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VIRTUAL REALITY THERAPY: A PRIME EXAMPLE OF HOW CONTROLLED "FAKE NEWS" CAN SOMETIMES BE BENEFICIAL

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Abstract: *Since the year 2000, virtual reality (VR) is not a myth of the future but has experienced rapid advancement and development in all fields and has emerged as one of the most promising technologies in domains such as training, education and newly in psychology. Witch the rising awareness of ones "mental health" and how important it is daily, there is also a constant growing demand for psychotherapeutic services and new approaches to psychotherapy, such as virtual reality exposure therapy (VRET). Virtual reality (VR) provides new and distinct capabilities, which can allow for an immersive, remote experiences, an authentic environment catered to the clients needs in hopes of helping with the process of psychotherapy, learning, training, getting over one's addictions, anxieties, depression etc. The study aims to find out if virtual reality therapy, more specifically the programs used, can be considered fake news for the human brain and if it has positive benefits on the mental health of people. Furthermore, the study wishes to summarize the experience gained during 4-5 years of therapy through Virtual Reality and to propose new directions and domains in which it can be used. Finally, the study aims to find and build new partnerships to create specific or special programs for people's mental problems/ disorder.*

Key words: *virtual reality therapy, virtual reality exposure therapy, fake news, anxieties, disorders, addictions, phobias.*

1. INTRODUCTION

Virtual reality therapy (VRT), also known as virtual reality exposure therapy (VRET), has emerged as a promising approach within the field of mental health treatment. By creating simulated environments and controlled experiences, virtual reality therapy allows individuals to confront and navigate their phobias, fears, or traumatic memories in a safe and immersive setting. Virtual reality therapy draws upon principles from cognitive-behavioral therapy (CBT) and exposure therapy, which emphasize the importance of gradually exposing individuals to anxiety-provoking stimuli, as stated by Ian Chard and Nejra van Zalk.

By integrating virtual reality technology, virtual reality therapy enhances immersive experience and provides a higher degree of control over the exposure process. The virtual environments can be tailored to everyone's specific needs, ensuring a personalized and effective therapeutic intervention [1].

One common misconception is that virtual reality distorts the line between perception and reality, leading to confusion and detachment from the real world. However, studies suggest that the effects of virtual reality are primarily temporary and do not compromise individuals' ability to differentiate between virtual and real experiences [2, 3]. As explain in [4], "People don't lose touch with reality any more than they do when they read a novel or watch a movie."

There are concerns that virtual reality may induce negative psychological effects, such as cybersickness, disorientation, or addiction. While these challenges exist, they can be mitigated through proper design, calibration, and user guidance. Research [5] suggests that with appropriate precautions, virtual reality can be a safe and effective tool for mental health interventions.

Virtual reality therapy has also been employed in physical rehabilitation and psychological well-being. By engaging patients in virtual environments that simulate real-world scenarios, virtual reality can facilitate cognitive and motor skill training, improve mood, and enhance quality of life. A study demonstrated the positive impact of virtual reality on cognitive function and psychological well-being in older adults [6].

To comprehend the impact of fake news in virtual reality therapy, one must first understand the terms within this context. Fake news refers to deliberately fabricated or misleading information presented as factual news. In the realm of virtual reality therapy, fake news can manifest in various ways. Firstly, misinformation may pertain to the efficacy of virtual reality therapy itself, creating doubts and skepticism among patients and professionals. Secondly, false claims and exaggerated benefits of virtual reality therapy may mislead individuals seeking treatment, leading to unrealistic expectations. Lastly, misinformation can influence the development and distribution of virtual reality therapy programs and applications, compromising their integrity and safety [7].

The study aims to find out if virtual reality therapy, more specifically the programs, can be considered fake news for the human brain and if it has positive benefits on the mental health of people. Furthermore, the study wishes to summarize the experience gained during 4-5 years of therapy through Virtual Reality and to propose new directions and domains in which it can be used. Finally, the study aims to find and build new partnerships to create specific or special programs for people's mental problems/ disorder.

2. METHODOLOGY

The methodology employed in investigating this not so explored area, combining the realms of misinformation/ fake news and mental health interventions. Drawing upon a range of scholarly works and expert opinions, this study outlines the essential steps, and data collection techniques required for conducting a comprehensive study on this evolving subject [8].

To thoroughly examine the potential benefits of utilizing virtual reality in therapy or psychotherapy, the study adopted a cutting-edge review methodology. To gather data, information from web-based sources between 2012 and 2022 was observed and its comprehensiveness and validity were considered. To comprehend the intricacies of investigating the relationship between fake news and virtual reality therapy, a comprehensive literature review becomes indispensable. “The Art of Mixing Realities” [9] emphasizes the significance of understanding how virtual environments can influence human cognition and emotional responses.

The approach involved incorporating existing research and literature over the past 10 years (content analysis) and drawing comparison and conclusions from personal experience in the field of virtual reality therapy, from over 300 VR therapy sessions and over 416 clients in coaching (over 4-5 years). This enabled the study to provide insights into the current level of usage in the field, emerging trends, and potential field for future research, VR programs and new ways/ domains to use virtual reality therapy.

Content analysis is a valuable approach for examining news and information. It entails a systematic examination of the content, typically text, to identify patterns or themes [10]. In this study, the characteristics of virtual reality therapy in specific cases were analyzed, including language, sources, and framing. However, it's important to acknowledge that content analysis has its limitations, as it may not capture the complete context or intent behind the communication.

3. EXPLORING THE METHODOLOGY OF VIRTUAL REALITY THERAPY

As such, virtual reality therapy has gained considerable attention as a promising approach to mental health treatment. Its immersive nature allows for individuals to engage in simulated environments that can promote relaxation, exposure therapy, or cognitive training etc. [11]. However, the rise of fake news poses a significant challenge to the credibility and

effectiveness of virtual reality therapy. The spread of false information, particularly within the context of mental health, can have detrimental consequences on patients and the overall therapeutic process [12], [13].

Exposure Therapy: VRET allows therapists to create controlled and customizable environments that mimic anxiety-inducing situations, providing a safe and gradual exposure for patients. Through repeated exposure to feared stimuli, patients can experience habituation and desensitization, leading to reduced anxiety responses in real-world situations [14].

Dr. Jeremy Bailenson's underscores the influence of VR on cognitive processes, particularly memory formation and recall [4]. As can be seen above, studies have shown that VR experiences can impact human memory, leading individuals to incorporate false or misleading information into their recollections. This phenomenon raises concerns about the potential for “fake news” to be embedded within virtual experiences, thereby shaping individuals' perceptions and beliefs.

In the article “Embodiment in Virtual Reality Intensifies Emotional Responses to Virtual Stimuli” the authors emphasize the emotional impact of VR experiences. When individuals engage emotionally with virtual content, they are more likely to form lasting memories and be influenced by the information presented. As such, the emotional intensity of VR can amplify the effects of “fake news” potentially leading to heightened beliefs in inaccuracies or misinformation. The authors' studies show that the repetition of “illusory” and gradually potentiated actions can modulate emotional responses [15].

The literature shows that virtual reality therapy can be used in the following domains of mental health:

3.1 Anxiety Disorders

Anxiety disorders are a group of debilitating mental health conditions that affect millions of people worldwide. While traditional therapeutic approaches, such as cognitive-behavioral therapy and medication, have been effective, emerging technologies, specifically Virtual Reality (VR), hold great promise in transforming the landscape of anxiety disorder treatments.

Research has demonstrated the effectiveness of virtual reality therapy in treating various anxiety disorders. A study [16] found that virtual reality therapy was effective in reducing symptoms of social anxiety disorder, with participants reporting significant improvements in social interaction and decreased anxiety levels. Similarly, a meta-analysis conducted by Powers and Emmelkamp [17] revealed that virtual reality therapy was successful in treating specific phobias, including fear of flying, heights, and spiders.

From the clinical experience of VRT, the most frequent cases were of panic attacks in which relaxation and mindfulness therapy gave the expected results – the statistics will be presented in a later work.

3.2 Phobias and fears

To comprehend the efficacy of VR-based fear reduction, it is crucial to understand the underlying theories that guide this approach. Fear conditioning involves the association of a neutral stimulus with an aversive experience, while extinction involves the gradual reduction of fear response through repeated exposure to the conditioned stimulus without the aversive outcome. [18], [19] VR technology simulates fear-evoking situations and provides a safe context for fear extinction to occur.

By activating fear networks in the brain, VR exposure therapy facilitates the process of unlearning fear associations. Virtual reality offers unique advantages for fear reduction compared to traditional exposure therapy.

The immersive and realistic nature of VR environments allows for a heightened sense of presence and engagement. This increased presence elicits emotional and physiological responses similar to real-world experiences, effectively activating the fear circuitry in the brain. [20], [21], [22].

Moreover, the ability to manipulate the VR environment allows therapists to gradually expose individuals to feared stimuli, controlling the intensity and duration of exposure. This controlled exposure enables individuals to

confront their fears in a gradual and systematic manner, promoting fear extinction and desensitization.

From the clinical experience of VRT, the most frequent fears and phobias were related to public speaking (Glossophobia), fear of heights (Acrophobia) and surprisingly of open spaces (Agoraphobia). In addition, the fear of mice (Musophobia) and various insects (Entomophobia) – the statistics will be presented in a later work.

3.3 Gen Z depression

Generation Z faces unique stressors, such as social media pressure, academic demands, workplaces that require very specific set of skills and an unstable, unsure and rapidly changing world. Depression rates among this population have been rising [23], [24], and traditional treatment approaches may not fully align with their preferences and digital lifestyles.

Generation Z has grown up with technology and is receptive to digital interventions. Technology-based interventions have the potential to reach a wider population, reduce stigma, and provide personalized and engaging experiences that resonate with this generation. [25]

Several studies have shown promising results in using VR for depression treatment. A study by Navarro-Haro et al. [26] demonstrated that a VR-based intervention led to a significant reduction in depressive symptoms and increased well-being in young adults with depression. VR interventions have also been found to improve emotion regulation, self-compassion, and quality of life in individuals with depression [27, 28].

The coaching and VRT classes with people from Generation Z confirm the great receptivity of these young people to “digital interventions”. The positive results were based on the hours of coaching performed – the statistics will be presented in a later work.

3.4 Post-Traumatic Stress Disorder (PTSD)

Virtual reality therapy has shown promise in the treatment of PTSD. A study by Reger et al. [29] explored the use of virtual reality therapy in military veterans with PTSD and found that it significantly reduced symptoms and improved overall functioning. Participants reported a decrease in nightmares, intrusive thoughts, and avoidance behaviors. Virtual reality therapy provides a controlled and immersive environment for individuals to confront and process their traumatic experiences, facilitating the therapeutic process.

A perfect example, which confirms the studies in this field, is the case of a client who “froze” on the pedestrian crossing, because their mother died in a car accident at that intersection. VRET helped to get over that trauma – the statistics will be presented in a later work.

3.5 Addictions

Virtual reality therapy can be employed in cue exposure therapy, allowing individuals to confront and manage triggers associated with substance use. By immersing individuals in virtual environments that replicate real-world scenarios, virtual reality therapy provides a safe space to experience and manage cravings. A study by Bordnick et al. [30] found that virtual reality therapy significantly reduced craving levels in individuals with substance use disorders.

Virtual reality therapy can simulate relapse-related situations, providing individuals with opportunities to practice and refine skills necessary for relapse prevention. Through virtual scenarios, individuals can develop coping strategies, practice refusal skills, and strengthen their self-efficacy in high-risk situations.

A previous study [31] demonstrated the efficacy of virtual reality therapy in improving relapse prevention skills and reducing relapse rates among individuals in substance abuse treatment.

The clinical experience, which will be presented in a later work, is only related to the consumption of alcohol and tobacco. In this case, the results were both positive (they managed to get rid of the addiction) and failures (they relapsed - some returning to therapy others not).

3.6. New ways to use virtual reality therapy

Dental anxiety and phobia are prevalent among patients, often resulting in delayed or avoided dental care. Virtual reality therapy (VRT) presents an innovative and patient-

centred approach to address these challenges. By creating immersive virtual environments, virtual reality therapy in dentistry has the potential to alleviate anxiety, enhance patient comfort, and improve treatment outcomes.

Virtual reality therapy has shown promise in managing dental anxiety and phobia. A study by [32] demonstrated that immersive virtual reality significantly reduced anxiety levels in patients undergoing dental procedures, leading to improved treatment compliance and satisfaction. Virtual reality therapy serves as a distraction technique, diverting attention from anxiety-inducing stimuli and creating a sense of calm and relaxation.

Virtual reality therapy has the potential to reduce pain and stress associated with dental procedures. A study [33] explored the use of virtual reality therapy in pediatric dentistry and found that children who experienced virtual reality therapy during dental treatments reported less pain and distress compared to traditional approaches. The immersive nature of virtual reality therapy alters the perception of pain by engaging the patient's attention and creating a more positive experience.

This area is a future track for clinical exploration and potential collaborations for new VR programs.

4. CONCLUSIONS

In conclusion, Virtual Reality Therapy (VRT) emerges as a promising and transformative advancement in the field of mental health treatment, positioning itself as the future of therapeutic interventions. Through the amalgamation of cutting-edge virtual reality technology and evidence-based therapeutic principles, VRT has the potential to revolutionize traditional approaches to mental health care.

Numerous research studies have demonstrated the efficacy of VR therapy in managing anxiety disorders. Randomized controlled trials (RCTs) have shown VR to be as effective as traditional exposure therapy in treating specific phobias, social anxiety disorder, and post-traumatic stress disorder. Furthermore, VR therapy has been found to be superior to standard treatment in some cases due to its enhanced levels of engagement and presence.

The presented research, the current state of virtual reality in therapy and more precisely the impact it has on people's mental health. It also highlighted that, if people are offered “fake news” – some researchers call them illusions [15] – in small and progressive quantities (through VR programs), the emotions generated can cause the human brain to root positive corrections in their current state of mental health.

As a final observation, the technology used together with the therapists’ knowledge and competences are part of an entrepreneurial initiative [35]. The key aspects in applying the VRT depend on the therapists’ capacities (human capital) of adaptation of the technology to clinical investigations [36].

The presented study also proposed to account the accumulated experience in 4-5 years of VRT, and to present the case statistics in a future paper. The current study is introductory and necessary to create the basis for subsequent case studies. Moreover, to be able to create a viable solution to reduce the consequences of exposure to fake news of the boomers and Z generations. Generations that proved to be the most exposed to this phenomenon, in the study “What is the main source of information for Generations Z, Y, X? A general fake news analysis on different media mediums” presented this year in MakeLearn, TIIM & PIConf, Malta 2023 [34]. And finally, the study aims to create bridges for future scientific collaboration.

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Terapia de expunere în realitate virtuală: un exemplu de utilizare controlată a „știrilor false" ca mijloc benefic pentru sănătate

Din anul 2000, realitatea virtuală (VR) nu este un mit al viitorului, dar a cunoscut progrese și dezvoltare rapide în toate domeniile și a apărut ca una dintre cele mai promițătoare tehnologii în domenii precum formarea, educația și mai nou în psihologie și medicină. Având în vedere creșterea gradului de conștientizare a „sănătății mintale" și cât de importantă este aceasta zilnic, există, de asemenea, o cerere în creștere constantă pentru servicii psihoterapeutice și noi abordări ale psihoterapiei, cum ar fi terapia de expunere la realitate virtuală (VRET). Realitatea virtuală (VR) oferă capacități noi și distincte, care pot permite experiențe captivante, la distanță, un mediu autentic, adaptat nevoilor clienților, în speranța de a ajuta în procesul de psihoterapie, învățare, antrenament, depășirea dependențelor, anxietăților, depresia etc. Cercetarea prezentată își propune să demonstreze dacă terapia cu realitate virtuală, mai precis programele folosite, pot fi considerate știri false pentru creierul uman și dacă are beneficii pozitive asupra sănătății mintale a oamenilor. Mai mult, studiul dorește să sintetizeze experiența acumulată pe parcursul a 4-5 ani de terapie prin expunere a subiecților în realitatea virtuală și să propună noi direcții și domenii în care poate fi utilizat. În cele din urmă, studiul își propune să găsească și să construiască noi parteneriate pentru a crea programe specifice sau speciale pentru problemele/tulburările mintale ale oamenilor.

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