complete, Academic Search Elite, and CINAHL Plus with Full Text), and PubMed.

To search grey literature, the following strategy was employed with a time limit of one hour: Google Scholar and Google were searched with the following terms: Gender equality AND virtual reality; Engaging men AND virtual reality; Violence prevention AND virtual reality; and (Equity OR diversity OR inclusion OR justice) AND virtual reality. Additionally, XY online was searched for “virtual reality.”

Inclusion criteria:

Time frame: 2010-2021

Publication language: English.

Availability: Full text option only.

Literature had to meet the following criteria:

- *Intervention type and target population:* Describe how virtual reality has been used to prevent violence and/or advance gender equality, justice, diversity, and/or inclusion with a population that includes at least 30% men, aged 18 and over.
- *Evidence of impact:* Provide evidence on impact of virtual reality on empathy and/or attitudes and/or behavioural and/or social norms and/or cultural and/or organizational and/or systems change.
- *Relevant literature:* Literature that provides any level of evidence around how virtual reality relevant/can be used but do not meet the above criteria (e.g., do not include men in target population, or do not describe details of a virtual reality intervention) will be reviewed, separately, to inform the analysis and recommendations of the rapid review.

Literature that did not describe a virtual reality intervention, focused on areas outside of violence prevention and/or advancing gender equality, justice, diversity, and/or inclusion, and/or did not include at least 30% men in their target population were excluded. Due to the primary prevention focus of this research, literature describing the use of virtual reality approaches with offenders of violence were excluded.

Information was extracted in a standardized form, including the following: author, publication year, discipline (if available), type of resource/research, focus area, setting, region/country, purpose of intervention, participant profile including gender disaggregation, length/duration of intervention, evidence of impact (including gender disaggregated, if available), evaluation measures, unexpected findings, and limitations.

3.0 Results

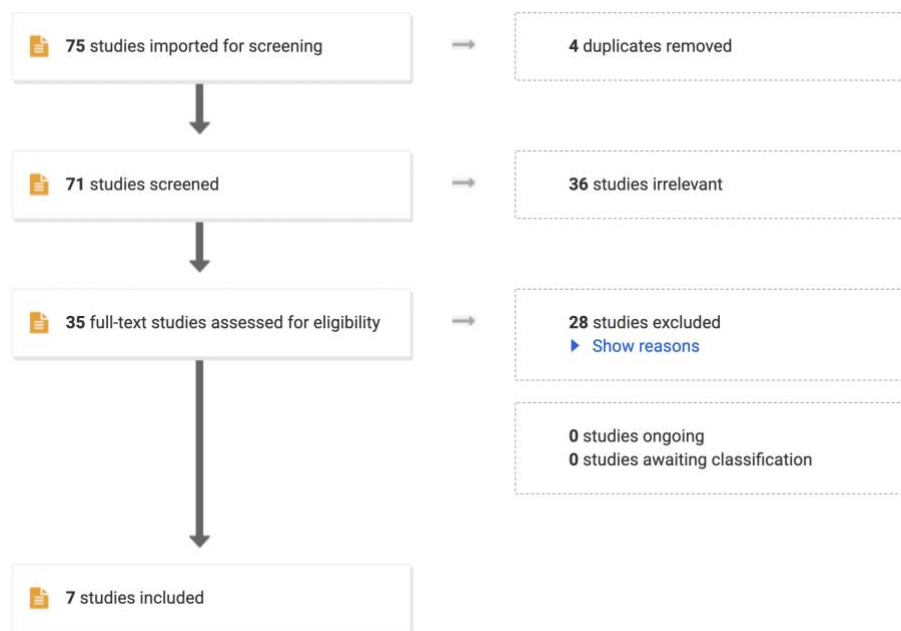
3.1 Source characteristics

Across all databases, a total of nearly 400 search results were initially identified. Following screening, removal of duplicates, and full text analysis, seven studies were included in the final assessment, while an additional study was identified in the grey literature, for a total of eight studies included in the main findings of this review. Four publications that did not match other criteria but were relevant for this review were also identified in the literature search, and are referenced where appropriate; additionally, companies implementing virtual reality interventions to address violence prevention, gender equality, diversity, justice, and/or inclusion that were identified during the grey literature search are also included in the Recommendations section.

The eight studies included in this review come from the following disciplines: Communications⁸; communications and journalism⁹; communications and psychology¹⁰; psychology¹¹; psychology and computer science^{12 13}; sociology, communications, and psychology¹⁴; and equity, diversity, and inclusion, and social work.¹⁵ Of the eight studies identified, five studies took place in the United States,^{16 17 18 19 20} one study in Spain (Barcelona),²¹ one study in Israel,²² and one study in Mexico.²³ Six of the eight studies were randomized controlled trials (RCTs),^{24 25 26 27 28 29} one study was a quasi-experimental research study design,³⁰ and one study followed a mixed methods study design.³¹

3.2 Figure 1. PRISMA flow diagram of studies included

(excluding the one study from grey literature included in review)



As shown in the table below, studies reviewed covered gender inequality, violence prevention—specifically sexual harassment and sexual violence—advancing diversity, equity, and inclusion, as well as building empathy and prosocial behaviour. Three studies specifically engaged men, with two studies^{32 33} examining how male populations were affected by having an embodied experience as a victim of sexual harassment through virtual reality, and the third study used immersive virtual reality to target both men and women to influence attitudes on sexual harassment and empathy, and in doing so noted specifically the importance of changing men’s attitudes and behaviours relating to sexual harassment.³⁴ The remaining five studies included at least 30% men in the target population, but did not explicitly note the importance of engaging and/or mobilizing men for the purposes of preventing violence or advancing gender equality, diversity, justice, or inclusion. This is particularly surprising for the study on gender inequality³⁵ which, despite nearly half of the study participants being male and the focus of the study on gender inequality, did not explicitly mention the need to engage men to reduce gender inequality.

3.3 Figure 2. Summary of studies reviewed

Intervention description	Area of focus	Purpose/Aim	Target population	Setting	Country	Impact
Cinematic Virtual Reality ³⁶	Gender inequality	To examine the sense of presence, attitude change, and perspective-taking while participants watch a video about gender inequality, in which people can choose to watch the narrative from the male or female character's perspective.	67 young educated adult participants; 42% male	Lab: Participants watched a narrative film "about a crisis in a technology startup in San Francisco"	United States	180° video was most effective measure to raise awareness about gender inequality; however 360° split-sphere film may have potential in affecting attitudes.
Embodied victim perspective (Spain) ³⁷	Violence prevention (sexual harassment)	To see whether putting male participants in a virtual reality scenario of sexual harassment from the perspective of the woman being harassed would break the in-group solidarity with the virtual males, using Milgram's obedience scenario ^{iv} as an objective measure of behaviour change.	60 male university students	Lab: VR setting was in a public bar	Spain (Barcelona)	Participants embodied as female were much more likely to stop administering shocks than those in male embodiment, suggesting that VR may be a useful mechanism to prevent male-identified anti-social behaviours that occur due to group pressure.
Embodied victim perspective (Israel) ³⁸	Violence prevention (sexual harassment)	To examine whether being present in a simulation of workplace sexual harassment can lead to a greater change in participants' opinions on the phenomenon, and especially a decrease in stereotypical views of harassment and victims.	73 University of Israeli students; 36% male	Lab: VR settings was workplaces "based on the testimonies of employees reporting workplace harassment"	Israel	Concluded that "VR by itself may not be enough" to increase empathy and change attitudes. ³⁹
Embodied victim perspective (Mexico) ⁴⁰	Violence prevention (sexual harassment)	To increase feelings of empathy, sense of oneness with the victim (of SH), and perspective-taking while decreasing violent attitudes.	44 Mexican adult males (average age 26.2 years)	Lab: Various settings (including public, private, workplace)	Mexico	Produced higher feelings of empathy and less violent attitudes, with 360 VR slightly more effective than narrative condition.
Virtual racial embodiment in a gaming app ⁴¹	Diversity, equity, and inclusion	To examine the effectiveness of using virtual embodiment via a digital gaming app to reduce prejudicial beliefs about African Americans by white Americans.	87 undergraduate white students; 37% male	The Sims Social virtual reality game	United States	Positively influenced beliefs of about African-American men in the study, but not African-American women, regardless of participants' sex.
Cultivating empathy through virtual reality ⁴²	Diversity, equity, and inclusion	To pilot the utility of integrating a racism-focused VR experience into existing diversity and equity initiatives at medical school and health system levels.	112 participants; 30% male, white = 86, Asian = 10, Black = 7, Hispanic = 4	Medical school	United States	Pilot, but suggested that VR is an effective platform to heighten engagement, enhance racial empathy, and improve communication.
Building long-term empathy ⁴³	Empathy and prosocial behaviour	Two studies were conducted in order to compare the effects of different types of perspective-taking interventions on empathy and prosocial behaviors related to homeless populations.	Total: 559 participants; 40% male Study 1: 117 participants; 34% male Study 2: 439, 43% male	Lab: an apartment, a car, and a public bus	United States	VR perspective-taking led to more positive attitudes and higher likelihood of signing a petition supporting helpful initiatives toward the homeless; perspective-taking tasks led to increased empathy in comparison to no perspective-taking tasks.
Virtual reality perspective-taking to increase empathy ⁴⁴	Empathy and prosocial behaviour	To test for increases in empathy as a mechanism through which VR perspective-taking increases prosocial behavior.	180 racially diverse university students; 40% male	Lab (university setting): "day in the life" of a university student	United States	VR perspective-taking increased empathy but was unable to show that the increase in empathy induced an increase in prosocial behaviour.

^{iv} The Milgram obedience study is a famous study in social psychology on group pressure and conformity in which participants were put in the position of "teacher" and pressured to administer electric shocks to a "student" for incorrect answers given. The "students" were actors who only pretended to receive the shock (unbeknownst to the participant "teacher") and the study found disturbingly high levels of willingness on the part of the participants to continue to deliver electric shocks as a result of social influence, despite pleas from the "student" to stop doing so.

4.0 Findings: How has virtual reality been used?

1. *How has virtual reality been used to engage and mobilize men for violence prevention and/or to advance gender equality, justice, diversity, and/or inclusion, including to increase empathy in men towards minority populations, those who are suffering, and/or victims of violence?*

4.1 How is virtual reality and/or immersive storytelling defined/described?

Most studies describe virtual reality similarly in terms of it being an immersive, virtual, and simulated environment.⁴⁵ A publication reviewed for this report defined virtual reality as: “mediated environments created with digital devices that present rich layers of sensory information so that users may see, hear, and feel as if they are in the physical world.”⁴⁶ Two studies note that virtual reality has been called the “ultimate empathy machine”^{47 48} because of its ability to create a sense of “being there,” resulting from being fully immersed in the virtual simulation and allowing users to experience any situation from any point of view. Specific terms used in the studies reviewed vary, however, despite many similarities in the types of virtual reality experiences being studied. For example, only one study uses the term “immersive storytelling,” but this study is specifically interested in using a 360-degree immersive VR video storytelling technique to explore the potential of “immersive journalism.” 360-degree videos, this study explains,

are a relatively new digital technique, developed as a sub-field of VR. These are videos filmed by the use of special VR 3-dimensional 360-degree video cameras (Tan, Cheung, and Ma 2018). The cameras record video in all directions simultaneously and the video is edited so that viewers can control the angle and direction of view by manually moving the device or display, or by moving their head if using a Head-Mounted Display (HMD) device.⁴⁹

Two studies use the term “virtual reality perspective-taking,” or VRPT,^{50 51} while another study⁵² describes what appears to be VRPT but only describes their study as “using a perspective-taking approach,” likely due to the fact that the VR experience is within a digital gaming application (“The Sims Social”), rather than a unique VR environment. VRPT can be defined as using a virtual reality environment to interactively experience taking on the perspective of another individual (first-person). The researchers in one VRPT study note that “an extensive line of research shows that perspective-taking is a powerful exercise that often results in increased empathy and prosocial behaviors toward a specific social target (e.g., stigmatized groups).”⁵³ Other studies^{54 55} use the term immersive virtual reality and/or embodied perspective, although do not offer specific definitions of these terms and the descriptions of the VR experiences seemingly fitting the VRPT definition. In another publication reviewed for this report, “embodiment” in VR was described as a “perceptual illusion” or “body ownership illusion.”⁵⁶

Another study⁵⁷ uses the term “360-Video-Based Virtual Reality” but does not use the term immersive VR, immersive storytelling, or VRPT, or embodied victim perspective-taking despite that being the focus of the study and using the term “perspective-taking” frequently throughout the article.

In the study that uses cinematic virtual reality (CVR),⁵⁸ the authors describe CVR as telling stories in a 360 degree view. They note that "the difference between other types of VR and CVR is that CVR aims to create immersive experiences of real-world scenes instead of computer-generated, game-engine-based worlds, as is the case with [immersive virtual reality] IVR and VR."

4.2 Settings

Five studies took place in public post-secondary educational settings across Israel,⁵⁹ Spain,⁶⁰ and the United States^{61 62 63}; however, because the virtual reality approach means that the actual intervention may take place in a virtual environment such as a workplace, taxi, or other virtual setting, it is important to note that many of the studies that were physically located elsewhere had virtual environments such as a library, a taxi, public transit, private residences, and workplaces.

4.3 Details of virtual reality interventions

4.3.1 Focus area: Gender inequality

The study⁶⁴ that sought to increase awareness around and perceived responsibility to address gender inequality involved 67 young educated adults (28 of whom were male) in the United States watching a film in either cinematic virtual reality (i.e., 360° split-sphere in a head-mounted display, and are able to switch between the perspective of the male and female character), as 180° in a head-mounted display (HMD), or in a flat control version on a laptop. The film was a 10-minute fictional 360° film called Uturn that tells a story about a crisis in a technology startup in San Francisco in which a female engineer fixes the problem but does not get recognized for her work. Those not in the 360 split-view condition had to watch each video separately (10 mins each, for a total of 20 mins). The total intervention, including the questionnaire administered, lasted 60 minutes. The study measured sense of presence, attitude change, and perspective-taking relating to gender inequality, as well as usability of a split-sphere, first-person perspective 360° video.

4.3.2 Focus area: Violence prevention

The embodied victim perspective study in Spain⁶⁵ sought to test whether putting male participants in a virtual reality scenario of sexual harassment from the perspective of the woman being harassed would break the in-group solidarity with the virtual males, using the Milgram obedience scenario as an objective measure of whether the embodied experience had any influence on their subsequent aggressive behaviour. With a sample of 60 male university students, participants were placed in an immersive VR experience in one of three conditions: 1) the participant is among a group of males at a bar where a male is sexually harassing a female in a bar; the participant is then embodied as the female victim who got sexually harassed in the bar scenario; 2) the same initial scenario, but the participant is embodied as one of the men who witnessed the female being harassed; or 3) the participant just experiences an empty bar, with no sexual harassment condition. One week later, participants are placed in another immersive VR experience, this time in a replication of Milgram's obedience scenario. Here, participants were the teacher and were encouraged to give shocks to a

female Learner by a group of three virtual males, the same men as the ones in the bar scene from part one.

In the second embodied victim perspective study,⁶⁶ based in Mexico, researchers also focused on an all-male sample in a scenario with a female victim of sexual harassment and, using a 360-video-based (immersive) VR experience, sought to increase feelings of empathy, sense of oneness with the victim, and perspective-taking while decreasing violent attitudes. Participants were randomly assigned to either have an immersive VR experience in which they embodied a female victim of sexual harassment or, in the narrative condition, participants were given the same story but instead had to imagine the content of the story as if it were happening to them. The task lasted approximately 10 minutes. After partaking in one of the conditions, the participants completed a variety of measures such as the Empathy Scale. Participants then partook in the other condition and filled out the measures after as well.

For the embodied victim perspective study with University of Israel students⁶⁷ testing to see whether simulating a workplace sexual harassment through an immersive VR experience would lead to a change in attitude around sexual harassment and a decrease in stereotypical views of harassment and victims, participants were randomly assigned to one of three conditions where the content was the same but the way the participants viewed them was different. The content involved three sexual harassment scenes in an office setting where the male manager was making inappropriate advances towards the female employee. For the immersive virtual reality condition, participants were embodied as the female employee, and could control their view of the video by moving their head around, whereas in the two-dimensional condition participants watched the sexual harassment incidents from the point-of-view of the female employee on a large screen. In the third and final condition, participants read the written scripts of the three scenes of sexual harassment. Attitudinal change and feelings of empathy were measured through pre- and post-intervention questionnaires on empathy and views of sexual harassment.

4.3.3 Focus area: Equity, diversity, justice, and inclusion

In addition to using immersive VR experiences for embodied victim perspective-taking in relation to violence prevention and building empathy, other researchers have used a similar technique to reduce racial prejudice. One study,⁶⁸ for example, used a sample of white American students to see how virtual racial embodiment in can influence participant's beliefs about African American men and women. Specifically, the study tests how “white users’ virtual play with a Black avatar in a digital gaming app (“The Sims Social”) might be utilized to reduce discrimination of African Americans and increase support for US policies benefitting racial and ethnic minorities.”⁶⁹ The researchers specify the following four reasons for choosing “The Sims Social” game for their intervention: being able to see the avatar from a third-person point of view in the game to make it visible to player at all times, ease of customization (including race, gender), being an open-ended game, and being accessible as a free downloadable app. Participants were randomly assigned to create either a Black avatar or a white avatar, matching their own gender, and to play “The Sims Social” game during the 50-minute lab session. For this study, and in contrast to other perspective-taking studies, there was no explicit instructions given to participants to imagine what their avatar

was thinking or feeling, with the researchers noting that “the avatar creation and embodiment naturally facilitate the perspective-taking process, such that the self is merged with the (virtual) other.”⁷⁰ Participants completed an online survey after playing “The Sims Social” for 30 minutes, measuring participants’ self-presence, race-related beliefs, and race-related policy beliefs.

In the pilot study⁷¹ examining the value of incorporating a VR experience addressing racism into diversity and equity initiatives at medical school and health system levels, participants first engaged in an interactive session with a large group of others on microaggressions, which was an hour in length. Following this session participants had a 20-minute VR experience independently to experience a racism module. They were then debriefed and reflected in another hour-long large-group session, with the total intervention taking 2.5 hours. This study uses an embodied victim perspective immersive VR experience called *1000 Cut Journey*⁷² in which participants experience racism from the perspective of Michael Sterling, a Black male, at three moments in his life. Participants’ experiences were assessed via a 10-question survey, including “sense of presence and sense of immersion, their view on the effect of the VR session on their empathy, whether any negative physiological effects resulting from the session, and their overall reactions and feedback.”⁷³

4.3.3 Focus area: Empathy and prosocial behaviour

It was noted in initial test searches and early researching that VR has been used as a strategy to build empathy, which is also a key skill that men are socialized out of through harmful gender norms that equate vulnerability and caring with weakness.⁷⁴ One study describes empathy as “not emotion by itself but rather an integral part of social and emotional intelligence, and it is essential for the regulation of social relations,”⁷⁵ and further that empathy “has a significant social value, because being able to see through others’ eyes and feel into others’ feelings may lead to a further, behavioral step: Decision to take an action to alleviate the suffering of another.”⁷⁶ As such, this was an area this review paid particular attention to.

While some of the studies focused on violence prevention and equity, diversity, justice, and inclusion also sought to increase empathy, there were two studies included in this review that employed a VR approach to increase empathy outside of those focus areas but were still relevant and thus included in this review. The first publication,⁷⁷ which compared the effects of different types of perspective-taking interventions on empathy and prosocial behaviours relating to homeless populations, included two studies with two different sets of participants. The first part of this study compared the effects of a VR perspective-taking task against a traditional, narrative-based approach longitudinally—specifically, half of the participants imagined if they were homeless inside an immersive VR experience and could interact with their VR environment, while the other half imagined if they were homeless by reading the same narrative as the VR experience.

The second study within this study sought to more deeply understand the mechanisms that caused the differences between the two perspective-taking conditions. This study was a short-term comparison of four different empathy conditions. Specifically, participants were randomly assigned

either to one of the two conditions from the first study (i.e., narrative-based perspective-taking, or VR perspective-taking) or they were assigned to an “information” group, in which participants read a packet of info about the homeless population, such as charts, graphs, maps, etc.; or they were assigned to a “desktop” group, in which participants experienced the same narrative from the other conditions about becoming homeless, except through a 2D interactive narrative. The intervention only last 15 minutes, but researchers looked at participants’ empathy and prosocial behaviours both at the time of the intervention and over the subsequent eight weeks in order to contribute to current dearth of research on the duration of these effects, as noted by the authors of the study. Impact was measured through a variety of different scales (e.g., dehumanization, empathy, personal distress, social presence) as well as through behavioural measures, such as actions taken in support of a proposition on increasing affordable housing for vulnerable populations, such as signing a petition, writing letters to elected officials, and donating.

The other publication documenting a study on VR perspective-taking and its impact on empathy for others targeted students at a U.S. university.⁷⁸ In this study, participants were all exposed to a virtual reality scenario and were assigned to one of three conditions relating to fictional characters, “James” or “Steve”: in the “direct empathy” condition, participants embodied James or Steve and experience a “day in the life” of this person, and are later paired with the person who they embodied; in the “indirect empathy” condition, participants embodied James or Steve in the same as was the direct empathy condition, but are then paired with whoever they did not embody (i.e., James if they embodied Steve). For the control condition participants are able to walk around as themselves, and then are paired with either James or Steve. Participants then play a series of real-stakes economic games with the person they are paired with to see how they behave.

5.0 Findings: What impact does virtual reality and/or immersive storytelling have?

2. *Based on Question 1, what impact does virtual reality and/or immersive storytelling have on behaviours and/or social norms and/or culture and/or systems?*

Likely due to the gaps in knowledge around translating impacts of immersive VR experiences into prosocial behaviours, few studies reviewed measured impact in terms of behaviour change. Three studies^{79 80 81} primarily focused on the impact of the VR intervention on empathetic feelings, although one of these studies⁸² sought to test whether increased empathy as a result of VR perspective-taking led to prosocial behaviours. Another study sought to reduce stereotypical views on sexual harassment,⁸³ and another⁸⁴ aimed to t (increase favourable beliefs of white participants about African-Americans). The study on gender inequality⁸⁵ sought to raise awareness about gender inequality and increase perceived responsibility to resolve a gender inequality-related matter, though the study did not measure actual behaviour change. The remaining two studies did measure behaviour change: the study⁸⁶ using the Milgram obedience scenario sought to use that as an objective measure of whether the VR intervention had any influence on participants’ subsequent behaviour; and the study⁸⁷ using homeless populations as the social target sought both to increase positive attitudes as well as increase prosocial behaviours, namely signing a petition supporting

helpful initiatives toward the homeless. Notably, none of the studies reviewed measured for or were able to provide evidence of impact on VR interventions on social norms and/or culture and/or systems change.

Findings from the pilot study⁸⁸ examining the utility of incorporating an embodied victim perspective immersive VR experience into existing diversity, equity, and inclusion trainings in medical schools and institutions suggested that “using VR as a platform for discussing structural racism was most effective in heightening engagement, enhancing racial empathy, and improving communication”⁸⁹ and noted that “a great majority of respondents (n = 72 [94.7%]) also agreed or strongly agreed that VR was an effective tool for enhancing empathy, and 65 (85.5%) agreed that the VR experience enhanced their own empathy toward racial minorities.”⁹⁰

The embodied victim perspective immersive VR study with men in Mexico⁹¹ found that all participants had higher feelings of empathy and less violent attitudes after engaging in one of the two conditions compared to baseline. The immersive VR condition had a greater impact on increasing feelings of empathy than the narrative condition, including appearing to last longer, but the researchers note that there were no differences between conditions in violent attitudes and suggest that “compared with empathy, the violent attitude is a more rational process that can be manipulated similarly with both strategies.”⁹²

The embodied victim perspective immersive VR study with University of Israeli students⁹³ found that the interaction between immersivity, gender (i.e., male participants), and the emotional content of the video could predict a decrease in stereotypical views on sexual harassment. However, the author notes that “contrary to the study’s hypothesis, there was no correlation between the method of content consumption and participants’ empathetic reaction, or identification with the victim” suggesting that the “use of VR by itself may not be enough” to increase empathy and change attitudes.⁹⁴

Interestingly, the study⁹⁵ measuring the effects of virtual racial embodiment in “The Sims Social” gaming app on reducing racial prejudice found that the intervention only influenced the beliefs about African-American men in the study—not African-American women, regardless of participants’ sex. Because the study was designed so that female participants played female avatars and male participants played male avatars, the researchers conducted some unplanned analyses to examine the potential role of participant/avatar sex, but did not find that participant/avatar sex played a role. The researchers hypothesize that the survey tool might have been the issue, or that “stereotypes about African American women are more deep-seated and thus more difficult to change,”⁹⁶ and note that more research should be done to examine these unexpected findings. The researchers conclude that embodying a Black avatar was linked to “greater prosocial attitudes toward African American men—but not African American women—and greater support for ‘pro-minority’ policy beliefs, in comparison to embodying a White avatar,”⁹⁷ however researchers note that there was no link found between beliefs about African-Americans and beliefs about “pro-minority” policies. Based on these findings, the researchers write that their study “cautiously suggests that digital games and avatar embodiment may be used for prejudice reduction.”⁹⁸

The study testing whether increased empathy as a result of VR perspective-taking (VRPT) led to prosocial behaviours⁹⁹ did show that VRPT increases empathy, but was unable to show that the increase in empathy induced an increase in prosocial behaviour. Overall, they found no effects of the VRPT experience on behaviour in the economic games.¹⁰⁰

The study¹⁰¹ comparing the impact of different kinds of perspective-taking interventions on empathy and prosocial behaviours relating to homeless populations through two conditions with different sets of participants showed more promising results. Specifically, the researchers found that over the eight-week course, a VR perspective-taking task led to more positive attitudes as well as higher rates of participants signing a petition for initiatives supporting the homeless, compared to the participants who performed a less immersive perspective-taking task, such as imagining what it would be like to become homeless. The study also concluded that any perspective-taking tasks, whether virtual or otherwise, were “more effective at increasing self-reported empathy than interventions without any perspective-taking tasks.”¹⁰² The authors conclude that “VR perspective-taking tasks may be more effective at improving attitudes toward specific social targets and motivating prosocial behaviors in the form of signed petitions in support of helpful initiatives than traditional and less immersive perspective-taking tasks.”¹⁰³

The study on gender inequality¹⁰⁴ found that the 180° video was most effective measure to raise awareness about gender inequality; however 360° split-sphere film may have potential in affecting attitudes. For example, the personal responsibility for advancing gender equality increased the most among the participants in the split-sphere condition, which the authors note was the only statistically significant attitude change. They note some usability issues with the 360° split-sphere condition as participants found it more challenging to follow the narrative and experienced concern about missing the full story, which compromised their sense of presence, a fundamental goal of cinematic virtual reality.

The embodied victim perspective study¹⁰⁵ in Spain that used the Milgram scenario as an objective measure of whether the VR intervention had any influence on participants’ subsequent behaviour found that participants (all of whom were men) who were in the female embodiment condition were more likely to stop administering shocks in the Milgram scenario than those in the male embodiment condition, in fact administering half the number of shocks as those in the male embodiment condition. The researchers contribute this effect to the participants identifying with the female learner as a result of embodying a female a week earlier. However, the researchers also note that, “irrespective of the experimental conditions, there were two classes of people, those who tended to stop giving shocks at the first signs of objections from the virtual woman Learner, and those who tended to continue until the end,”¹⁰⁶ suggesting that this was due to the level of plausibility they experienced in the shock scenario. Nevertheless, the researchers conclude by stating that, based on their findings, VR may be a mechanism through which to prevent immoral or illegitimate behaviours, including sexual harassment, that occur in group scenarios.

6.0 Findings: What are the key strengths, lessons learned, challenges, and gaps from using virtual reality?

3. *What are the key strengths, challenges, gaps, and lessons learned from using virtual reality based on Questions 1 and 2, and how can this inform the use of virtual reality to engage and mobilize men in male-oriented settings for the purposes of violence prevention and to advance gender equality, justice, diversity, and inclusion?*

6.1 Key strengths and lessons learned

Virtual reality interventions show promise as a tool to engage and mobilize men for violence prevention, gender equality, and/or diversity, justice, and inclusion. Virtual reality has become increasingly affordable,¹⁰⁷ and most of the VR interventions reviewed took an hour or less, which suggests that virtual reality interventions could be a “low hanging fruit” that can either be used as a stand-alone tool or, ideally, incorporated into a multi-pronged intervention that helps to reinforce the desired behaviour and/or social norms and/or systems change. For example, in a publication reviewing the use of virtual reality as a tool for violence prevention the authors note that VR could be used to augment bystander interventions, including to assess bystanders in addition to self-reported bystander actions, as research has shown that “bystanders often fail to recognize a bullying situation taking place in front of them, particularly when victims are being exposed to covert and tacit violence.”¹⁰⁸

Virtual reality interventions, particularly immersive and perspective-taking virtual reality, appear to have significant potential in creating real world scenarios in a safe environment that allow people to practice prosocial behaviour so that they are better prepared to do so when situations arise in daily life. Researchers note, for example, that “by allowing group members to take part in such a virtual scenario, and then live through the consequences of their own actions as a victim, they may become aware of the illegitimacy and immorality of the behaviour of the perpetrators, and thus avoid engaging in such behaviour.”¹⁰⁹ The publication reviewing the use of virtual reality as a tool for violence prevention argues a similar point, stating that “a growing collection of research demonstrates that VR can effectively demonstrate future negative consequences of present behaviors, thereby promoting favorable health behaviors.”¹¹⁰ This could also be considered a form of nudging, particularly in terms of using virtual reality as a priming strategy, which the U.K. Behavioural Insights Team describes in the following way: “Priming shows that people’s subsequent behaviour may be altered if they are first exposed to certain sights, words or sensations. In other words, people behave differently if they have been ‘primed’ by certain cues beforehand.”¹¹¹ As the authors of the publication on using VR as a tool for violence prevention explain,

Perhaps one of the most critical opportunities that VR provides for the primary prevention of violence is the fact that the impact of experiences in VR does not end when the user “unplugs” and leaves the virtual world; rather, the effects transfer into the physical world to shift the user’s attitudes and behaviors, such as adopting recommended health attitudes and behaviors in the domains of eating (Ahn, 2015), vaccination (Nowak et al., 2020), exercising

(Fox and Bailenson, 2009), adopting pro-environmental behaviors (Ahn et al., 2014), and helping others (Ahn et al., 2013; Rosenberg et al., 2013) in the physical world. A growing number of studies demonstrate that users temporarily shift the attitudes and behaviors of their physical selves to match those of their virtual selves (Yee and Bailenson, 2007; Ratan et al., 2018). Compared to traditional platforms, the magnitude of these changes is stronger and lasts longer over time (Ahn, 2015; Ahn et al., 2015; Herrera et al., 2018). Counter to what intuition might suggest, virtual experiences are not transient and virtual interactions are not intangible.¹¹²

VR also offers new possibilities for building empathy, perspective-taking, and sense of oneness,¹¹³ and immersive experiences have the potential to influence attitudes.¹¹⁴ In a review¹¹⁵ that brings together research across cognitive science, psychology, education, medicine, the arts, and virtual reality (VR) to address the potential use of VR for learning empathy-related abilities, the authors provide useful and specific details relating to embodied virtual reality, and note that VR has been used since the 2000s to study perspective-taking. They cite studies that have shown EVR (immersive embodied virtual reality (EVR)) has resulted in a decrease of implicit bias, significant plasticity of empathic abilities, increase altruistic intentions, and argue that immersive VR shows promising in training empathy-related abilities. In the publication on using VR as a tool for violence prevention, the authors note that “VR systems provide rich, multilayer perceptual information and create embodied experiences so that users are able to see, hear, and feel as if they have become another person” and that “the effects of sharing the ‘lived’ experiences of persons in need, who are struggling with physical disabilities or circumstances such as social inequality, transferred into the physical world to increase helping behavior over time.”¹¹⁶

While outside the scope of this primary prevention-focused review, VR has also shown promise in engaging male offenders of sexual and/or domestic violence, and research in this area may help to inform the ways in which VR can be used for primary prevention. For example, in the publication on using VR as a tool for violence prevention, the authors cite research that found that when “males with a history of domestic violence embodied the experience of a female victim in VR, their ability to recognize fear in female faces improved and their tendency toward associating fearful female faces as happy was reduced.”¹¹⁷ In parsing out the mechanisms behind this impact, they cite research that shows that “men who experienced a domestic violence incident in VR in the first-person perspective activated neural networks associated with feelings of identification for a virtual victim, even when they had never experienced domestic violence in the physical world.”¹¹⁸

These studies also demonstrate that immersive virtual reality, including virtual reality perspective-taking, is both replicable and translatable to addressing a variety of prejudices, biases, and discrimination, including homophobia, transphobia, and ableism. For example, researchers of the study using a digital gaming app conclude that researchers that “virtual embodiment in a digital game allows for a less obtrusive, more personalized, and entertaining perspective-taking experience that may prove to be more readily received”¹¹⁹ and they say it can be used in diversity training. Further, they state that “the results of this study cautiously support the use of virtual play and avatar creation in a gaming app as potential tools for reducing racial prejudice among dominant group members.”

Furthermore, research suggests that VR could be a promising avenue to cultivate and strengthen desired group/social norms, with the publication on using VR for violence prevention arguing that “social connectedness (e.g., peer relationships) is a violence protective factor, and future research may examine the role that interactive media violence plays within and between various peer groups, both online and in person.”¹²⁰

6.2 Challenges and gaps

There are also a number of challenges in using VR, and key areas where more research and piloting of interventions is needed to understand how best to harness the possibilities of VR for engaging and mobilizing men for violence prevention, gender equality, and diversity, justice, and inclusion. For one, and as the 2020 publication on the use of VR for violence prevention noted, “to date, very little work in VR has looked directly at violence or violence prevention.”¹²¹ Based on the findings of this review, even less research is available on VR for using to advance gender equality, diversity, justice, and inclusion, suggesting an urgent need for more work in these areas.

Another notable gap in this research is that there is little available research on the impact of VR on behaviour and social norms change, with many of the studies reviewed measuring attitudinal change and/or differences in empathy only. Additionally, with the studies that only measured in terms of attitudinal change, it is important to interpret with some caution as these are self-reported measures.^{122 123} Moreover, while a growing body of research shows that VR can be an effective means through which to cultivate empathy, some research was unable to show a link between VR and empathy,¹²⁴ and there has also been some research that shows negative side effects of using VR to increase empathy. For example, a book written by Jeremy Bailenson entitled *Experience on demand: What virtual reality is, how it works, and what it can do* (2018) purportedly includes research showing that the use of VR led participants to wrongly feel like they experienced another person’s experience.¹²⁵ Some studies reviewed also noted that there may be better scales/ways to measure empathy,¹²⁶ which suggests that more research around optimal ways to measure changes in empathy as a result of VR is needed, as is more understanding around the mechanisms through which VR is successful in building empathy.

To this end, some research has examined how immersive storytelling impacts both empathy towards the characters and enjoyment of the experience. For example, two publications on one study^{127 128} with university students in Spain exploring how the immersive properties of a story may impact audiences’ cognitive processing of the information in the stories in relating to both empathy and enjoyment found that “enjoyment of pleasurable aspects of the experience may hinder the affective dimension of empathy toward the characters”¹²⁹ and that “immersive presentation elicits higher arousal and presence, but also lower focused attention, recognition, and cued recall of information.”¹³⁰ The researchers note the need to carefully consider the “targeted reactions from the audience, since different intended psychological outcomes may not be fully compatible.”¹³¹

Other research has sought to understand more about potential gender differences in presence in VR interventions, though more research is needed in this area to understand the impacts within

interventions that seek to engage and mobilize men for violence prevention, gender equality, and diversity, justice, and inclusion. One study¹³² among university students in Austria looked at gender differences in the sense of presence and emotional traits while being in a stressful virtual or imagined public speaking scenario and found that “male participants reported significantly higher levels of presence in the virtual condition [and also in the control/imagination condition] than female participants” and that men not only experienced the virtual environment “more like a place they had visited, they also attributed more realism to the scenario and felt more physically present when holding the speech in front of the virtual audience.”¹³³ This could potentially be used as an asset in VR interventions focused on engaging and mobilizing men.

There is also a lack of longitudinal data on VR interventions, which should be addressed in future research on VR. One study reviewed tracked the impact of the VR intervention for eight weeks,¹³⁴ and another tracked longitudinally in that the two parts of the study took place a week apart to see if the VRPT intervention (the first part of study) impacted behaviours (e.g. Milgram obedience) in the second part of the study.¹³⁵ All of the other studies reviewed only measured change immediately after participants completed the VR intervention, making it difficult to understand the potential long-term impacts of VR interventions.

There were also a few logistical issues relating to VR that were noted in a few of the studies reviewed, including that immersive VR (or 360-video) can create feelings of sickness from the movements of the camera, although in one study the researchers hypothesize that “our findings could also suggest that sickness may arise because of the psychological impact of feeling oneness with the victim.”¹³⁶ Additionally, the study on gender inequality noted some usability issues with the 360° split-sphere condition as participants found it more challenging to follow the narrative and experienced concern about missing the full story, which compromised their sense of presence, a fundamental goal of cinematic virtual reality.¹³⁷

7.0 Recommendations

(How can the findings from this review inform the use of virtual reality to engage and mobilize men in male-oriented settings for the purposes of violence prevention and to advance gender equality, justice, diversity, and inclusion?)

This review suggests that there is promise in using virtual reality interventions to build empathy and promote and strengthen prosocial behaviours including but not limited to engaging and mobilizing men for violence prevention and advancing gender equality, diversity, justice, and inclusion. However, the findings also make clear that this research is still in its infancy and there is still much to learn about this approach. Perspective-taking, and particularly embodied victim perspective interventions are common in the available research, for example, but more is needed to understand for what purpose, with what scenario, and with who these are most impactful. Importantly, more needs to be done to track and understand the impact of VR interventions longitudinally, as well as on the potential impacts beyond on attitude change—namely, on behaviour change, as well as social norms and/or culture and/or systems level change. For example, more research is needed to understand how to best translate changes in attitudes and empathy through VR into prosocial

behaviour.

The next section summarizes some of the key ways that using virtual reality could be a powerful and useful tool in engaging and mobilizing men for violence prevention, gender equality, and diversity, justice, and inclusion. The final section of this review provides a brief summary of companies identified in the grey literature search that are developing and implementing virtual reality-based trainings to improve soft skills (e.g., empathy, emotional intelligence), prevent sexual harassment, and promote diversity, equity, and inclusion.

7.1 Promising ways to use virtual reality to engage and mobilize men

7.1.1 Perspective-taking, including embodied victim perspective-taking

Using a virtual reality environment to allow an individual/group of individuals to interactively experience taking on the perspective of another individual (first-person) appears to be a promising and potentially potent way to engage and mobilize men for violence prevention, gender equality, and diversity, justice, and inclusion. As researchers in one VRPT study note that “an extensive line of research shows that perspective-taking is a powerful exercise that often results in increased empathy and prosocial behaviors toward a specific social target (e.g., stigmatized groups).”¹³⁸

7.1.2 Practicing prosocial behaviours (priming)

Virtual reality interventions provide an excellent opportunity for people to practice particular prosocial behaviours by simulating real world scenarios in a safe environment, thereby facilitating the ability to be better prepared to respond appropriately when situations arise in daily life. Through hands-on experience and practice, VR interventions offers a low-cost, low-stakes option for men to hone awareness and learn to take action to prevent violence and advance gender equality, diversity, justice, and inclusion. Virtual reality can also be considered as a way to nudge behaviour through “priming,” which means that “people’s subsequent behaviour may be altered if they are first exposed to certain sights, words or sensations. In other words, people behave differently if they have been ‘primed’ by certain cues beforehand.”¹³⁹

7.1.3 For topics/issues that often ignite tension and defensiveness

VR also appears to be a valuable option for opening and facilitating discussions on topics that, if broached in a real world scenario among a group of people, might otherwise result in defensiveness and other unproductive responses. Given the challenges often found in getting men to the table in the interest of violence prevention and advancing gender equality, diversity, justice, and inclusion, VR could be a key strategy as an opener to a training on these issues, as a means of allowing individuals to practice *and make mistakes* as they learn to become allies, and even as a way to safely assess behaviour beyond self-reported measures and/or preventable incidents. For example: the study¹⁴⁰ examining the utility of incorporating an embodied victim perspective immersive VR experience into existing diversity, equity, and inclusion trainings in medical schools and institutions suggested that “using VR as a platform for discussing structural racism was most effective in

heightening engagement, enhancing racial empathy, and improving communication.”

7.1.4 Building empathy

As a skill that is an integral part of social and emotional intelligence and yet socialized out of men from an early age, strategies that ignite and cultivate empathy should be considered essential in the toolbox of engaging and mobilizing men for violence prevention and advancing gender equality, diversity, justice, and inclusion. VR, and particularly immersive VR experiences, offer new possibilities for building empathy, perspective-taking, and sense of oneness,¹⁴¹ and immersive experiences have the potential to influence attitudes including decreasing implicit bias, facilitating plasticity of empathic abilities, and increasing altruistic intentions.

7.1.5 Changing social norms

Although there was unfortunately no available research that used a VR intervention to impact social norms, given the ability of VR technologies to simulate detail-filled, highly authentic, and interactive environments to impact “how people think, feel, and behave in the physical world,”¹⁴² there is urgent need to pilot research to understand the potential of VR in addressing and change social norms within and between various peer groups.

7.1.6 To augment other interventions to engage and mobilize men

Due to the ability of VR to be relatively low-cost and to be implemented in a short time span (e.g., one hour or less), VR interventions could be incorporated into other intervention strategies to enhance and target their impact. Role playing and perspective-taking have long been used as valuable tools in face-to-face education with men, and particularly for bystander interventions for violence prevention such as “Green Dot” and “Bringing in the Bystander”¹⁴³; these strategies could be enhanced through the use of VR. Additionally, and due to its capacity to build empathy and engage in perspective-taking, using VR as a “feel the need” nudge could be useful, particularly if paired with additional nudges and interventions to help catalyse change beyond the individual and/or behavioural level. Finally, and as noted above, VR could be used as part of a social norms approach to cement desired social norms change.

7.2 Companies using VR to prevent violence and promote equity, diversity and inclusion

This final section provides a list of companies identified in the grey literature search that are developing and implementing virtual reality-based trainings to improve soft skills (e.g., empathy, emotional intelligence), prevent sexual harassment, and promote diversity, equity, and inclusion.

7.2.1 Vantage Point

In 2018 a company called Vantage Point started developing a sexual harassment training/intervention program through virtual reality technology.¹⁴⁴ Developed by a two-time survivor of sexual violence, Morgan Mercer, the program uses virtual reality to allow people to fully

be immersed and embodied in the virtual reality experience so that their responses in the virtual reality situations will hopefully be their responses in the real-world situations.¹⁴⁵ The company's training/intervention program focuses on sexual harassment/assault, changing stigmas, responses, changing behaviour, and training for impacts and bystander intervention.¹⁴⁶ This training/intervention program can be individualized to each person such as accounting for their personal experiences and unconscious biases.¹⁴⁷ Additionally, Vantage Point's website specifically describes an empathy and awareness-building component of their training, describing their "Learning Platform" that manages their "VR-based training program for Soft Skills, Sexual Harassment Training, Diversity and Inclusion Training" that "prepare[s] your workforce for the soft skills, empathy and awareness they need to excel in an inclusive, modern and educated workplace."¹⁴⁸ The website cites the Carnegie Institute of Technology for the statistic that "85% of success is due to skills in emotional intelligence and emotional quotient" and states that "while technology can cause apathy, immersive technology can drive empathy and fundamentally make the world more human. This is our mantra."¹⁴⁹ As of 2018, Vantage Point conducted pilot studies of their bystander intervention module with the companies Tala and Justworks.¹⁵⁰

7.2.2 Shift Bias

As described in an online article¹⁵¹ on the University of Oregon's website, two faculty members from the Department of Education at the University of Oregon teamed up with a company called Shift Bias, a virtual reality training company focused on diversity, equity, and inclusion that describes their goal as to "improve learning outcomes for technical and soft skill training through the use of virtual reality."¹⁵² According to the online article, after an initial assessment, participants engage in the course curriculum (which is 3.5 hours and designed to take 8 weeks to complete) where they will hopefully leave the training with the motivation to change their behaviour.¹⁵³ While the article does not provide evidence of impact from Shift Bias's training, it briefly discusses a study¹⁵⁴ conducted by PricewaterhouseCoopers which looked at learning outcomes from another virtual reality soft skills training which found that participants who use virtual reality to learn were "275 percent more confident" in applying learned skills after the training and programs were completed four times faster than they would be in traditional classroom settings.¹⁵⁵ This study does not include any mention of gender or specify the gender disaggregation of study participants, so it was not included in the main findings of this review.

7.2.3 Praxis Labs (Pivotal Experiences)

A virtual reality tool called Pivotal Experiences, created by the company Praxis Labs specifically "lets employees experience what it's like to face bias and discrimination in the workplace and teaches them how best to respond."¹⁵⁶ The avatars for the initial start-up were designed to be representative of the global workforce and participants engaged in it are encouraged to fully embody the avatar. The focus of Pivotal Experiences is using virtual reality to increase empathy through putting participants in other people's shoes. According to the article in The Washington Post,¹⁵⁷ in February of 2021 Praxis Lab managed to secure \$3.2 million dollars in funding, and Pivotal Experiences has been initially tested on Uber, eBay, Amazon, and Google where companies can sign up for six months to a year through a subscription-based service.

7.2.4 Equal Reality

Equal Reality provides virtual reality immersive diversity and inclusion training to “drive empathy, awareness, and inclusion” in workplaces.¹⁵⁸ They provide case studies on their website that provide details of their training and its impact. For example, they provided virtual reality-based training to a company seeking to “drive Diversity and Inclusion into the DNA of the company” in which “employees experienced what it’s like to be bullied, and the subject of abuse of power.” Equal Reality states that “the workshops increased participant’s personal accountability and drove effective behaviour change. Additionally, 95% of participants enjoyed the VR experience.”

7.2.5 Horizon 2020

Another approach to advance gender equality is to use XR (which is inclusive of virtual reality, augmented reality, and mixed reality) to improve uptake of preventive health care among men. A company called Horizon 2020 has funded projects that use XR in the healthcare field, according to the website Gendered Innovations, hosted by Stanford University.¹⁵⁹ Men are less likely than women to engage in preventive healthcare as harmful gender stereotypes, including equating illness with weakness, prevents men from protecting their own health.¹⁶⁰ Increasing male involvement in and responsibility for their own health care is a key component of advancing gender equality, particularly as the burden of care for men often falls on women (as nurses, personal care workers, mothers, siblings, and spouses), and virtual reality has been shown to increase preventative care engagement among men.¹⁶¹

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