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How Virtual Reality (Vr) Can Help Women Against Violence?

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Abstract
This article's objective is to exhibit the exposition of how Virtual Reality (VR) with its immense potential could develop into a suitable ally to women against violence. The author first determines this potential of VR by ascertaining its profound impact on humans, then shifts to the proposed exposition. Here, the author explores several studies in the field of VR, an analysis of which bolsters its inclusion in prevention and rehabilitation programmes to help women against violence. Next, in the exposition, the capability of VR in the judiciary, legislature, and policy-making- all of them assuming a crucial function in the protection of women- is expounded. Lastly, the author posits the concept of retributive punishment through VR for enhancing deterrence among offenders, to aid women against violence.
Keywords: *Virtual Reality (VR), Women, Violence.*

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I. Introduction

Virtual Reality (VR), is one of the rapidly growing fields, exhibiting the calibre to contribute with its unique characteristic to simulate real-world scenarios in other areas. It's nothing but the creation of a world similar to the experience in reality, with differing degrees of immersive attributes, having the objective to facilitate users with a very realistic artificial environment through simulation. A man sitting in the comfort of his home can experience the environment of a football stadium. When launched, was seen as a prospect limited to the gaming industry, but the realization didn't take long to spot its potential to influence the fields of law, psychology, social science, business and economics, politics, education, training, etc. With the capability to positively interfere, Virtual Reality, therefore, promises to better help women against all forms of violence.

The quality of Virtual Reality to immerse the user in the virtual world by replicating a real-world scenario with high-quality 3D graphics makes all the difference. Women against violence are helped by making stringent laws, effective rehabilitation programmes for offenders, awareness campaigns among women and the population in general, training campaigns to acquire defensive and offensive skills for women, etc. A traditional rehabilitation programme focuses on augmenting empathy among offenders by displaying painful victim stories, movies, and videos to give first-person and third-person perspectives on a 2D monitor; Virtual Reality can present the same in a brain-tricking 3D atmosphere, where a human reacts realistically to a virtual setup due to its high presence and immersive property. Therefore, an offender's empathy levels can be increased by enabling him victim's perspective through Virtual Reality. Similarly, Virtual Reality can better assist in training teenage girls and adult women by allowing them to practice skills in a simulated scenario that generally occurs in real life. For example, creating a setup in VR where a drunk man is attempting to sexually harass the trainee; practicing to confront the situation in a real-like atmosphere will better prepare her for the real world. Likewise, legislating for violence against women after assessing the proposed law in the virtual structure could foster superior laws and policies. Virtual Reality also furnishes the potentiality to punish offenders with the same offence they committed to satisfy deterrence theory.

This paper aims to study in detail, how Virtual Reality can improve the effects of these conventional methods to prevent violence against women and stimulate upgradation in programmes in different fields.

II. Virtual Reality And Its Profound Impact On Humans

This section will form the base of the paper, as it substantiates the substrate, core of the claim that Virtual Reality possesses the ability to positively impact women against violence for the reasons of its level of effect it can have on humans. Virtual Reality is pursued as an "empathy generating machine", since applied in the domain of rehabilitation and awareness; interrogation of this claim leads to several studies and meta-analyses, alluding to which can aid in the substantiation.

Before imbibing the studies, it is significant to comprehend the meaning of empathy. Empathy is attached to the dynamics or symbiosis of emotions and cognition of a person to perceive others' context and predicament emotionally and cognitively (Riess, 2017). It's the skill to affix rationality, logic, and understanding to other individuals' circumstances, that is acquiring a cognitive insight by putting yourself in others' shoes to determine their sentiments, emotions, and intellect; this is cognitive empathy. It's different from emotional empathy, where emotions are affixed; a person feels an emotional connection or feels the same emotions as the other who is facing the situation. Emotional empathy is very natural and spontaneous, while cognitive empathy is a skill-demanding practice (Martingano et al., 2021). Listening to a rape victim's agonizing story can instantly generate emotional empathy but may fall short of cognitive empathy, as fabricating an understanding of what a rape victim is going through requires high cognitive ability.

Ventura et al. (2021) conducted a study to ascertain the effects of taking a sexual harassment victim's perspective in a 360º-video-based Virtual Reality (VR) on 44 Mexican men. Here first, the participants were shown different 360º-videos of sexual harassment in VR from the victim's perspective then, were asked to take a traditional perspective-taking exercise, where participants have to imagine themselves in the situation of the victim, to analyse the empathy scale. The results convey that 360º- video in VR has better potential than the traditional perspective-taking exercise in cultivating and enhancing empathy and reducing violent behaviour toward women. Traditional perspective-taking exercise when preceded by the VR experience had a greater impact on empathy, which imparts the ability of VR to advance the efficiency of a traditional mechanism.

Seinfeld et al. (2018) executed an important study in the field of Virtual Reality, as an advanced VR, called immersive VR technology, was used to scale the empathy levels and emotion recognition among offenders and non-offenders of domestic violence. Immersive technology of VR facilitates the embodiment of any avatar in the virtual setup; therefore, a user can embody and encompass himself into the body of a female, child to encounter the first-person perspective. It's different from 360º-video VR, as in the latter, real-life footage is displayed in a less immersive 360º ambiance; in the former, the user can interact with the virtual world. In the study, participants were enclosed in the body of a female victim of domestic violence, where they are confronted by a male avatar, acting in the mannerisms of an offender of domestic violence. Results reveal the enhancement in the empathy levels of the offenders along with improvement in emotion recognition. Studies have shown that inadequacy in recognising emotions such as fear, anger and discomfort has a positive correlation with the commission of violence against women. Similarly, studies have established a connection between a lack of empathy and violent behaviour (Seinfeld et al., 2018).

While such studies propose an exemplary potential of VR in regards to enhancing empathy, some contentions argue negatively, soliciting consideration. VR is circumscribed to augmenting emotional empathy, which is an impulsive attribute, invoked even while witnessing a 2D scene and is devoid of bringing attitudinal changes in offenders or people in general; it is deficient in the ability to enhance cognitive empathy as, it affords minimal room for imagination to deliberate from other's perspective, which is a prerequisite for developing cognitive empathy; it can only arouse altruistic feelings (Martingano et al., 2021; Seinfeld et al., 2022). These meta-analyses emphasise cognitive empathy for behavioural changes, it asserts that cognitive empathy is a skill developed over time and a mere creation of fake reality with highly immersive traits cannot encourage the user to think about others' perspectives. Ramirez et al. (2021) too contends that it's impossible to really understand the position of another due to distinctness in idiosyncrasies (differences in the level of rationality and emotions, will create differences in how one approaches and handles the issue). Scholars have countered by positing that VR eliminates the obligation of conscious imaginational exercise to correspond with cognitive empathy by depicting the exact scenario faced by the victim or others, therefore the burden is taken off. But cognitive empathy is triggered by highly advanced immersive VR, capable of embodiment or body swap illusion [as was used in the study by Seinfeld et al. (2018)] due to its ability to offer a greater presence in the virtual environment to the user; ergo, the conclusion is safe that, higher the immersion, better is the probability of invoking cognitive empathy (Ventura & Martingano, 2023, Chapter 3, p. 51). Such studies submit that empathy is not just a characteristic, it can be evolved with time if efforts are laid (Shashkevich, 2018). It's pertinent to note that, the advanced embodiment VR, according to research, serves as the best ground for catalysing cognitive empathy, but other less immersive VR, like 360º video-based, cannot be disregarded wholly. The subjectivity in the traits of users enables even a less advanced VR to enhance cognitive empathy (a very sensitive and highly rational person may not need an embodied VR experience to evoke cognitive empathy).

Amid positive results of VR on humans, unfavourable impacts cannot be side-lined. Banakou et al. (2020) in their study reflected an increase in racial bias when embodiment VR was used on 92 female whites, primarily due to the despair and agony caused when embodied in a black body. Here, VR counteracts to substitute empathy with apathy. Other negative effects like, cybersickness are rendered by high integration and assimilation of users in VR, causing highly negative emotions (Lavoie et al., 2020). Therefore, it cautions operationalizing VR with responsibility and solicitude.

These studies establish the profound impact of VR on humans, permitting us to move forward in demonstrating how VR can help women against violence.

III. Virtual Reality And Prevention Of Violence Against Women

Prevention is unequivocally a preliminary step of paramount significance in actualizing women's welfare and safety against violence. While, in the immediately preceding section, the study of Ventura et al. (2021) suggested prevention by empathy generation through the victim's perspective in VR among control groups, another study by Gonzalez-Liencres et al. (2021) on convicted, non-convicted, and control group by employing immersive embodiment VR (embodying female victim), urged that the non-convicted and control group considered the VR experience beneficial and effectual in provoking negative emotions of fear, disrespect, etc. (Johnston et al., 2023). A study by Gonzalez-Liencres et al. (2020) has confirmed an interconnection between participants' affinity for women and the mitigation of discriminatory or biased conceptions against them; here non-offenders (without any history of violence) were immersed in an embodiment VR, to give first- and third-person perspective in spousal abuse. This study shows the progression from empathy generation to nearing behavioural changes, as a reduction in prejudicial beliefs could bring about constructive attitudinal alterations.

An alternative interventional strategy for the prevention of violence against women could be knowledge and awareness promotion of different forms of violence, and one of the means is virtual gaming interference. Gaming, though conventionally perceived to be confined to entertainment, lately has matured into instilling an awareness of social concerns without compromising on its ingrained task of amusement to the user. "The Mystery of Pandora", is such VR game, created for disseminating knowledge and awareness pertaining to domestic violence, where a 360^{o} VR headset is installed by the user for reveling enjoyment and knowledge. Players are given the role of investigator to unearth the truth of a woman's murder. During the stages of the investigation, the users learn about domestic violence realistically. A study on this VR game with 52 players of all age groups, showed high satisfaction levels overall, as multiple determinants of satisfaction were compiled and knowledge is one of them; players believed, their understanding or awareness of the subject matter (domestic violence) had improved, experienced an increase in their knowledge or comprehension of the theme (Felix et al., 2023). Another VR game, "Through Pink and Blue Glasses" (a gender violence awareness game), presented effective outcomes, as participants felt affected and impacted by the character in the game and attained a novel understanding of the issue (Yanez et al., 2023). Manifold serious and influential non-VR games in the sphere of gender violence (like, "Pandora's Caixa", "Choices & Consequences", "Campus Craft", "Ines & Us", "Behind Every Great One"), proven by studies to impact and impart knowledge and awareness in players, can be proffered to be piloted in VR for heightening effectiveness.

Propagating such VR games could be an optimal attempt for the prevention of all forms of violence against women, in consideration of the popularity of the gaming industry, which can be capitalized upon for the facilitation of knowledge and awareness particularly in youth. Government intervention in developing serious VR games targeting women should be a pivotal undertaking, owing to the fact of accessibility to copious and competent data and enormous research resources, all of which could be occupied in producing result-oriented, highly potent VR games.

Furthermore, alongside the aforementioned preventive methodologies, allocating VR in the domain of training programmes for women can be adjoined to such methodologies (International Training Centre, 2022). VR persuades to relocate the training base to a virtual setup on account of its highly immersive ingredient. "My Voice My Choice" (MVMC) is an example; it's a meticulously devised intensive training program spanning 90 minutes, aimed at cultivating assertive behaviour and instilling resistance skills against sexual harassment, in an immersive VR environment. Adolescent females are trained in typically transpiring sexual harassment situations in VR, with a male avatar enacting sexual abuser. This unfolds at three levels, with every level intensifying the advances of the male abuser; the trainee has to enforce assertiveness and resistance to the manoeuvres of the harasser. This skill training exercise halved the rate of sexual persecution of trainees in three months against the non-trainee group (who did not take this exercise) (Rowe et al., 2015). Another study was carried out as the baseline, upon women in their mid-20s, to inquire about the strength of the high immersion feature of VR - when participants were accosted with sexual misconduct endeavours from job interviewers- and whether it can establish a foundation for aggregating skills imperative for strong responses against the efforts of sexual harassment. Results validate the highly immersive property of VR, as participants actually felt harassed as they would in the real world, and approved VR as a likely source of effectual responses to sexual harassment attempts (Sadeh-Sharvit et al., 2021).

These self-preservation attitudes in women are correspondingly compelling and crucial for the prevention of violence against them. Successfully denying the sexual pursuits of abusers, stages a formidable response, manifesting the likelihood of effecting behavioural restraints in potential offenders and offenders, consequently qualifying in the prevention of violence.

VR in the entertainment realm holds captivating prospects, specifically in the cinematic industry. Movies penetrate the interests of the spectators and are expedient in communicating awareness, this prompts to engage

VR for the production of cinematic works presentable with VR features. VR film has been explored in respective undertakings across nations, like Warwickshire County under the Safe in Warwickshire policy, which introduced new VR films accentuating misogyny and male chauvinism, from women's perspective, in an immersive VR, to educational institutions' male students. It also highlighted the deleterious impacts of prejudiced male behaviour on women, to motivate reformation in the conduct of young males towards women (Film Birmingham, 2022). A VR film named, "Kya Yahi Pyar Hai", a 7-minute film, was released in June 2017 on intimate partner violence in India, which portrays the story of a female character Anuja and her relationship with Manoj (Sharma, 2017; SIMA Collection, 2018). "The Sun Lady", is another VR film, delving into the survival of women battling against ISIS (a terrorist group), screened at the Sundance Film Festival in Utah (Sharma, 2019).

As tugging on the audience's emotion is seamlessly carried out by the movies and documentaries, VR can amplify the experience and engender vigorous perceptions and emotions, complementing greater awareness and knowledge of violence against women, ultimately functioning in prevention motives.

VR has incorporated a new dimension to standard and classic prevention frameworks (training exercises for women); miscellaneous and unconventional means (gaming and documentaries, short films respectively), by contributing its innovative and impactful attributes. Along with facilitating a new technological methodology of undergoing victim's perspective in an embodiment virtual reality, to prevent violence against women.

IV. Virtual Reality And Rehabilitation In Offenders Of Violence Against Women

An efficacious rehabilitation programme is one of the pivotal antidotes for violence against women. A glimpse of the capability of VR in rehabilitation has been accessed in a previous section when alluded to the studies of Ventura et al. (2021) and Seinfeld et al. (2018). Further studies will assist in compounding how VR promises to redevelop offenders effectively.

Barnes (2020) conducted a study on 37 convicted offenders of gender violence by embodying them in a woman's avatar to record their empathy scales; criminal records of all offenders were examined to segregate more violent biographies from less violent ones. The outcome of the study indicates significant overall development in empathy and more improvement among less severe violence biographies than more severe ones. This suggests the personalization of the VR environment following the profiles of offenders to extract positive results. Johnston et al. (2023) cite a study undertaken by Johnston et al. (2021) in this regard, where the magnitude of the VR experience was increased than the normal in an abuse setup by installing expedited heartbeat of the virtual victim which could be felt as a pulsation in the offenders' chest. This high-intensity immersive VR presence, caused the offenders to sense more fear and susceptibility than those who participated in a normal immersive VR atmosphere. It cues towards the formulation of subjective rehabilitation programmes, meaning hardened offenders of violence against women may be treated with high-intensity VR, though sufficient studies lack in this context. London Borough of Redbridge (2021) in collaboration with a technology solution, Antser performed a study on perpetrators of domestic abuse through 360º video VR and found 90% of the participant offenders did not commit any domestic violence after indulging in the VR experience of victim's perspective; found strong evidence that culprits were zealous to change their behaviour. This study diminishes the speculation that VR is impotent in securing attitudinal changes and is a constraint to empathy generation. An increase in self-control levels promptly after VR experience was evidenced in Tuente et al. study (Kip & Bouman, 2021). Another positive prospect for rehabilitation.

Johnston et al. (2023) refer to the study which undertook the responsibility of evaluating the by-stander or third-person behaviour of convicts and non-convicts (having no history of violence) when exposed to an intense violent scene between a couple in immersive VR, to find out lesser proclivity among offenders' group to help out in intimate partner violence situation and more conformity with the depicted scenario than the non-offender group. Behavioural analysis of offenders is crucial for selecting an appropriate rehabilitation plan, as indicated by the study. It encourages us to behold important studies in this regard. The University of Montreal and others conducted a study on sexual offenders, assessing their anatomical reactions to sexually explicit content projected through VR. It measured the gaze intensity of the offenders for a particular scene or image and recorded sexual arousal through Penile Plethysmography (PPG). It helped in interpreting, at what exact moment in a scene or what category of images stimulated sexual arousal (Seidman, 2014). This behavioural assessment of sex offenders through VR can initiate better rehabilitation programmes. Corresponding analysis can be traced in the study of Kip et al. (2019) when asserted that varied settings can be displayed to the offender in VR for identifying which activity precipitated the wrongful act (Dolezal et al., 2022).

Another approach to rehabilitation, apart from empathy invocation and behavioural assessment of offenders through VR, can be the cognitive behavioural programmes, designed to alter the thinking process of offenders; this procedure has yielded superior results in reducing the rate of recidivism relative to other alternatives (Andrews & Bonta, 2010). VR exhibits the capability to further strengthen traditional cognitive behavioural programmes, where solutions are provided to contend with the mental fallacy triggering foul behaviour in offenders. Solutions aim at advancing skills in offenders for tackling cognitive barriers and

misconceptions to modify their way of thinking through role play among offenders. The enactment here can be substituted by a more realistic milieu, through immersive VR, which can facilitate a better platform to develop and exercise the skills; different scenarios can be constructed, adhering to the subjective requirements of the offender, for practicing confrontation with troubled and provoking instances (Ticknor, 2018). For example, a gender violence offender, committing crimes out of pure hatred against women, can be treated by frequently conversing with virtual women in a VR setup, to understand the nature, qualities, and issues associated with women; or offence stimulating act of disrespect from women, inducing rage in offender can be managed by rehearsing self-control in a similar VR context experienced in real-life. Supporting conclusions were drawn in a study carried out on juvenile offenders. Here, juveniles role-played in VR and compared it with the traditional cognitive behavioural programme, to suggest higher engagement in VR and enhancement of skills practiced in such virtual scenarios (Ticknor, 2017). Finland's Criminal Sanctions Agency is exploiting the potential of VR technology in prisoner rehabilitation, and the success has inspired to use VR for preparing prisoners for dealing with life outside prison, via a similar mechanism of scenario creation; a resembling initiative was launched with ViRTI project in Europe (Helsinki Times, 2023; Prison Systems, 2023).

A distinctive approach towards rehabilitation through VR was assumed in the study of Gelder et al. (2022) where VR was utilized to introduce and embody convicts in the body of their future selves to account for attitudinal and reactional changes. Results convey a decline in wrongful and prohibited behaviour among convicts. A logical probability of action or conduct for an extended period was premeditated and projected in the future avatar of a convict in VR. Witnessing themselves in dreadful life situations, empowered convicts to initiate positive behavioural changes (showing a convict of drunk driving his miserable state 10 years from now due to excessive alcohol consumption could be feasible in bringing about actional changes in him). Operationalization of this distinctive approach upon offenders of violence against women is attractive and could be conducive to propitious results, therefore demands a thorough study. For example, an offender of mild sexual harassment, like groping can be embodied in his future self, where he is convicted of rape and murder (as it's a probable consequence), spending harsher and longer punishment along with recurrent jail abuse; family, with whom he had a great attachment, has cut ties and is devoid of any support. Such substantial transformation in life may propel the minimization and relinquishment of offensive sexual actions, supplementing rehabilitation and protection of women against violence.

VR has been shown to upgrade the traditional programmes to effect better results in offenders. Besides, offering a conduit for distinguished and novel rehabilitation ideas of exposure to convicts' future selves. There lies a certain positive correlation between capable rehabilitation programmes and the safety of the target group. Women's security can be averred with higher authority when a released prisoner's recidivism plausibility is low, which can be accomplished only through successful rehabilitation policies, potentiated by VR.

V. Virtual Reality In Legal System, Helping Women Against Violence

The legal regime sustains critical and indispensable stewardship of protecting women and imparting justice to help them against the violence of perpetrators. Legislature and Judiciary are the fundamental organs for realizing these significantly significant objectives (protection and justice), and VR can extend support by optimizing the achievement of the objectives.

In early 2023, the South American country, Colombia's administrative court of Magdalena heard its first case in metaverse using VR technology, where all the functionaries of the court represented themselves through a virtual avatar (Bello, 2023). Analogous configuration has been suggested for Chinese law schools in moot court scenarios (Ouyang & Nai, 2019). Germany in 2016, arguably leveraged VR technology in the judicial system for creating a 3D model of a Nazi concentration camp, Auschwitz, to apprehend the last extant Nazi war criminals (The Guardian, 2016). These occurrences underscore the admission of VR in the legal field, though at a low limit and isolated within limited jurisdictions.

Expanded involvement of VR in the trial process can be envisaged, if the victim's experience of transgression is depicted in a simulated VR in court proceedings, it will afford court officials an improved and nuanced understanding of the facts, assisting in better judgments. Visual depiction therein VR, certainly avails greater comprehension of the case, thus helping women victims of violence. For example, a deed of coerced fondling is discerned as a mild sexual assault, but the gravity of the offence may not be entirely grasped in the narrative of such moderate sexual offences, consequently awarding incongruous, misfitting punishment and compensation. A simulated projection of the incident in VR can elucidate the gravity adequately. Also, it would save women from delivering descriptions of abominable incidents, which is always challenging, distinctively in sexual harassment cases. Evidence- an exclusive principle for pronouncing judgment- its presentation can be productively interfered, if a crime scene is realistically built in a 3D environment, where specifics can be examined by the court officials, it can convey accurate and better assimilation of the case, particularly in judges, leading to educated decisions (Rout, 2023; iFour Team, 2022). Forensics, playing a seminal role in the outcome of a case, can procure assistance from VR in sophisticated cases for enacting any scene from a crime, for intelligibility

(Barker, 2017). For example, in a case of an attempt to murder a woman, where a bullet shot failed to pierce the body at its usual depth to cause death, might suggest an intervention, that the forensic department believes to be a human body. The bullet must have penetrated through a human body before arriving at the female victim; such intervention could have reduced the momentum of the bullet significantly, causing a weakened impact on the victim. Such intricately convoluted cases can be astutely comprehended through the enactment and immersion within the virtual reality milieu. Moreover, women victims can conceivably vest with self-assurance and composure in an intimidating court ambience for tendering evidence, by applying themselves in a 3D VR court, accosting challenging conditions and questions (McCracken, 2023).

All these VR interposition in the trial process refine the decision-making of court personnel, consolidating the justice system, which is intrinsic to helping women against violence. Amelioration in various constituents of trial through VR and resultantly, more accurate verdicts would solidify the credence of women in the judicial institution, to help them against violence precisely, and potentially would do so.

The legislature and policy-makers, like the judiciary, can profit from deploying VR in their principal job. VR can empower a statute and policy by assessing it at the proposal stage in a customized simulated VR setup, to extrapolate lacunae and panoptic efficiency of a law or policy; it might be construed as proximate to prognosticating, but such assertion is exaggerated. So, before effectuating a law or policy, its competency test could be practicable in the VR world, by erecting a scenario where the law or policy would be enforced. For example, the ramifications of a suggested policy entailing the deployment of specialized law enforcement personnel at intervals of 10 kilometres to combat crimes targeting women in public spaces, could be evaluated by tailored virtual simulation capable of faithfully emulating the pertinent facets of the actual context. The personnel in VR can be engineered to perform the duties conforming to the objectives of the policy (patrolling, responding to calls of threat, etc.) and disparate scenarios can be inspected for examination of the policy. This will beget promulgation of well-tested and corroborated laws and policies for women, to stand formidable against violence.

Community interpreter- a profession to eliminate obstacles in communication stemming from uncommon languages between parties- of intrafamily violence in the field of law, policing, social help, etc. can self-improve by conditioning in VR with requisite simulations, successively helping women against violence (Gerber et al., 2021).

Laws and policies are orthodox prophylactic measures against violence and their enrichment through VR would preserve the effective aid to women against oppression.

VI. Virtual Reality And Punishment

Punishment resolute to deter contravention of law; this resolution could be placed on the precipice of achievement through VR, by equipping the relevant authority with the enablement in orchestrating transgressors to undergo their offending act, commensurately with the suffering endured by the victim, to administer punishment (Moncada, 2020). Such an aberrant proposition may come across as preposterous, but the metamorphosing VR presumptively threatens the perceived preposterous proposition to materialize in the distant future.

A perpetrator of domestic violence, who ventilated with profanity and assaulted his partner for a year, can be subjected to the same offence for an equivalent timeframe by a virtual woman showing semblance to his spouse, in a VR setup, ensuring a palpable and proportionate experience to that of the victim partner. While the impalpable form of abuse is induced in an immersive embodiment VR (as shown in several studies alluded to for empathy generation), the assault may be induced in VR through cooperation with haptic technology, designed for tactile feedback. This technological invention through bodily equipment, motivates touch sensation, harnessed for augmented VR gaming experience (Brodsky, 2022). It should be manipulated to deliver the experience among offenders of being assaulted by their spouses for the same duration they perpetrated the assault; for example, a tactual sensation of somatic strikes of different varieties by the virtual woman for a prolonged duration of a year may conceivably be an extremely efficacious retributive form of punishment. Its patent, this like-for-like punishment would be unreasonable for all assorted categories of violence against women, notwithstanding could be an effective manner of punishing for some categories.

Such punishment, enabled through VR, would elicit a reinforced sense of justice and contentment in women along with thwarting offenders by producing fearful apprehension of punishment with the same offending act. Synoptically, would help women against some forms of violence.

VII. Conclusion

Women, being the most endangered gender and incontrovertibly one of the proficient contributors in all fields, encourage safeguarding them from all vulnerabilities, one of them being violence. Albeit the premature research in the field of Virtual Reality (VR), the limited studies intimate VR's profound influence on human entities. And could be strategically capitalized to aid women against recurring violence. By interposing in prevention and rehabilitation programmes; laws and policies; forms of punishment, it not merely transmutes and

upgrades the predetermined, conventional methodologies but also presents new procedures and recognizes new means to help women.

Governmental organs should cognize of the strength of VR and be amenable to its application in official government measures succeeding a pilot study on VR, to counter violence against women; private associations, educational institutions, and non-governmental organizations (NGOs) should not trail behind in assessing the efficacy of VR in the protection of women. Such collaborative endeavour would expeditiously realize the potentiality of VR and posterior formal implementation across the board. In summary, Virtual Reality (VR) succinctly exemplifies the nexus between its (VR) competencies and security, empowerment of women against violence, and demanding enhanced exploitation.

References

[1]. Andrews, D. A., & Bonta, J. (Eds.). (2010). The Psychology of Criminal Conduct (5th ed.). Anderson Publishing, Ltd. https://doi.org/10.1016/B978-1-4224-6329-1.50016-6

[2]. Banakou, D., Beacco, A., Neyret, S., Blasco-Oliver, M., Seinfeld, S., & Slater, M. (2020). Virtual body ownership and its consequences for implicit racial bias are dependent on social context. Royal Society Open Science, 7(12). https://doi.org/10.1098/rsos.201848

[3]. Barker, P. (2017). Virtual Reality and the Law. 27 Partners. 27partners » Virtual Reality and the Law

[4]. Barnes, N. (2020). El projecte V-Respect.Me en el programa de violència de gènere als centres penitenciaris. Avaluació de resultats del projecte als centres penitenciaris Quatre Camins i Mas d'Enric. ResearchGate. Retrieved June 6, 2023, from (PDF) El projecte V-Respect.Me en el programa de violència de gènere als centres penitenciaris. Avaluació de resultats del projecte als centres penitenciaris Quatre Camins i Mas d'Enric (researchgate.net)

[5]. Bello, C. (2023, March 3). Future of justice: Colombia makes history by hosting its first-ever court hearing in the metaverse. Euronews. Future of justice: Colombia makes history by hosting its first-ever court hearing in the metaverse | Euronews

[6]. Brodsky, S. (2022, November 10). How Real-Life Sensations in Virtual Reality Could Deepen the Experience. Lifewire. How Real-Life Sensations in Virtual Reality Could Deepen the Experience (lifewire.com)

[7]. Dolezal, D., Supe, M., & Nisevic, A. J. (2022, March 7-8). Possibilities Of Applying Virtual Reality in The Education and Offender Rehabilitation [Conference presentation]. 16th International Technology, Education and Development Conference, Online Conference. 10.21125/inted.2022.0445

[8]. Felix, Z. C., Machado, L. S., & Vianna, R. P. de T. (2023). The Mystery of Pandora: A Serious Games Approach With 360-Degree Videos on Domestic Violence Against Women. International Journal of Game-Based Learning, 13(1). 10.4018/IJGBL.323447

[9]. Film Birmingham. (2022, May 10). New VR Films Tackle Misogyny in Warwickshire. New VR Films Tackle Misogyny in Warwickshire - Film Birmingham

[10]. Gelder, JL., Cornet, L. J. M., Zwalua, N. P., Mertens, E. C. A., & van der Schalk, J. (2022). Interaction with the future self in virtual reality reduces self-defeating behavior in a sample of convicted offenders. Scientific Reports, 12, Article 2254. https://doi.org/10.1038/s41598-022-06305-5

[11]. Gerber, L., Hlavac, J., Shepherd, I., Mcintosh, P., Archila, A. A., & Cho, H. (2021). Stepping into the Future: Virtual Reality Training for Community Interpreters Working in the Area of Family Violence. The Journal of Specialised Translation, (36b), 252-275. Microsoft Word - 36b_4_Gerber et al.docx (jostrans.org)

[12]. Gonzalez-Liencres, C., Zapata, L. E., Iruretagoyena, G., Seinfeld, S., Perez-Mendez, L., Arroyo-Palacios, J., Borland, D., Slater, M., & Sanchez-Vives, M. V. (2020). Being the victim of intimate partner violence in virtual reality: first- versus third-person perspective. Frontiers in Psychology, 11. https://doi.org/10.3389/fpsyg.2020.00820

[13]. Helsinki Times. (2023, May 22). Rikosseuraamuslaitos introduces virtual reality-assisted rehabilitation for prisoners to practice everyday situations. Rikosseuraamuslaitos introduces virtual reality-assisted rehabilitation for prisoners to practice everyday situations (helsinkitimes.fi)

[14]. iFour Team. (2022, November 28). AR and VR: Modernizing the Legal sector in 9 ways. AR and VR: Modernizing the Legal sector in 9 ways (ifourtechnolab.com)

[15]. International Training Centre, ILO. (2022, November 14). ILO launches VR course against sexual harassment in the garment sector. ILO launches VR course against sexual harassment in the garment sector | ITCILO

[16]. Johnston, T., Seinfeld, S., Gonzalez-Liencres, C., Barnes, N., Slater, M., & Sanchez-Vives, M. V. (2023). Virtual reality for the rehabilitation and prevention of intimate partner violence – From brain to behavior: A narrative review. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.788608

[17]. Kip, H., & Bouman, Y. H. A. (2021). A Perspective on the Integration of eHealth in Treatment of Offenders: Combining Technology and the Risk-Need-Responsivity Model. Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyt.2021.703043

[18]. Lavoie, R., Main, K., King, C., & King, D. (2020). Virtual experience, real consequences: the potential negative emotional consequences of virtual reality gameplay. Virtual Reality, 25, 69-81. https://doi.org/10.1007/s10055-020-00440-y

[19]. London Borough of Redbridge. (2021, May 14). Redbridge Council uses virtual reality to tackle domestic abuse. Redbridge Council. Redbridge - Redbridge Council uses virtual reality to tackle domestic abuse

[20]. Martingano, A. J., Hererra, F., & Konrath, S. (2021). Virtual Reality Improves Emotional but Not Cognitive Empathy: A Meta-Analysis. Technology, Mind, and Behavior, 2(1). https://doi.org/10.1037/tmb0000034

[21]. McCracken, N. (2023, April 30). Virtual reality used to address victim court trauma. BBC News. Virtual reality used to address victim court trauma - BBC News

[22]. Moncada, J. A. (2020). Virtual reality as punishment. Indiana Journal of Law and Social Equality, 8(2), 304-326. "Virtual Reality as Punishment" by Jose A. Moncada (indiana.edu)

[23]. Ouyang, S., & Nai, P. (2019). Exploring Intelligent Higher Education of Law: Moot Court Based on VR and AI Technology. Advances in Social Science, Education and Humanities Research, 315, 166-169. 10.2991/icpcs-19.2019.39

[24]. Prison Systems. (2023, February 8). Virtual Reality Training in Prisons: Enhancing Inmate Education and Rehabilitation. Virtual Reality Training in Prisons: Enhancing Inmate Education and Rehabilitation - IPS Innovative Prison Systems

[25]. Ramirez, E. J., Elliott, M., & Milam, PE. (2021). What it's like to be a _____: why it's (often) unethical to use VR as an empathy nudging tool. Ethics and Information Technology, 23, 527-542. https://doi.org/10.1007/s10676-021-09594-y

[26]. Riess, H. (2017). The Science of Empathy. Journal of Patient Experience, 4(2), 74-77. https://doi.org/10.1177/2374373517699267

[27]. Rout, S. (2023, May 12). How Virtual Reality Is Changing The Way Legal Cases Are Tried. Exoinsight. How Virtual Reality Is Changing The Way Legal Cases Are Tried (openexo.com)

[28]. Rowe, L. S., Jouriles, E. N., & McDonald, R. (2015). Reducing Sexual Victimization Among Adolescent Girls: A Randomized Controlled Pilot Trial of My Voice, My Choice. Behavior Therapy, 46(3), 315-327. https://doi.org/10.1016/j.beth.2014.11.003
[29]. Sadeh-Sharvit, S., Giron, J., Fridman, S., Hanrieder, M., Goldstein, S., Friedman, D., & Brokman, S. (2021, September 14-17). Virtual Reality in Sexual Harassment Prevention: Proof-of-Concept Study. [Conference presentation]. IVA '21: ACM International Conference on Intelligent Virtual Agents, Virtual Event, Japan. https://doi.org/10.1145/3472306.3478356
[30]. Seidman, K. (2014, November 4). Researchers use virtual reality to predict behaviour of sex offenders. Montreal Gazette. Researchers use virtual reality to predict behaviour of sex offenders | Montreal Gazette
[31]. Seinfeld, S., Arroyo-Palacios, J., Iruretagoyena, G., Hortensius, R., Zapata, L. E., Borland, D., de Gelder, B., Slater, M., & Sanchez-Vives, M. V. (2018). Offenders become the victim in virtual reality: impact of changing perspective in domestic violence. Scientific Reports, 8, Article 2692. https://doi.org/10.1038/s41598-018-19987-7
[32]. Seinfeld, S., Hasler, B. S., Banakou, D., & Levy, J. (2022). Editorial: Virtual reality and empathy. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.1089006
[33]. Sharma, C. (2017, June 21). Love Matters India Launched India's First 360 Virtual Reality Film To Generate Awareness On Intimate Partner Violence (IPV). ED Times. Love Matters India Launched India's First 360 Virtual Reality Film To Generate Awareness On Intimate Partner Violence (IPV) (edtimes.in)
[34]. Sharma, T. (2019, January 16). HOW VIRTUAL REALITY CAN HELP IN WOMEN EMPOWERMENT? Global Tech Council. How Virtual Reality Can Help In Women Empowerment? | Global Tech Council
[35]. Shashkevich, A. (2018, October 17). Virtual reality can help make people more compassionate compared to other media, new Stanford study finds. Stanford News. Virtual reality can help make people more empathetic | Stanford News
[36]. SIMA Collection. (2018). IS THIS LOVE? (Kya Yahi Pyar Hai?). IS THIS LOVE? (Kya Yahi Pyar Hai?) – SIMA Collection
[37]. The Guardian. (2016, October 2). Virtual reality helps Germany catch last Nazi war criminals. Virtual reality helps Germany catch last Nazi war criminals | Holocaust | The Guardian
[38]. Ticknor, B. (2017). Creating a Virtual Environment for the treatment of offenders: Pilot 1.0. ResearchGate. Retrieved June 2, 2023, from Creating a Virtual Environment for the treatment of offenders: Pilot 1.0 | Request PDF (researchgate.net)
[39]. Ticknor, B. (2018). Using Virtual Reality to Treat Offenders: An Examination. International Journal of Criminal Justice Sciences, 13(2), 316-325. 110.5281/zenodo.2654383
[40]. Ventura, S., Cardenas, G., Miragall, M., Riva, G., & Banos, R. (2021). How Does It Feel to Be a Woman Victim of Sexual Harassment? The Effect of 360°-Video-Based Virtual Reality on Empathy and Related Variables. Cyberpsychology, Behavior, and Social Networking, 24(4), 258-266. https://doi.org/10.1089/cyber.2020.0209
[41]. Ventura, S., & Martingano, A. J. (2023). Roundtable: Raising Empathy through Virtual Reality. In S. Ventura (Ed.), Empathy - Advanced Research and Applications (pp. 51-63). IntechOpen. http://dx.doi.org/10.5772/intechopen.100657
[42]. Yanez, A. G. B., Alonso-Fernandez, C., & Fernandez-Manjon, B. (2023). Systematic literature review of digital resources to educate on gender equality. Education and Information Technologies. https://doi.org/10.1007/s10639-022-11574-8