

The Role of Technology in Facilitating Virtual Sexual Offences and Its Psychological Impact on Its Victims

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Abstract: Since the victim and perpetrator do not need to be in close proximity to one another, virtual sexual offenses have been on the rise for decades. Technology, on the other hand, is making these offenses easier through a variety of platforms, as the current study notes. People of all ages use social media sites like Facebook, Instagram, and others, which can have both beneficial and detrimental effects. Furthermore, shedding more light on the drawbacks of virtual platforms, it is noted that there are many different ways that criminals target their victims and continue to abuse them. Ordinary people who are assaulted experience psychological effects and many traumas. The case study cited in this research provides a brief idea respectively. The paper compares real-world experiences and virtual world assumptions in online activities, highlighting minor loopholes used by criminals. Victims experience traumatic issues in virtual sexual offenses, similar to real-life assaults. Medical diagnoses show a thin line between mental impacts and real-life assaults. The paper emphasizes the need for law enforcement agencies to consider legal impacts and equip their teams to resolve crimes effectively. Strict regulations, education, and technological solutions are needed to combat virtual sexual offenses, including content bans, respectful relationships, outreach programs, AI tools, and mental health impacts.

Keywords: Virtual Environment, Virtual Sexual Offences, Exploitation, Technology Facilitated Crimes, Psychological Impact, Digital Anonymity

I. Introduction

Sexual offence is described as “an illegal act or any inappropriate behavior to obtain a sexual act without the consent of the person. Traditionally for a sexual misconduct to occur the victim and the offender should be in an adjacent vicinity to one another but with the new developments and advancements in the technology this is not a necessary factor. (Fisico and Harkins 2021) After the collapse of the “dotcom” bubble in the early 2000s, a new era of online communication emerged, often called Web 2.0. This focused fostering engagement, involvement, and connectivity. As noted by O'Reilly and Battelle (2009), the web has transformed from a collection of static HTML pages into an integrated ecosystem in “information shadow” are created. This led to both a wide range of opportunities as well as potential risks, especially in how the Internet facilitates harm, such as sexual victimization of children and young people. Initially, threats online came from strangers in chat rooms, but as the Internet grew, these risks expanded to involve more familiar individuals, such as peers, classmates, and even close friends. Social media platforms, which prioritize user-generated content and facilitate interactive communication, have further complicated this problem. Websites such as Facebook, Twitter, and virtual worlds have made it easier to establish both positive and negative relationships, with risks that go beyond the initial consensual interactions to include negative digital outcomes. These platforms are characterized by sharing of personal information which have altered the way young people interact and become vulnerable. (Bluett-Boyd et al. 2013) Anonymity and identity can lead to less accountability and illegal behavior which can cause harm to an individual and the society as a whole. By concealing one's identity or by using fake accounts perpetrators can act without the possibility of being caught or punished. Perpetrators can also pretend to be someone else to commit crimes. Some of the misconduct with anonymity include online bullying, catfishing, online stalking and virtual sexual offences etc. In order to trick victims, criminals frequently fabricate a profile and pose as someone else in catfishing situations. (Andalibi et al. 2018) This review deals with the ways in which technological platforms contribute to virtual sexual offenses and the psychological effects they have on victims. While focusing on potential prevention methods to safeguard people in this ever-evolving technological world.

Role of Technology in Virtual Sexual Offences

Virtual reality (VR) has gained huge demand after the launch of VR equipment in 2016, the technology has been evolving quickly, creating a seamless transformation from the physical world and the virtual environment. After putting on a VR headset, the user is isolated from their physical surroundings and enter a different place which is the virtual world. With the help of their personalized avatars, they interact in this virtual world, experiencing it as if they were really there or this virtual world to be true. The main goal is to create such an immersive experience making the users forget that they're wearing a headset and start to believe the virtual world is real. Alas sexual offences in the virtual world is not uncommon. (*Sexual Assault in Immersive Virtual Reality: Criminal Law Must Keep Up with Technology — Harvard Undergraduate Law Review* n.d.)

Case 1: In October 2016, Belamire shared her disturbing experience of being sexually touched without her consent while playing the game QuiVr with the HTC Vive headset. While waiting for an attack in the game, another player, BigBro442, initiated unwanted contact by virtually rubbing her chest, he continued chasing her and making grabbing and pinching gestures. He even put his hands towards her characters groin and started to sexually pleasure himself. The victim described this online assault to be very frightening and distressing, she compared this disturbing experience to her real-life experience of being groped. She said that even though there

was no physical contact, the emotional impact was similarly violating. (*Sexual Assault in Immersive Virtual Reality: Criminal Law Must Keep Up with Technology* — Harvard Undergraduate Law Review n.d.)

Case 2: In late 2021, Meta also known as Facebook, announced plans to pin to the metaverse. Meta has two main virtual reality apps. The first is Horizon Worlds, a social platform where users can build and explore unique digital spaces. The second app, Horizon Venues, which hosting live-streaming events in the metaverse. Within 60 seconds of logging in to Horizon Worlds Nina Patel was gang raped online within a minute by 3-4 male-appearing avatars. She was verbally, sexually harassed and groped aggressively due to her avatar having a female appearance. (Chawki et al. 2024)

Case 3: In addition, Meta has acquired other popular gaming apps like Population One and Echo VR While using Population One Chanelle Siggins was approached by a player, who imitated touching inappropriately and discharge his semen onto her avatar. Another victim faced harassment multiple times in a week. While wearing a haptic vest, DeGrazia was abused when one of the fellow players groped her avatar's chest. While playing Echo VR Sydney Smith encountered sexist remarks and another player recorded her voice in order to "jerk off." Even after this disturbing incident she could not report the player. (Chawki et al. 2024)

Case 4: LambdaMOO is a multiuser dimension program and uses LambdaCore database maintained inside xerox corporation. It is a virtual meeting space and this program can be used by anyone. This program allows to design or create its communication space, the individuals using this program can personalize their own characters that they have created. The users can interact with one another with the help of dialogues and stage description. In March 1993, a user named Mr. Bungle entered LambdaMOO as a voodoo doll which is the sub-Program that manipulates the actions of other avatars. The result is that the avatars can be easily controlled. Legba, a regular user requested to remove Mr. Bungle's because he forced her to perform sexual acts with him which was disturbing. Even though he was not present in the living room, he could still control the actions of other users through the sub program. He also forced another user to conduct sexual acts on others including the victim followed forcing her to strike herself with a steak knife. After a community discussion, one user with administrative perks removed Mr. Bungle but by using a new name the user behind the character returned shortly. The incident highlighted the need for clearer policies on online behavior and left a lasting impact on the LambdaMOO community. This was reported by Julian Dibbell. (Huff et al. 2002)

Case 5: For more than three years John Zimmerman offended fifty-five victims and majority of the victims were 12 to 15 years old during the commission of crime. He used technology like social media and mobile phone to build a relationship with the victims, and in other cases these technological platforms helped him to commit actual offences. He used webcam for child pornography where in the minor girl victims sent him private pictures or indulge in sexual activities online. Later he would use these private images to blackmail these minor girls into visiting him and would force them to engage into sexual activities with him. Zimmerman was the manager of a local folk and had a control over the Myspace which helped him to lure victims. He would guarantee them free entry passes and merchandise as a bait to visit them and engage into sexual activities by blackmailing them. He also used multiple Facebook and MSN accounts for committing these sexual offences by concealing his identity. With the help of these multiple accounts, he further manipulates his victims. For example, by using one account he told a victim that he had forwarded a naked photo of her to other people, and then with the help of another account he contacted her saying that he has received her naked photos. In 2011 Zimmerman pleaded guilty and was charged for 87 crimes including rape, pornography of minors, sexual penetration of a minor, for possessing and making child pornography, and using a carriage service to harass and groom a child for sexual acts. (Bluett-Boyd et al. 2013)

Case 6: An Australian woman who as in defense force recruit got involved in a consensual sexual intercourse with her coworker. However, by using Skype and without her knowledge it was aired live to a group of recruits in some other room. The explicit photos of them having sex were also distributed with the help of cell phone. After reporting the incident to one of her seniors, she then approached the local media so that the incident does not go public. This led to the violation of defense laws, and she was forced to apologize. The victim was initially told that there will be no legal action that could be taken. On 29 April 2011 the Police charged two of the cadets. One was charged for utilizing a carriage service to commit this offence and an act of obscenity, the other for utilizing a carriage service to cause offence. After this incident other females came forward and said that they had also been sexually abused which was video graphed or involved other cadets watching. (Bluett-Boyd et al. 2013)

Comparative Analysis:

Technology has significantly transformed the aspects of virtual sexual offenses; the perpetrators now have new means or methods to exploit victims within various digital platforms. The immersive nature of Virtual Reality has significantly increased the number of sexual harassment cases. The line between the real world and the virtual world is blurred due to the use of avatars which can be personalized. In QuiVr (Case 1), Jordan Belamire encountered virtual groping when another player named BigBro442 utilized the platform to simulate unwanted sexual act or gestures. She even compared this incident to the sexual assault she faced in real stating that even though there was no contact the impact was the same. Likewise, in Meta's Horizon Worlds (Case 2), Nina Jane Patel was virtually gang-raped by a group of male avatars few seconds after logging in. These incidents highlight how the immersive qualities of VR intensify the emotional repercussions of harassment, even when the harm is virtual rather than physical, and how the absence of protective measures leaves users exposed. While using population one (case 3) Mari DeGrazia Faced harassment more than three times per week which shows how the perpetrators conceal their identities under their avatars and commit these unlawful acts without the fear of getting judged or caught. Due to the flaws in these gaming platforms or technologies the players are not able

report these perpetrators which encourage this deviant behavior as there is no fear of getting caught due to the great degree of anonymity. In sophisticated programs like LambdaMOO (Case 4), features like the "voodoo doll" allows the users to manipulate or control the avatars of others users without their consent, the perpetrators take advantage of these features to behave in a very wrongful manner making others uncomfortable or sexually violated. In this case even after reporting the perpetrator he could still control the actions of other players which directly points out to the flaws of these software. Even after this incident the perpetrator could use the software again with the help of a new user name. On the other hand, due to anonymity and ease of access social media platforms have further expanded the prospects for virtual sexual offenses. In Case 5, platforms like MySpace and Facebook, along with webcams and mobile devices were highly exploited by John Zimmerman, to groom and abuse minors. The features like creating multiple accounts by a single user on social media apps like Facebook and MySpace led to John Zimmerman creating several fake accounts through which he emotionally manipulated his victims, forcing them into sharing explicit material or pictures, and further engaging into sexual acts with them both online and offline. The ability to conceal one's true identity and pretend to be of a younger age helps the perpetrators online to target minors and other victims. In cases related to streaming of explicit videos and sharing of such explicit content or media online like in the Australian Defense Force incident (Case 6), the online communication platform known as Skype was used to stream the consensual sexual encounter without the consent of the victim followed by sharing this explicit content through mobile phones. This demonstrates how technology can be used to infringe one's privacy and expose victims to public humiliation. This case underlines the urgent need for guidelines and policies to address the ethical use of live streaming of videos and sharing of media technologies. These cases indicate the extreme effect of technology in facilitating virtual sexual offenses. From immersive Virtual Reality and gaming platforms to sophisticated programs, online communication apps and social media offenders have used this ever evolving and advancing technology to virtual sexual offences. All these cases culminate and put light on the urgent need for ethical privacy guidelines, efficient policies, regulatory frameworks, and technological solutions for these illegal and unethical conduct which will protect safeguard users from these sexual violations and ensure the safety to individuals online.

Psychological Impacts on Victims

Developments in technology have altered the methods by which criminals entice and prepare their victims. The proliferation of cellphones among children and young people, for instance, has facilitated communication between criminals and potential victims via social media and online chat rooms. Opportunities to commit crimes related to the Internet, such as online child sex exploitation, have expanded as digital technology continue to advance. (OCSE) (Drejer et al. 2024) Although numerous victims of online child sexual exploitation do not come into contact with their abusers, certain situations result in in-person meetings where victims experience sexual abuse and exploitation. In some cases, the sexual abuse is documented or broadcasted live, resulting in the production of child sexual abuse material (CSAM) that is subsequently shared and circulated online. Research shows that the I generation—that is, those born after the proliferation of the Internet are more likely than previous generations to connect and form relationships with people, they have never met offline. (Twenge 2019) Virtual sexual assault is a startling and relatively new phenomenon that challenges our accepted understanding of trauma and its causes. The symptoms that survivors of actual sexual assault experience are remarkably similar to those of victims of virtual sexual assault, which can have a significant psychological impact. The immersive nature of virtual reality allows the brain to process interactions in these environments exactly as it would in the real world. The visual, aural, and sometimes tactile input of a virtual reality headset can provide a convincing sense of realism. For a long time, psychological literature has argued that events that are vividly imagined or recreated might also cause us to feel something. VR exposure treatment is based on this concept, whereby patients are exposed to meticulously designed simulations of their fears in order to treat PTSD and phobias. The brain frequently reacts as though the events are actually happening in an environment that is sufficiently immersive, according to studies on the psychological realism of virtual reality encounters. This is a psychological state called "presence," where virtual encounters seem real. As a subjective experience, presence is described in a landmark study by Slater and Wilbur (1997) as "part of all the individual's perception fails to accurately acknowledge the role of the technology in the experience." This feeling of presence is what makes virtual reality (VR) both an effective tool and a possible cause of real psychological suffering. For victims of virtual violence, the consequences of this are clear. Acute stress reactions, such as shock, bewilderment, and disbelief, may occur in the early aftermath, resembling those of actual victims. Some people may experience symptoms of post-traumatic stress disorder (PTSD) in the days and weeks after the incident, including nightmares, flashbacks, and avoidance behaviors. A person's everyday functioning and mental health may be significantly impacted by anxiety and hyperarousal brought on by the intrusive memory of the virtual assault. Researchers in the field of neuroscientific study have found that virtual experiences elicit strong emotional reactions. According to research using functional magnetic resonance imaging (fMRI), when people are exposed to scary stimuli—whether they be actual or virtual—similar parts of their brains become active. This implies that virtual encounters can activate the same parts of the brain in charge of processing emotions as real ones. In addition, research on cyberbullying and online harassment sheds light on the similarities between pain experienced virtually and in the real world. The disinhibition and anonymity provided by digital connections can occasionally result in more extreme behaviors, which can be especially harmful to one's mental health. Suicidal thoughts, despair, and social anxiety are among the well-established consequences of cyberbullying, which support the assumption that physical contact is not necessary for harm to occur. It's crucial to remember, though, that each person's psychological reaction to virtual assault might differ significantly. Personal history, resilience, the particulars of the virtual environment, and the type of assault are some of the factors that influence the psychological result. A few people would dismiss the event with minimal effect, but others might be deeply impacted. The distress experienced by those who are greatly harmed by virtual assault is legitimate despite the fact that this diversity is also evident in reactions to real-

world trauma. Discussions about the psychological effects of virtual assault are now highlighting the idea of "moral injury." The negative psychological, behavioral, emotional, and spiritual effects of being exposed to situations that go against one's moral or ethical principles are referred to by this word, which is frequently used in relation to military warfare. Virtual sexual assault can also result in a moral harm, which is a profound disruption of the victim's morals, trust, and sense of safety. The adolescent in the UK serves as a reminder of the necessity for a deeper comprehension of the psychological effects of virtual experiences. Legal systems, the mental health community, and VR creators must all recognize that virtual activities can have real-world repercussions. Support networks for victims of virtual assault must be established as VR becomes more widely used. These networks should include counseling and therapy programs that take into account the particulars of their trauma. The psychological impact of virtual experiences cannot be understated, according to the reported experiences of victims of virtual assault as well as the body of research on the emotional and psychological consequences of VR. It is necessary to really consider the safeguards we provide for users in virtual spaces since virtual assault, particularly when sexual in nature, can cause real psychological trauma. In order to protect the mental health of VR users, this case study provides a great starting point for future research and a driving force behind policy and practice conversations. According to a recent study, the elements that influence victims psychologically align with one another, making the barriers to reporting and seeking support services for both online and offline platforms essentially the same. (Jeglic and Calkins n.d.) Most victims of sexual violence (63 percent) do not report the incident to the police, making sexual abuse the most underreported crime. Sexual abuse reporting is difficult and a personal choice. Reporters of abuse cite a variety of obstacles to reporting, like as:

- Sensations of guilt, shame, and embarrassment
- Perceived adverse outcomes from reporting
- Fear of the criminal taking revenge
- Financial reliance on the offender
- The criminals refusing to accept assistance
- Avoiding the prosecution of a friend or family member
- Lack of faith in a successful prosecution
- Insufficient resources to provide assistance
- Criminal justice system mistrust
- Linguistic or cultural obstacles

Utilization of services may also be impacted by mental health problems following an assault. It is possible that those with severe mental health symptoms are more inclined to seek medical attention because they have a more immediate need. Prior studies have indicated that those who experience more depressive symptoms are more likely to seek medical attention. (Price et al. 2014) A vast range of medical, psychological, social, and legal needs are among the many services that survivors of sexual assault (SA) require.

Legal Impact with Respect to Virtual Sexual Offence

Due to evolving technology, with mainly due to the introduction of VR (virtual reality) has overtaken the development of corresponding legal framework, creating a significant gap in how the law reacts to the virtual crimes, mainly in cases involving virtual sexual assault and other types of cyber-crimes. The conventional criminal laws were structured to protect the individuals from physical harm. These laws necessitate certain elements like, physical interaction or violence, which are absent in virtual crimes. However, this lack of physical interaction prevents those crimes from meeting the definition of sexual assault in various jurisdiction. Even when the emotional and physical damage is profound, the absence of physical interaction prevents those crime to be trailed under the existing laws and regulations. The cross-border nature of virtual crimes possesses significant challenges to legal frameworks. Users from various nations, governed by various jurisdictions interact with shared digital spaces. In cases of alleged virtual sexual assault, the pertinent question is which jurisdiction's laws should be applying. These issues become more complex when the accused and the victim are located across different countries. Hence the Legal systems have yet to formulate a standardized approach considering the jurisdiction in the digital sphere, which otherwise might lead to fragmented legal landscape with no clear guidelines for which law to be applied. Apart from issues relating to jurisdictions, law enforcement agencies frequently encounter constraints in their resources, compelling them to prioritize cases based on multiple factors like severity of the offence and threat to public safety. Unlike physical assaults cases which contains a clear and tangible evidence. Virtual assault cases often lack physical evidence and does not pose an immediate threat thus affecting prioritizing cases. However, the psychological trauma and emotional harm resulting from virtual assaults are increasingly being recognized as significant, leading to a growing understanding of the necessity to take these crimes seriously. The investigation of virtual sexual offences is often affected by the novel and evolving natures of these crimes. The law enforcement agencies are still formulating procedures and expertise required to handle such crimes, which lead to delayed investigations. The effective investigation of virtual sexual offences requires the use of both established investigative skills and in-depth knowledge about the associated technology. The other major challenge of investigating a virtual sexual offence is providing training for law enforcement agencies on handling the case and gathering resources. The allocation of

resources towards training the law enforcements officers is of paramount importance, encompassing not only the technical aspects but also the psychological and legal aspects. Furthermore, the law enforcement agencies should also develop innovative and a standardized app for the collection and preservation of evidence preserving its integrity and ensuring its admissibility in the court of law. Added to this is another complexity, the question of attitudes of the police and other actors in the justice system towards policing and accountability for acts of virtual sexual offences. The volume of various forms of online violence, frequently paired with the anonymity of the perpetrators and the lack of appropriate and efficient reporting mechanisms pose a barrier to the effective processing of such cases. Indeed, there are no existing laws regarding the authorship and handling of biometrics collected by the VR systems. These platforms also handle highly sensitive information including the eye tracking data, voice patterns and body movements, which goes beyond the scope of what traditional social media platforms typically collect.

Future Directions

The addressing and prevention of virtual sexual offences requires a multifarious approach due to its emerging nature. Thereby requires the enactment of severe regulatory actions, by making use of cutting-edge technology and maintaining cooperativeness among other regulatory bodies. The technological companies must be made in charge of introducing such strong measures, prohibiting children from the usage of such violated contents across different social media platforms. Thus, amplifying clarity and outside oversight are essential for regulating the promotions and utilization of such platforms, mainly in areas of high risk of occurrence like India. Thus, we could potentially reduce the likelihood of children and other individuals encountering such harmful online environments by embedding strict law and regulatory frameworks. Education plays a fundamental role in the fight against virtual sexual offences. By embedding lessons on virtual sexual offences at school level, it helps promoting courteous relationship among individuals, helping the younger users to gain insight on to the dangerous nature of online interactions. By introducing these programs at very young age like the late primary school, help children to gain necessary skills to stay away from falling to such traps, allowing them to interact with digital landscape in a secured manner. It is imperative to implement outreach programs directed at parents and culturally and linguistically diverse (CALD) communities, as these initiatives specifically address the challenges associated with comprehending and managing the Tax-Free Savings Account (TFSA). Along with this it is equally important to highlight the online disinhibition effect, which can reduce the perception of accountability in virtual setting thereby enhancing their safety. The necessity for conducting advanced research and building technologically practical solutions cannot be overestimated in addressing and recognizing the risk of virtual sexual offences. Moreover, in order for establishing more productive intervention strategies the future studies must concentrate on expanding theoretical framework and identifying perpetrator behaviors. Further, techniques like the HERO resilience model can help individuals mainly younger audience in building physiological resilience within the digital world. (Singh and Nambiar 2024) Moreover, theoretical advancements in identifying mental health repercussion of online exploitation on children will aid in the development of robust support systems. Additionally, the AI tools created by expanding the Technology Acceptance model will ensure the safe and smooth usage of virtual spaces by children, enhancing the preventive measures. Methodologically, there is an urgent need to conduct an observational study focused on evaluating the potency of AI tools in preventing the virtual sexual offences. Studies focusing on pre and post intervention evaluation can foster significant insights into the enduring effects of AI based prevention strategies. Furthermore, comprehensive case study analyzing the application of AI across various platforms will help in identifying the obstacles and promote effective practices, aiding future technological advancements. Such research efforts are essential for revealing gaps and opportunities in the effective application of AI in preventing virtual sexual violence, mainly online exploitation of children. Therefore, the application of novel technology integrated with AI plays a paramount role in prevention of sexual offences across the digital realm, particularly in regions where such offences are high, like India. The AI tools must be made adaptable for the smooth application across various platforms. including social media and social meeting spaces, to reduce the risk of any type of exploitation with the virtual spaces. Additionally, ensuring an effective communication between various agencies like law enforcement, forensic services and other organizations are vital for effective response and data collection. These agencies must ensure that such type of offences does not occur across the various platforms, ensuring integrity and safety of virtual platforms. By integrating education, regulation, research, and collaboration, society can significantly vanish virtual sexual offenses and create a more secured environment for people.

II. Conclusion:

The review focuses on the profound impact of technology in the commission of virtual sexual offences and their adverse psychological effects on its victims. Moreover, it highlights how technology and virtual platforms such as virtual reality and social media are being exploited by perpetrators as a modum for the commission of these offences. The ability of these platforms which allows the offenders to establish high level of anonymity, facilitate these offences, without the fear of getting caught. Also, the cases mentioned in the review highlights how these offences lead to different type of psychological elements like post-traumatic stress disorder, fear, anxiety and more injury. The review also reflects the urgent need for a multifarious approach to tackle virtual sexual offences. Despite exponential rise in virtual sexual offences, the absence of clear guidelines and policies in addressing these crimes rise serious concerns and also provide the perpetrator an opportunity to behave the way they please. Unlike the traditional crimes the widespread nature of these offences elevates the requirement for cross border cooperation and effective collaboration between various law enforcement agencies.

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