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A New Era of Ethics: The Use of Virtual Reality Interventions in Social Work Ethics

Trahan, Smith, and Benton

Abstract

Social work practice is embracing the use of technology for the purpose of providing clients with the most efficacious interventions. Virtual technology, another significant wave in technological advancement, is commercially available to the public and social work practitioners. While social work has been researching the efficacy and impact of virtual reality interventions, social work macro and micro practitioners are not equipped with ethical standards for best practices that maximize client outcomes and reduce risk. The article reviews the National Association of Social Workers (NASW) code of ethics and new standards published by the Association of Social Work Boards (ASWB) to review information pertaining to virtual reality technology including risks and benefits, standards for procedural use, and future direction for establishing best practices. The use of virtual reality with clients has multiple layers of ethical considerations social workers must address before engaging in the use of virtual reality tools. Social work practitioners are provided with suggested guidelines for virtual reality use with clients.

According to the National Association of Social Workers (2008) code of ethics, social workers are called upon to focus particularly on the "needs and empowerment of people who are vulnerable, oppressed, and living in poverty" (p. 1). Therefore, social workers have a duty of delivering services to particular populations that have been dismissed by the larger society. As socioeconomic status (SES) drives access to information and resources, many who struggle financially believe that financial scarcity impacts the quality of services they receive, leaving them feeling mistreated, discriminated against, and marginalized (Loignon et al., 2015). Rapidly advancing technology brings a new layer to the social work duty of addressing the needs of vulnerable populations. As Hill and Ferguson (2014) note, "information technology will touch all areas of social work practice, and will demand adaptation and adjustment on the part of [all] social work practitioners" (p. 5). Very little has been written on the use of virtual reality (VR) interventions in social work and how to utilize them in a way that reflects the standards social workers are expected to maintain. The purpose of this article is to address an urgent need to provoke discourse about social work ethical considerations in providing virtual reality treatment services to client populations.

Access to Technology

Advancements in technology increasingly allow individuals rapid access to others and information. A PEW research report (2013) found that 90% of U.S. adults own a cell phone, 61% own a smartphone, and 42% own a tablet computer. Approximately 74% of adults also use a social networking site such as Facebook or Twitter (Pew Research Center, Internet Science & Technology, 2013b). A majority of youth (75%) ages 12-17 use a cell phone and 92% of teenagers use the Internet on a daily basis (Pew Research Center, Internet Science & Technology, 2013c). This rise in the use of technology and social media is impacting every aspect of social functioning (Boulianne, 2015). While negative impacts have been recorded, there are also impacts that can promote positive well-being. For instance, previous research demonstrates the impact of social media use on positive change in health behavior (Laranjo et al., 2015). Individuals can be empowered through technology, as more clients are seeking online services for issues related to health, relationships, substance abuse, anxiety, and depression (Menon & Rubin, 2011).

However, access to technology is influenced by various demographics factors causing what is known as the "Digital Divide." This divide is the difference between those populations with access to technology and those without (Dolan, 2016; Hoffman, Novak, & Schlosser, 2000). Dolan (2016) notes that families making less than

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$25,000 per year only access the Internet 49% of the time at home, while families making $100,000 or above access their Internet at home 96% of the time. Groups less likely to access Internet at home include those without a high school diploma, rural populations, and disabled groups (Dolan, 2016). Furthermore, home access to computer varies based on ethnicity (minority status), SES, and citizenship. Even in schools where students may have access to technology, the percentage of computers to students varies based upon SES, leaving lower income communities without adequate access. Mobile devices, on the other hand, are more accessible to low income communities, with black populations showing high rates of access (Dolan, 2016). Although mobile phone ownership is influenced by income, the income gap is slowly closing. Approximately 84% of US adults making less than $30,000 per year own a mobile phone, and 47% own a smart phone (Pew Research Center, Internet Science & Technology, 2013).

Virtual technology is becoming more available in mainstream applications, with cost and accessibility barriers overcome by applications for a commercial market. From video games to chat rooms, virtual technology applications are expanding. During the spring of 2016, various virtual reality platforms were released commercially to the general public including the Oculus Rift ($600), HTC ($766), and Samsung Gear VR ($99). While many of the more sophisticated systems utilize an expensive computer platform, smart phone applications will be accessible to all populations, regardless of SES. For less than $20, individuals can access Google Cardboard, while the Samsung Gear VR ($99) is adaptable to any Samsung smart phone. Cost and availability position VR to become the next generation of public technology, thus increasing the urgency for social work to address uses for VR and its social implications. This new advancement requires a new evolution of ethics and further conversation about creating standards for social work applications.

Virtual Reality

Over the past ten years, virtual reality interventions (also known as virtual reality exposure therapy, virtual reality immersion therapy, simulation for therapy, and cyber therapy) have developed into a new wave of treatment for mental and medical health with a variety of populations and problems, including PTSD for post combat veterans (Seitz, Poyrazli, Harrison, Flickinger, & Turkson, 2014), social anxiety and phobias (Opris et al., 2012), substance abuse and substance cravings (Hone-Blanchet, Wensing, & Fecteau, 2014), stress management (Gaggioli et al., 2014), acute pain (Wiederhold, Gao, Sulea, & Wiederhold, 2014), cognitive impairment (Coyle, Traynor, & Solowij, 2015), memory (Yip & Man, 2013), spatial skills (Gutierrez, Dominquez, & Gonzalez, 2015), and even psychopathology (Smith et al., 2015).

"Virtual reality (VR) is an advanced form of human-computer interface that allows the user to interact with and become immersed in a computer -generated environment in a naturalistic fashion" (Eichenberg, 2012, p. 3). Virtual reality is created by combining computers, head mounted displays, and body tracking sensors, interface devices, and real time graphics to create a computer generated simulated world (Rizzo, Schultheis, & Rothbaum, 2003). According to Fox, Arena, and Bailenson (2009), "A virtual environment (VE) is a digital space in which a user's movements are tracked and his or her surroundings rendered, or digitally composed and displayed to the senses, in accordance with those movements" (p. 95). VR is an "empowering environment" that allows individuals the freedom to explore their thoughts and feelings, and feel a sense of "presence" without fear of being threatened (Eichenberg, 2012).

When an individual is present in a VE they are able to "intuitively transform their intentions in actions" (Eichenberg, 2012, p. 4). While in a VE, a psychological experience known as immersion occurs when one loses oneself in the digital environment and shuts out cues from the physical world (Fox et al., 2009). An immersive virtual environment (IVE) is one that perceptually

surrounds an individual and "is characterized as a psychological state in which the individual perceives himself or herself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli" (Blascovich et al., 2002, p. 105). It is within the IVE whereby researchers are studying the role of virtual reality in behavioral health treatment.

Researchers have shown increased interest in applications for treatment with various medical and psychological conditions, viewing applications of virtual technology as an advantage for better outcomes while expanding access to the general public. Reger and Gahm (2008) used virtual reality exposure therapy (VRET) to successfully treat combat related Posttraumatic Stress Disorder. Researchers discovered that IVEs can provide a platform to create virtual cues used to simulate drug cravings. Cue reactivity, a phenomenon found in addiction wherein addicts have significant physiological and subjective reactions during exposure to drug-related stimuli, can be induced and extinguished using virtual reality exposure (Kuntze et al., 2001). IVEs have also been used as a tool with cognitive behavioral therapy to treat specific phobias, eating disorders, and drug addiction (Fox et al., 2009).

Currently, social work researchers play a significant role in evaluating the use of VR technology, with multiple labs conducting research on different subjects such as teen relationship violence, posttraumatic stress disorder, drug craving and cue reactivity in smokers and drinkers, depression, and other mental health disorders. In the United States, social work represents one third of all virtual labs conducting research. A review of national academic programs that contain virtual reality labs uncovered that out of roughly 15 identified programs with labs, 4 of those are within social work programs (Table 1). These universities include: University of Southern California, Texas State University, University of Houston, and University of Alabama.

A New Era of Ethics

Technology has evolved beginning from the development of online knowledge-based learning and the mobile phone to the smartphone to recent development of a more modernized version of virtual reality. Commercial producers have not thoroughly considered the ethics related to their use (Sharma, Lomash, & Bawa, 2015). These advancements in technology are transforming social work practice without full understanding of their impact on practice, education, or the profession. The last discussion about standards of practice for technology by the National Association of Social Workers (NASW) was offered in 2005. This standard attempted:

> to maintain and improve the quality of technology-related services provided by social workers; to serve as a guide to social workers incorporating technology into their services; to help social workers monitor and evaluate the ways technology is used in their services; to inform clients, government regulatory bodies, insurance carriers, and others about the professional standards for the use of technology in the provision of social work services. (NASW, 2005, p. 6)

This attempt to standardize approaches to technology is valuable in that it addresses use of technology in all areas of practice (clinical, community, administrative). But with the introduction of new technologies, it is already outmoded (Hill & Ferguson, 2014).

In 2015, The Association of Social Work Boards (ASWB), assisted by an international technology task force and Frederick Reamer, Ph.D., developed and published a model for standards for technology and social work practice. These standards focus on the use of "digital and other electronic technology" including Internet, social media, online chat, text, email, smartphones, landline phones, and video technology (ASWB, 2015). These standards serve to inform the NASW in updating the 2005 NASW Technology Practice Standards (ASWB, 2015). However, the new ASWB standards have not yet been adopted into the code of ethics, leaving social workers without a clear set of guidelines pertaining to use of electronic technologies.

Table 1: Virtual Reality Labs

University	Services
University of Alabama School of Social Work http://osp.ua.edu/FRD_bios_Traylor.html	• This virtual reality technology lab assists in exploring drug craving and cue reactivity. • Currently exploring interventions with adolescent females in juvenile detention facilities.
UT AUSTIN http://www.utexas.edu/cola/cps/research/virtual-reality-systems.php	**Center for Perpetual Systems: Virtual Reality Systems** • Driving and attention project examines driver's ability to detect signs in a virtual environment and effectively understand their environment when aspects of the visual input may be unpredictable. • Baufix environment allows individuals to copy a model pattern shown to investigate learning, eye movement targeting, and eye, head, and hand coordination.
UT DALLAS Department of Computer Science https://utdfivelab.wordpress.com	**Future Immersive Virtual Environments Lab (FIVE LAB)** • LEGO project works to establish baseline measurements of the training transfer that occurs when individuals use the instruction manual provided in the LEGO model. • MATLAB allows individuals to examine surfaces and interact with programs through a 6-depths of field manipulation. • SuperKAVE project developed an immersive life sized replica of a 50,000 tons of water and 13,031 photomultiplier tubes under Mount Ikenoyama in Japan. SUPERKAVE displays the positioning of photon sensors and their color-coded data, which helps to improve neutrino interaction patterns, as well as supports transitioning between data events.
Duke University http://virtualreality.duke.edu	**Immersive Virtual Environment** • Addresses stress by placing individuals in different virtual situations to analyze how individuals react and behave during stressful tasks • Anxiety, fear and emotional arousal in specific environments • Recreation of a premature infant retinal vessel to help understand the changes that occur during this serious disease in order to help prevent blindness from occurring. • Created virtual DNA strands, which can be manipulated and studied from various angles for better understanding of human genetics.

Table 1 Continued: Virtual Reality Labs

University	Services
University of Houston Graduate College of Social Work http://www.uh.edu/socialwork/New_research/VRCRL/	**Virtual Reality Clinical Research Lab (VRCRL)** • Focuses on relapse prevention for individual with alcohol dependence. • Addresses cue reactivity for individuals with nicotine cravings. • Virtual alcohol control lab prepares individuals for situations that could trigger drinking to learn coping skills virtually.
Iowa State University http://www.vrac.iastate.edu	**The Virtual Reality Application Center (VRAC)** • Provides training exercises for military personnel to explore a replication of urban areas with virtual buildings, roads, and people. • Military personnel conduct efficient and low cost trainings in the virtual environment • Creates a virtual complex team-training scenario in which groups can work to achieve goals and then receive immediately feedback evaluating the team's performance.
University of Maryland School of Public Health Department of Kinesiology http://sph.umd.edu/department/knes/lab/22230	**CogMo Virtual Reality Lab** • Utilizes a 3-screen visual to study walking and standing by projecting a scene around the individual, a treadmill, and a tracking system that records the individual's movements to understand muscle activation within different parts of the body.
University of Minnesota School of Architecture Department of Landscape Architecture http://vr.design.umn.edu	**Virtual Reality Design Lab (VRDL)** • Utilizes a perception head mounted display to produce a 3D human scale visualization of structures that are in the process of being designed and built. • Created a virtual interactive environment of a suite planned to be built in an intensive care unit at a California children's hospital.
Rowan University http://www.rowan.edu/president/asa/vrcenter/	• Design and visualization, 3D printing and prototyping, collaboration, research and development, creating applications for a variety of devices

Table 1 Continued: Virtual Reality Labs

University	Services
University of Southern California School of Social Work http://medvr.ict.usc.edu	**Medical Virtual Reality** • Used to treat and assess individuals with PTSD using gradual exposure therapy by exposing them to a virtual environment similar to the scenarios that represent their traumatic experiences. • The Detection and Computational Analysis of Psychological Signals (DCAPS) project uses innovative tools to detect depression and other mental health issues by studying the individual's body language, gestures, and facial expressions in hopes to improve psychological wellbeing amongst returning veterans.
SMU College of Humanities and Sciences http://www.smu.edu/Dedman/Academics/Departments/Psychology/Research/FamilyResearchCenter/Research/Virtual%20Reality	**Family Research Center's Virtual Laboratory** • Partner project with Dallas Independent School District that incorporates role-playing virtual scenarios in which an individual has the opportunity to intervene as a bystander in multiple relationship violence situations.
Stanford University https://vhil.stanford.edu	**Virtual Human Interaction Lab (VHIL)** • Provides dramatization of the effect that humans have on our planet. Thus, effectively changing conservation behaviors. • Simulations that allow individuals to see their reaction, behaviors, and appearance reflected in a virtual mirror in a wide range of scenarios to encourage and teach empathy. • Virtual classroom to conduct experiments that investigate the interaction between classmates, learning environment, and participation among students. • Immersion at scale project studies the degree of immersion necessary for an ideal virtual experience.
Texas State University School of Social Work http://www.socialwork.txstate.edu/about-us/VRTL.html	**Virtual Reality Technology Lab** • Treat individuals with alcohol and drug addictions • Treat social anxiety/PTSD in Veterans • Smartphone app to prevent binge drinking • Smartphone application for WIC mothers • Radiation therapy training

A review of the ASWB guidelines indicates that the guidelines do not fully explore the implications of virtual reality. For instance, the ASWB guideline 3.02 states:

> Social workers who chose to provide electronic social work services shall: Use proper safeguards, including encryption, when sharing confidential information using digital or other electronic technology. [S]ocial Workers shall protect clients' stored confidential information through the use of proper safeguards, including secure firewalls, encryption software and password protection. (ASWB, 2015, p. 6)

Unfortunately, while this guideline may apply to electronic technologies such as email and texting, virtual reality electronic transmission cannot be encrypted or secured in this manner. In fact, the lack of security pertaining to transmission of virtual reality data may not meet standards of current state and federal regulation for securing client protected health information (HIPAA, 1996).

Currently, most of the research regarding technological trends in social work is related to the use of "Web 2.0" technologies, a term used to describe electronic services including email, texting, social media, online therapy as a form of service delivery, and telehealth (Kimball & Kim, 2013; Dombo, Kays, & Weller, 2014; Reamer, 2015). In an educational setting, research has addressed the issues of providing online and hybrid courses (Jones, 2015; Kilpelainen, Paykkonen, & Sankala, 2011; Moore, 2005). Additionally, social work practitioners and educators are using social media as a way to raise awareness and promote issues of social justice and human rights (Deepak, Wisner, & Benton, 2016; Bent-Goodley, 2015; Hill & Ferguson, 2014).

The ASWB standards report that "electronic social work services include means of the use of computers (including the Internet, social media, online chat, text, and email) and other electronic means (such as smartphones, landline telephones and video technology)" (ASWB, 2015, p. 3). However, virtual reality, while it perhaps could be argued to be a video technology, retains specific risks and benefits, is maintained through separate electronic platforms, and may pose specific ethical challenges due to the conflict between avatar creation and ethical standards regarding dual relationships.

Social work research has addressed the positive benefits of technology such as its ability to reach clients in rural areas, clients with disabilities, and those seeking assistance with identifying resources (Dombo et al., 2014). The benefit of technology to increase access to social work education and training for practitioners in rural areas has also been noted (Mathias & Benton, 2011). Additionally, the use of video conferencing for both continued education and supervision allows for more students/practitioners to reduce expenses, increase productivity, and be more flexible compared to traditional face-to-face methods (McCarty & Clancy, 2002; Rousmaniere, Abbass, Frederickson, Henning, & Taubner, 2014).

Concerns regarding the use of these technologies, quality, and ethics for social work practitioners and educators has also been discussed (Jones 2015; Kimball & Kim 2013; Moore; 2005; Voshel & Wesala, 2015). These discussions include suggestions for clear boundaries between personal and professional representation, and that practitioners and students alike need up to date training on this ethical issue and others (Kimball & Kim, 2013; Reamer, 2011; Voshel & Wesala, 2015). Effective use of social media and education regarding ethical issues provided in coursework can be translated into professional practice (Deepak et al., 2016; Duncan-Daston, Hunter-Sloan, & Fullmer, 2013). Furthermore, it is recognized that even within the increases to accessibility already noted, there are still issues of equal access to technology based on individual SES, agency finances, or geographical location (Mathias & Benton, 2011; NASW, 2005). Social workers are encouraged to review state regulations and continual legal changes regarding the use of technology and service delivery, and online activity in general, and stay up to date on rapid development of ethical guidelines related to technology (Dombo et al., 2014; Menon & Rubin, 2011; Reamer, 2015). We also encourage social workers to review new ASWB standards for electronic social work

services as these standards are a foundation for potential future NASW electronic services ethical standards (ASWB, 2015). This dialogue is meaningful, but may not address particular ethical guidelines for virtual technology. Sharma, Lomash, and Bawa (2015) suggest that in a virtual world, individual freedom is high while personal responsibility can be perceived as low; therefore ethics described as "collective responsibility" related to VR is needed. This collective responsibility can also define why the social work profession needs to address the expanding use of technologies like virtual reality.

Social Work Virtual Ethics

To date, the social work ethics of virtual reality treatment have received scant attention in the research literature. The NASW Code of Social Work Ethics is the standard for ethical guidelines for the industry (NASW, 2008). Using the NASW Code of Social Work Ethics, this article attempts to address ethnical guidelines for the future of virtual reality interventions. As no official ethical code for VR interventions has been adopted, this article uses current guidelines to address ethics in the VR environment. Social work ethics code includes 6 core values: service, social justice, dignity and worth of the person, importance of human relationships, integrity and competence (NASW, 2008). This article inspects virtual reality interventions from each of these common values to determine best practice models for using interventions. As technology is rapidly changing, social workers must adapt to changing technology. We include only those virtual reality interventions being discussed in the literature as viable treatments as a basis for an ethical debate.

Service and Social Justice

Social workers are called to "help people in need and to address social problems" (NASW, 2008, p. 5). Social workers are ethically required to "pursue social change, particularly with and on behalf of vulnerable and oppressed individuals and groups of people" (NASW, 2008, p. 5). Research on virtual reality interventions is often focused on social problems related to mental and medical health. Due to the expense of VR technology, applications for interventions for marginalized groups have previously been cost prohibitive.

Recently, commercial virtual reality applications have reached mobile phones with inexpensive phone applications. With expansion into an affordable phone market, low income populations are more likely to have virtual access. However, potential treatment applications still require more complex computer systems to run digital software programs to provide appropriate virtual resolution. While this technology may not currently be cost feasible for low income populations, social workers should plan for cost reduction in the near future and growing accessibility. While costs may still be high for consumer access, social work may want to consider developing protocols and treatment standards now in order to meet the demand as it arrives. Taking it a step further, social work organizations and practitioners may want to explore ways to advocate for and support improved access across SES. Increasing access to technology supports the social justice value (Mathias & Benton, 2011). To further education and experience with these technologies, social workers may want to consider cost sharing or agency purchasing to offset the costs. For instance, a mental health clinic may find that purchasing the technology to use within the treatment facility may be a worthwhile investment and may service a large group of clients. Dependent upon continued research related to outcomes and benefits, social workers may desire to incorporate this technology as an "investment" to increase their outcomes. Because these applications are currently commercially produced and possibly available to various populations, social workers are called to be aware of the impact of virtual reality on mental health as well as truly investigate the outcomes for VR treatment for their area of intervention, to determine whether the cost of providing the service is negligible due to the benefit to the populations served.

Dignity and Worth of a Person

Social workers are called upon to be caring and respectful to those they serve, bearing in mind issues of diversity and culture while maintaining support for a client's right for "socially responsible self-determination" (NASW, 2008, p. 5). Similar to evaluating face-to-face practices for their efficacy across cultural groups, the same assessments should be made regarding virtual treatments. Furthermore, recognizing and communicating potential risks and benefits of specialized treatment plays a critical role in the maintenance of self-determined consent for treatment. Uninformed clients experiencing negative treatment effects may become distrustful of social work intervention and future treatment. Therefore, it is essential that social workers know and communicate risks of treatment to the client. In order to provide some of this information, this article compiles succinctly some of the risks and addresses them in order for social workers to maintain this ethical standard.

Risks:

Exposure to virtual reality has been shown to increase the potential for adverse effects including *cyber sickness* and *after effects*. VR technology currently uses a visual display system of light perceived through goggles or a headset. Indirect and direct potential effects can result from visual exposure in the virtual environment (Viirre, Price, & Chase, 2015). Indirect effects, including psychological and neurological effects, may increase neurological risks such as eye strain, visual acuity, and stereoscopic vision (Viirre et al., 2015). Unidentified issues related to neurological disorders may be triggered, and seizures could result from exposure to patterns of flashing light. VRET may also produce problems related to imbalance, nausea, and motion sickness (MS; Viirre et al., 2015). Direct effects include impacts to using the technology, such as the weight of the headset. Cyber sickness, or motion sickness within the cyber realm, is a physiological response to ongoing visual motion. Motion sickness is quite common in the general population, with approximately 60% of viewers experiencing after effects of motion stimulation with common symptoms of nausea, dizziness, and warmth when experiencing ongoing motion such as marine or space settings (Lawson, 2015; Stern, Hu, Anderson, Leibowitz, & Koch, 1990). In virtual reality environments, adverse symptoms may be present in 60-95% of participants experiencing 15-60 minute intervals of VR participation (Lawson, 2015; Stanney, Mourant, & Kennedy, 1998; Stanney & Salvendy, 1998). These statistics may also include between 5-40% of users ending their participation due to these MS symptoms (Lawson, 2015; Stanney & Salvendy, 1998).

The induction of MS symptoms is more common for those who have previously experienced motion sickness, even in other environments (Lawson, 2015). Common symptoms of motion sickness include nausea, vomiting, increased salivation, cold sweating, drowsiness, pallor (loss of color to the face), dizziness, headaches, and flushing (warmth; Lawson, 2015). A cascade of symptoms may begin with yawning or sighing with ongoing progression of slight dizziness, visible nystagmas, bodily warmth, headaches, pallor, perspiration, increased salivation, and finally nausea (Bennett, 1928; Lawson, 2015). Early symptoms that may indicate presence of MS include mild stomach symptoms, dizziness, headache, flushing or perspiration, and pallor (Lawson, 2015). Early cessation of exposure when these symptoms begin to appear can deter the cascade from reaching its most intense levels including nausea and vomiting (Lawson, 2015).

Other factors may exacerbate indirect effects in the VR environment. A larger field of view may contribute to greater symptoms (Kennedy, Fowlkes, & Hettinger, 1989). A larger field of vision produces greater "presence," a term used to describe the amount of immersion or "being there" in the virtual field (Chertoff & Schatz, 2015; Barfield, Zeltzer, Sheridan, & Slater, 1995, p. 475). The main disadvantage of a greater field of vision is more potential risk for disequilibrium due to increased motion. The amount of motion within the field environment appears to contribute

to 20% more variance in discomfort (Kennedy, Berbaum, Dunlap, & Hettinger, 1996). Exposure to rapid moving scenarios such as a roller coasters or a moving vehicle are likely to be more stimulating than a placid scenario. Adaptation of the human experience to the virtual environment appears to decrease probability of symptoms. Two to three days between exposures has produced positive results for decreasing potential side effects (Watson, 1998). Exposure over time appears to contribute to increased adaptation, resulting in less potential for symptoms (Cobb, Nichols, Ramsey, & Wilson, 1999). The ability for the user to be an active participant in movement within the VR environment can also decrease symptoms. Virtual systems providing a joy stick to use for moving up and down and side to side as opposed to lack of user participation (passive) or the ability to navigate six degrees of freedom are more likely to reduce symptoms (Stanney & Hash, 1998).

Another potential risk is after effects, the adaptation back to the physical world after using VR. After effects are symptoms post exposure that indicate that the brain adapted to the VR environment and is adjusting to re-engage with the natural world. For instance, vertigo has been reported for VR users post exposure in simulation training (Crampton, 1990). Welch & Mohler (2015) suggest two solutions: a) plan procedures after exposure for stabilization, and b) create a contingent adaptation procedure. A re-adaptation procedure may include a task involving hand eye coordination to allow participant to adjust to real time (Welch & Mohler, 2015). Another part of a re-adaptation procedure may include a "holding period" of time to ensure participants are capable of regaining motor control for continuing regular activities. Contingent adaptation, or dual adaptation, would promote participant adjustment to both environments over time, reducing the after effects because of adaptation in VR and real time. For more information pertaining to adaptation, Welch & Mohler (2015) discuss procedures.

Another risk that must be accounted for is client specific: clients with problems related to cognitions and reality testing. Virtual reality has the potential to intensify stimulation creating greater reality testing problems (Rizzo et al., 2003). Clients with active delusions or hallucinations may be at risk for further psychopathology from exposure to VR. As VR becomes available to the general public, participants actively seeking VR experience without being screened for potential mental health issues are at risk for problems with functioning (Rizzo et al., 2003). Social workers providing VR treatment are called to thoroughly assess clients prior to engaging in VR treatment. While there is a potential risk to those with psychopathology, there may also be benefits dependent upon virtual exposure interventions. It has been demonstrated that virtual reality job training intervention for individuals with schizophrenia has positive impact on social functioning (Smith et al., 2015). This intervention appears to be less visually stimulating; thus, more research pertaining to the limits of virtual reality is recommended before social workers may feel confident to proceed with treatment to this population.

The Importance of Human Relationships

Social workers are called by ethical standards to enhance human relationships, using them as mechanisms for social change. The virtual reality treatment movement has the potential to impact human relationships; however, studies indicate both positive and negative effects on social interaction (Calvert, 2015). A concern is that increased time in virtual world is at the expense of time in the real world (Sharma et al., 2015, p. 24). People may be less likely to interact with family members and friends as a result of increased Internet use (Kraut et al., 1998). However, young adults may also find themselves less socially isolated with use of social network and Internet (Slater, Sadagic, Usoh, & Schroeder, 1999). Internet use may have some positive effects on social well-being and social interaction within virtual reality space may reduce loneliness (Kraut et al., 2002; Luhman, Schonbrodt, Hawkley, & Cacioppo, 2015).

Therefore, we cannot generally say that virtual reality is harmful for social interaction. However, just like any tool, VR may be abused and thus

diminish human contact. At the current time, no research to our knowledge has studied the threshold pertaining to virtual reality abuse and impact on real time social interaction. Therefore, social workers may want to be aware of potential misuses of virtual reality such as ongoing reinforcement of avoiding social interaction through virtual space rather than promotion of increased social interaction in real space. This would mean encouraging treatment and applications that are pro-social, diminish social isolation, and increase esteem. Social workers may want to clarify the goals of virtual reality within the consent process to embolden client social engagement and caution regarding virtual reality as a means to replace social interaction.

Competence

Social workers are called to practice within their areas of competence and provide the most efficacious services while providing knowledge to the profession (NASW, 2008). This call to efficacy of intervention suggests that social workers review research outcome efficacy of virtual reality treatment and be able to communicate the benefits to the clients they serve to provide the best possible outcomes. Social workers would need to be trained in VR and required to demonstrate competencies in VR treatment just as clinicians would in any other clinical approach.

Additionally, similar to challenges in current online social work education regarding teaching clinical skills (Jones, 2015), attention needs to be given regarding the quality of the training. If social workers receive poor training/education on VR modalities, their efficacy in actual implementation will be questionable. Furthermore, practitioners should prepare for also training clients on the use of VR treatments. In a study exploring the incorporation of a VR activity into an engineering course, researchers found that both instructors and students expressed a desire to be better prepared for the activity (Nadolny, Woolfrey, Pierlott, & Kahn, 2013).

Recent evidence suggests that VR interventions are effective for improving gait in children with cerebral palsy (Collange Greco et al., 2015); diminishing anxiety including fear of animals, fear of flying, and obsessive compulsive disorder (Ling, Nefs, Morina, Heynderickx, & Brinkman, 2014); reducing phobic fears such as acrophobia and arachnophobia (Morina, Ijnterna, Meyerbroker, & Emmelkamp, 2015); and managing pain during medical procedures (Guo, Deng, & Yang, 2014). VR treatment has produced several negative outcomes, such as no Wimpact on pain and anxiety during cystoscopy procedure (Walker et al., 2014).

Some meta-analytic reviews of VR anxiety research demonstrate no difference in effects of virtual reality treatment when compared to standard cognitive behavioral treatment (Opris et al., 2012). Even studies with follow-up at 6 months or 1 year indicate no difference in CBT and VRET interventions for many anxiety disorders, except for fear of flying (Opris et al., 2012). One study of actual clinical outcomes for anxiety indicates that classical behavioral interventions may be more effective than VRET (Opris et al., 2012). However, VRET with many problems still appears to do better than a waitlist control group, indicating that VRET can be an effective intervention, certainly better that no intervention.

Another element of social work ethical competence is knowing factors that contribute to success within the virtual reality treatment realm. While some studies lay a foundation for understanding empirically supported intervention, much remains a mystery. For instance, more sessions of VRET appear to induce greater impact (Opris et al., 2012). Specified interventions within virtual reality may be more effective for the targeted problem. For instance, exposure procedures appear to be an effective virtual treatment for anxiety; however, for depression, a virtual reality CBT psycho educational/teaching tool appears to be effective (Li, Theng, & Foo, 2014). A self-administered VR program may be more effective for a problem like depression than anxiety (Li et al., 2014).

Despite some of these initial studies of relevant factors for VR treatment success, researchers have not adequately addressed

comparisons between different virtual reality treatment interventions to provide clinicians with clear direction about empirically supported treatment. Research has still not addressed comparisons of interventions techniques for targeted problems, long term treatment outcomes, combining various therapeutic interventions with virtual reality, and particular populations that may be most impacted by the intervention. The dearth of answers to these questions suggest that social workers remain vigilant about reading relevant research literature as studies continue to provide answers and social work researchers continue to evaluate treatment outcomes.

Social workers are still required to utilize training and education to prepare themselves for virtual based interventions and provide the most evidence based practice to clients. For instance, the virtual reality treatment for anxiety is an exposure based intervention using virtual reality and exposure to imagery to extinguish response. Social workers should still be qualified for providing a clinical intervention like exposure therapy prior to adding an additional virtual component. Virtual reality does not replace appropriate training and guidelines for clinical practice.

In accordance with evidence based practice (EBP), social workers are called to use access to research to confirm that the virtual treatment is effective and the best possible modality for treating the current problem (Drisko & Grady, 2015). Not only are social workers encouraged to look to research to determine whether evidence support exists, but also to use evidence based practice models of evaluating outcomes throughout the treatment in order to discern the impact of the treatment on the client (Drisko & Grady, 2015).

Social workers will benefit from ongoing discussion with the client about the productivity of the intervention and whether the intervention supports the goals of the client. Additionally, discerning benefits and potential negative effects at stages throughout the treatment will promote the human relationship with the client, providing the client with opportunity to voice concerns and the social worker with the opportunity to adjust treatment approaches should there be negative indirect effects or outcomes.

Implications

Having thoroughly explored the relation of virtual reality treatments to social work's core ethical values, the authors hope to address some specific sections of the code and the implications these sections have for agencies and practitioners considering adding VR to their treatment modalities.

Section 1.01 (Commitment to Clients) states:

> *"social workers primary responsibility is to promote well-being of clients," and section 1.02 (Self-Determination) states "social workers respect and promote the rights of clients to self-determination and assist clients in their efforts to identify and clarify their goals." (NASW, 2008, p. 7)*

In efforts to promote the client's rights to self-determination and assist clients in identifying and clarifying their goals (unless potential actions pose a significant and imminent risk to the client), we suggest that social workers begin this process by thoroughly reviewing protocol, research, and processes of virtual reality treatment to determine whether their clients may be at undue risk for such a procedure and communicate their findings to clients prior to treatment. Because social workers are called to promote the well-being of the client, this article suggests that social workers use research and information pertaining to negative effects to analyze benefits and risks to clients.

Social workers may need to justify need for VR treatment beyond traditional therapy, as it appears that they have similar outcomes. Virtual reality may enhance exposure opportunities for increased outcomes to CBT; however, the benefits of this added exposure may be overshadowed by negative side effects to the treatment. We recommend that social workers document their reasons for treatment, identifying why they believe that virtual interventions may be more efficacious than standard treatment.

Section 1.03(E) (Informed Consent) states:

> *"social workers who provide services via*

electronic media (such as a computer, telephone, radio, or television) should inform recipients of the limitations and risks associated with such services." (NASW, 2008, p. 7)

Social workers will also need to communicate these benefits and risks to the client in their consent for treatment, outlining the purpose of the treatment, risks, limits of services because of third party payers, alternatives to treatment, the right for the client to change their mind during treatment, and the approximate time frame for treatment. VR treatment contains a special set of risks and benefits which the social worker will need to clearly outline (perhaps both in writing and verbally) to provide the client with all available information.

Section 1.04(C) (Competence) states:

When generally recognized standards do not exist with respect to an emerging area of practice, social workers should exercise careful judgment and take responsible steps (including appropriate education, research, training, consultation and supervision) to ensure the competence of their work and to protect clients from harm. (NASW, 2008, p. 9)

Social workers are called to practice within the scope of their education and training, ensuring that any they have learned the skill set required to deliver the treatment intervention. As virtual reality exposure interventions are relatively new, few guidelines have been published for the sake of treatment protocol. Therefore, social workers that chose to use VR in their practice with clients are working without a structured method. As such, we call on social workers to thoroughly research VR treatment research prior to engaging in any treatment interventions with clients. We suggest that social workers, after researching and communicating risks, use procedures to protect clients to the best of their ability. VR treatment is not covered by general graduate curriculum and has no certification or quality control authority; thus, social workers are taking a great risk to engage in virtual reality treatment. We suggest establishing procedures based on potential risks for standardized treatment.

Based on our experience within the VR lab and previous research, we suggest procedures to avoid potential negative effects during VR treatment including limiting exposure to VR to less than 20 minutes of time, creating a holding time of at least 30 minutes after VR treatment to allow client to re-adapt to real space, and providing ongoing assessment procedures to identify when negative effects are occurring. These assessment procedures may include depersonalization and dissociation scales prior to treatment, verbal or physiological bio markers to identify when negative effects are occurring (such as perspiration and nausea), and muscle coordination tests after exposure to ensure that clients can return to regular physical faculties. We also recommend that social workers document any adverse or negative outcomes pertaining to their virtual reality interventions. Just like any other intervention, social workers will need to be able to prove that they have enough training and knowledge to utilize an intervention such as virtual reality exposure therapy.

Additional Areas of Ethical Concern

Virtual reality treatment has recently expanded to include a group therapy setting treatment intervention in which multiple participants are engaged in receiving services. To begin treatment, the social worker and clients create an avatar, a virtual representation of their physical presence within the virtual space. From an ethnical standpoint, this kind of treatment is fraught with potential problems. Here are the problems that we foresee within this intervention without guidelines and standards:

Section 1.06 states:

"social workers should not engage in dual or multiple relationships with clients or former clients in which there is exploitation or potential harm to the client. In instances where dual or multiple relationships are unavoidable, social workers should take steps to protect clients and are responsible for setting clear, appropriate, and culturally sensitive boundaries." (NASW, 2008, p. 9)

Avatar introduction has the potential to blur the lines between professional relationship and

personal. Lin and Wang (2014) investigated the phenomenon of avatar creation and found 73% of VR users had multiple avatars that did not replicate their actual physical or personality characteristics. The avatars created were often attempts to increase their distinction as a character within the virtual space, with features that were often over exaggerated for effect. Similarly, social workers may be tempted to create an avatar that is not true to their expertise, character, or personality, thus misrepresenting themselves. Even if social workers create avatars representative of themselves in personality and physicality, the potential for interacting with clients whose avatars represent their actual features is improbable. The introduction of avatars also potentially has the risk to compromise the authenticity of human interaction.

Deception related to avatar creation can potentially harm the client-social worker relationship and leave clients vulnerable to potential cases of power and influence. Because of the potential for deception, social workers may not be able to truly assess the condition of the client and thus open themselves to liability. When a client is face to face with a social worker, social workers have more opportunity to assess physical and emotional state and thus may intervene and ask questions pertinent to client well-being and safety. Confidentiality may be compromised in these settings, as avatars could be created and used to glean information from participants within the group setting. This leaves group participants open to potential abuses and breaches in confidential information.

Section 1.09 states:

> *"social workers should under no circumstances engage in sexual activities or sexual contact with current clients, whether such contact is consensual or forced." (NASW, 2008, p. 13)*

The problem of deception related to virtual group therapy may also blur boundaries related to sexual ethical conduct in these environments. The ability to create an avatar and relate to others who are also avatars distances one from the realities of the boundaries of human relationships. Because sexual impropriety is already a risk within an environment of close intimate relationships created within the social work treatment environment, adding an element of fantasy (avatar) has the potential to distance social workers from the real ramifications of sexual speak, innuendo, and subtle and overt interaction with the client. The potential for breaching boundaries in this area may increase due to feelings of invulnerability around being caught and feeling as if the interaction is fantasy.

Section 1.07(C) states:

> *"social workers should protect the confidentiality of all information obtained in the course of professional service, except for compelling professional reasons." (NASW, 2008, p. 10)*

Social workers are also called to ensure that electronic formation sent through cable, web, etc. are secured as to protect client health information. Internet systems for video conferencing may not be compliance with HIPAA regulations for encrypted information transfer, and thus may create a confidentiality breach. In the virtual environment, social workers will need to be aware of systems for delivering virtual environments that save or collect and information pertaining to the client experience. This information is considered protected health information and thus is to remain confidential in accordance with federal standards (HIPAA, 1996). Legal and ethical issues around the development and security of the digital self are still not fully understood. For instance, within the virtual reality space, participants create avatars, a virtual representation of self. This avatar, while not an actual representation of self, has no current regulation pertaining to privacy and security. Questions remain about whether information pertaining to the characteristics of the avatar is protected health information according to HIPAA regulation (HIPAA, 1996). Additionally, questions remain about whether information pertaining to interaction sequences of the avatar that may be stored within computers is information that can be encrypted. Because this information is non-secure, are social workers to avoid using this technology? Further investigation of ways that this information can be secured is required in the process of developing standards for confidentiality.

The transmission of virtual information through various means must also be secured. In an Internet-based virtual reality platform, data are sent through electronic means. While standards have been established regarding transmission of phone and online media for encryption, it is not clear if these same standards are applicable to the transmission of virtual data. Additionally, it is not clear whether transmission of virtual data can be secured by encrypted means. To ensure standards related to federal laws, social workers should inquire about standards pertaining to HIPAA in their local areas of practice.

The transmission of online virtual data poses concerns pertaining to where the social work services are received. ASWB (2015) guidelines state social workers using electronic media shall "comply with regulations governing the use of this technology both in the jurisdiction in which they are regulated and in the jurisdiction in which the client is located" (p. 4). This further establishes the guideline that social workers should hold a license within the state that they are providing services and the state where the serviced client is located. As social work licenses pertain to particular states, social workers may not be able to provide virtual services, similar to video conferencing or phone, as they may not hold license to provide the service in the state where the client is physically located.

However, with the introduction of an avatar receiving the service, questions remain about whether the avatar represents a sense of self, and therefore could receive services anywhere within the virtual space, regardless of client physical location. Thus, questions remain about social workers providing online virtual interventions and whether they are practicing out of the scope of their license when providing services virtually to clients located in other states.

Conclusion

The use of new technologies is widespread in the social work profession and adds a very complex layer to all aspects of practice. Agencies, schools of social work, and practitioners are encouraged to take a quality assurance approach to the integration of technologies and not rush into use without full understanding. Based upon the previously stated areas of ethical consideration, in conclusion, we offer a list of recommendations for NASW, ASWB, and social workers interested in virtual reality treatments.

1. Develop standards of practice for the use of virtual reality in the social work profession. The new standards developed by the ASWB (2015) begin the process of dialogue pertaining to these standards, but do not fully address the implication of virtual technology. When translating these guidelines to an official NASW code of ethics, consideration must be given to virtual technology and the future role in social work interventions. The Standards for Technology and Social Work Practice drafted by NASW and ASWB (2005) should be updated and expanded to include VR treatments and to further explore issues related to access and cultural competence. Social workers/ social work organizations and schools need to ensure they are not using modalities that perpetuate a digital divide.

2. Ensure a training and certificate program is developed to manage and monitor the impact of VR and its use. Schools of social work and other organizations, such as NASW state chapters, which provide continuing education/professional development, should explore options to train current social workers on the use of VR. Additionally, in preparation for increased use of VR, schools and organizations should increase concrete education around the ethics of VR and other technologies.

3. Explore advocacy and funding opportunities to increase access to VR equipment and training.

4. Fully research the benefits and the risks of virtual reality treatment in general and with the population that you plan to serve. Be sure to include extra risks and benefits within your consent procedures and provide both written and verbal explanation of risks and benefits to the client. Be sure to use language that can be understood by your client population. Provide clients with alternatives to virtual reality treatment at the time of consent. Document any

adverse side effects of your virtual reality treatment sessions, making sure that you also include documentation of procedures that you followed to avoid any risks.

5. Practice within the scope of your training. Be sure that you are competently trained to practice procedures that incorporate a VR element. Contact a consultant who has previously used VR treatment (if available) to discuss process and procedure, or locate a training/certificate program (see recommendation #2). Use evidence-based practice procedures (EBP) to ensure that VR treatment is providing the most effective intervention for the client.

6. To avoid potential side effects of VR treatment and risk to clients, create assessment procedures to screen for problems such as reality testing, dissociation, and cognitive impairment. Be vigilant about watching clients, as the headset may inhibit social workers' ability to assess for discomfort and end sessions if clients begin to communicate any discomfort. Limit VR exposure in initial sessions to determine sensitivity to cyber sickness and allow for client adjustment. Provide a holding area after sessions to ensure that clients can return to normal functioning.

7. Avoid cyber group therapy (therapists and clients create avatars and meet in cyber space) until research can show the efficacy of this treatment and provide some guidance on how to avoid risks related to deception.

8. Pay attention to state and federal laws related to privacy of protected health information of clients. Ensure that you are aware of any electronic information that is being collected within the virtual realm, either by the computer or in cyber space. Know your liability around communicating in the virtual realm.

History shows we should develop ethics prior to the implementation of various treatments and not create standards in a vacuum. Virtual platforms are currently in development for addressing many different medical, psychological, and social problems and the prevalence of this technology and its implications are not fully understood. Given the profession is currently at the forefront of using this technology we should lead the debate about the utility of this technology and the protection of our clients while using it.

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