`

RISKS AND EFFECTS OF NEURO-LINGUISTIC PROGRAMMING IN VIRTUAL REALITY

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Abstract

This paper explores the transformative potential of integrating Neurolinguistic Programming (NLP) into Virtual Reality (VR) for various psychological applications, focusing on mental health treatments. NLP, as a psychological approach to treat patients, aligns seamlessly with VR's immersive capabilities. Through the research done in this paper, the synthesis of NLP and VR holds promise in therapeutic interventions by allowing the user to personalise experiences to cater to their own preferences, fostering empathy and connection. The literature and research done so far, focusses on case studies where NLP has been applied, such as in special education and healthcare, demonstrating its positive impact on confidence, behavior, and pain management. It is discovered that there are various ethical considerations, potential psychological effects, and the importance of user consent and privacy while implementing NLP in VR. The essay concludes by emphasizing the promising prospects and transformative potential of this fusion and the ways it could revolutionizing therapy, mental health, and overall well-being through technological advancements.

Keywords: Neurolinguistic Programming, Virtual reality exposure therapy, therapeutic interventions, mental health & healthcare

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Introduction

Using virtual reality (VR) for video games and entertainment is something that is seen very often, but seeing the gaining popularity and potential of VR, it's clear that there are various other uses that are being overlooked. It's not like the public hasn't recognised the full capabilities of VR, there has been recent developments in education, sports training, healthcare, etc, but when it comes to being used for psychological purposes such as mental health treatments, it's falling surprisingly short. One such treatment that can be used in VR to contribute positively to mental health is Neurolinguistic programming (NLP).

Neurolinguistic programming is known for being a psychological approach that serves as a framework for understanding how people interact and communicate effectively. It provides a way to analyse and emulate excellence in various situations, whether they're in clinical environments or other everyday settings (Wake and Leighton, 2014). It is based on how humans use their brains and how they perceive meaning in the world, which drives their behaviour, thoughts and actions. It's especially useful when people have trauma, phobias or lack confidence in themselves. Over a period of time there have been many therapeutic techniques that have been developed by experts and these techniques are used to address specific issues that people may have, such as anxiety, depression, etc. It is also used in psychological healing as well as self-development and self-transformation.

NLP, focussing on understanding various talking patterns and cognitive approaches, manages to align with VR's capacity and is able to create immersive and personalized environments. When put together, NLP and VR can cater to the various different needs of people by delivering an effective programme for

therapeutic inventions. For example, If these NLP principles can be efficiently leveraged, VR applications can be adjusted to match the users' linguistic preferences, which can showcase an empathetic approach to mental health care. Such an integration enables cognitive restructuring and can develop a genuine connection as the user feels understood in a particular way that is specifically catered to their preferences, in this case, it being the language they feel the most comfortable in. In the same way, Neurolinguistic programming can be used in VR experiences to enhance the immersive and interactive aspects of virtual experiences. It has the potential to improve mental health in individuals by offering therapeutic inventions and personal experiences.

As the technological world advances, more unexplored territories start to appear. The fusion of NLP and VR prompts critical questions about the associated risks and side effects that need to be taken into consideration. This essay aims to reveal potential benefits yet also caution the reader by bringing into light, the possible dangers that come along with using neurolinguistic programming in virtual reality.

CHAPTER I. Literature Review.

1. NLP in Special Education

In a case study done on children with Special Education Needs (SEN) such as Attention Deficit Disorder (ADD) and Attention Deficit Hyperactive Disorder (ADHD), Kuldrikis (2014) aimed to understand the potential of how teacher assistants (TA), educating children with mild SEN, could use the meta-models of language and reframing within neurolinguistic programming to improve classroom interactions and participation as well as students' perceptions and learning experiences. To achieve that, once the TAs finished attended workshops involving the two mentioned NLP principles of language and reframing when applied in educational scenarios, Kuldrikis held an NLP intervention program, including TAs doing semi-structured interviews with the students, that spanned over a period of 12 weeks which sampled 12 students from the age of 11 to 13. Despite the study not revealing a difference in terms of quantifiable data on the students, the teachers observed an increase in confidence and self-esteem among students with an improvement in their behaviour, which only meant that the workshops were a success and the TAs were well equipped beforehand to conduct those interviews. As the NLP meta-models were used accurately, it granted the TAs the skills for critical questioning to ensure that each interview was viewed positively, allowing the students to keep an open frame of mind, increasing the chance of yielding positive results (Knight, 2012).

Another case study was done by Arumugam et al (2016), on a young 9-year-old boy diagnosed with ADHD, displaying disobedience and impulsivity with a diminished attention span, who had experience frequent falls. He was part of a 6-week long intervention treatment, where the researchers again implemented

the NLP meta-model of reframing to transform his hyperactive/impulsive behaviour towards positive actions. The study yielded positive effects on the boy, resulting in an enhancement in his attention span, physical athleticism and fine motor skills.

2. Reducing claustrophobia and pain in patients through various NLP techniques

NLP provides various tools and can be used as a psychological approach towards patients to improve their overall healthcare experience. There are several techniques in NLP that can be used to rewire the brain allowing it to improve in any area necessary (Tosey & Mathison, 2010). These techniques demonstrate the potential that NLP has in enhancing the well-being of individuals experiencing discomfort during medical procedures.

a. Using NLP to mitigate anaesthesia usage in MRI patients experiencing claustrophobia

According to Bigley et al (2014), a study performed in 2006 and 2007 involving 50 adults who failed Magnetic Resonance Imaging (MRI) diagnostic tests due to claustrophobia, underwent a very specific NLP training technique called "Clare's fast phobia cure". The purpose of this study was to reduce the use of anaesthesia on patients who were afraid to go into the MRI machine as they induced hyperventilation, feeling of panic and chills/sweating in them (Smith, 2018).

Clare Rushworth, while working in the realm of cancer care, discovered the "Clare's fast phobia cure" as she was working to mitigate phobias that were yet to be known (Rushworth, 1994). This specific technique involved the process of

substituting a negative, emotional or psychological response linked to a specific stimulus with a more beneficial one by anchoring that particular feeling with a positive memory instead that is activated on tactile contact. 'If you change what the experience *means* to them, their response will change' (Brandler & Grinder, 1982). When the patient was visualising that positive, happy memory, the practitioner touched the patient's shoulder to anchor that memory to that feeling of pleasantness, which in turn made the MRI experience more soothing and comfortable for the patient when that anchor was triggered as they were going into the machine for an MRI.

b. Harnessing NLP and guided imagery to alleviate pain

Guided imagery as an NLP cognitive technique is proven useful to reduce pain. It uses the five fundamental senses of touch, movement, auditory perception, smell and taste to facilitate the immersive experience of exploring the healing journey that is characterised as a cognitive process that engages and utilises information (Rossman, 2000). If that particular pain can be associated with an image in your head, such as a particular shape of a particular size, it gives that pain character, therefore making it malleable according to your liking. It can be reduced in size or even changed in colour to make it look more pleasing, it's all up to the individual's imagination (John, 2009).

Sometimes, simply the phobia or fear of experiencing pain is enough to induce pain-related anxiety. According to Porro et al. (2002), the anticipation of pain alone is enough to induce 40% of the neural responses. The expectation itself can trigger an activation of pain receptors in the cortical region of the brain. A study done by (Prochazka & Bolstad, 2003) done on a woman with chronic pain in both her lower legs revealed, that if the fear is cured, the pain reduction comes along with it. Having a fear of climbing flimsy things and ending up falling due

to her weight was a trigger to her subconscious mind to protect her from this fear by limiting her from doing such physical activities, therefore causing the pain in her legs. It was cured by the implementation of the "phobia cure" developed by Clare Rushworth. This study proved that mind-body connection is an important aspect in relieving pain. While treating certain health issues, both physical and psychological factors need to be considered and that it's possible that pain can have a correlation with an underlying phobia.

3. VR technology used in therapy

Virtual reality therapy (VRT) revolves around using a computer-generated environment or a VR headset to help individuals overcome various mental health issues and disorders such as PTSD, anxiety, etc.

A certain type of VR therapy called VR exposure therapy (VRET) is proven useful to battle PTSD and anxiety. It is considered as a behaviour treatment that uses VR to decrease the intensity of feelings experienced or response to stimuli when you are exposed to memories or thoughts that provoke anxiety or trauma. The individual is slowly exposed to their PTSD trigger in a safe and controlled VR environment that mirrors their personal real-life experience (Tull, 2023). These experiences could help in reducing anxiety-inducing disorders in people who have witnessed something traumatising like a terrorist attack, abuse, accidents or even war-veterans who have seen death during war.

People in the military are more prone to experiencing trauma on the battle field such as violence, losing a personal acquaintance or hostility and as a result developing PTSD from it. VRET can A case study done by Vianez et al (2022), involved 22 male war veterans from different Colonial War and NATO peacekeeping missions who participated in a focus group and used VR to combat

the PTSD that they had been experiencing. Despite none of the participants knowing about virtual reality, upon explanation, they agreed that it was crucial to have technology like VR combine with therapy. The main focus was given to immersion and how it was key to having a realistic experience which provided the feeling of involvement. The scene was made interactable and changeable which in turn allowed each patient to experience a standardised yet personal trauma experience, catered to their specific needs and tolerance levels. The study concluded that VRET was proven to be valuable in addressing PTSD cases.

CHAPTER II. Discussion

There are various risks and effects that need to be taken into consideration while talking about integrating Neuro Linguistic Programming into Virtual Reality. One of the main concerns that come up are the ethical implications that need to be considered, where having transparency between the patient and the researcher and the full consent given by the user, becomes key. Handling privacy issues becomes a complex task since the researcher has free and authorised access to all personal data that they collect from the user. Safeguarding by implementing secure encryption and data storage to make sure that user privacy and data security is handled, prevents the risk of having unauthorised access and potential misuse. Privacy issues also include unknown photographing and surveillance of interviews/conversations that take place between the user and researcher. In every case study that has been researched about in this paper, users are always well-informed about the nature of these experiences and give full consent to being recorded and captured. Even though VRET is known to be successful, if the user refuses to give consent, they are not considered for the case study.

The psychological aspect of VR which has the potential to impact the user, also cannot be overlooked. Despite the user knowing what they are going into and giving full consent, it is possible that depending on the individual, re-experiencing past traumas in VR can sometimes be dangerous. If the user is prone to headaches or motion sickness related incidences, it can worsen the experience (Lawrence, 2023). It is crucial to thoroughly study and understand the potential of psychological effects on the user, to prevent the experience from negatively affecting their mental well-being. During an experience, there is always a lingering possibility of the user having a sudden influx of

uncontrollable emotions and behaviours that can escalate. User trust and well-being should always be prioritised to prevent or handle such episodes.

Correctly implementing NLP in VR can lead to positive behavioural changes. By allowing the option of customisable and interactable environments that can be controlled by the user, they get to go through different experiences that are focussed on their personal development and habits. This can help them to confront and over-come their fears and anxieties leading to positive behavioural and emotional decvelopement. Behavioural reframing can not only change the user's perception and behaviours, but by altering the way they assign meaning to situations, it is completely possible to reshape their cognitive responses to improve the way they tackle that situation as well as improve their social skills and empathy development.

The prospects of enhancing motivation and relaxation in an individual as well as reducing stress can all be achieved through meticulously integrating NLP techniques into immersive VR experiences. If their design is focussed on inspiring individuals and pursuing important objectives, the user is not only visually compelled, but also psychologically convinced. The NLP visualisation techniques of goal-orientation and affirmations can lead to clear motivation and drive in the user. After the experience they might feel like they have new found purpose or motivation in life and be more positive in general.

Similarly, NLP can be used to induce relaxation which further reduces stress, again by positive visualisation techniques which guide the user through a stress-management or relaxing experience. For example, by creating an immersive environment with a soothing and calming setting like a waterfall or a beach, integrated with NLP scripts of guided relaxation, the user can experience a sudden release of stress and an immense sense of peace. In this way, NLP can

promote relaxation, stress management and also enhance an individual's mental resilience through VR.

Conclusion

The exploration of implementing neurolinguistic programming in virtual reality proved to be a transformative research area. It revealed new directions in which the world can advance technologically and highlighted its diverse applications, ranging from special education, all the way to pain management, displaying various instances where scholars came together to test theories and conducted studies.

The case study in special education showcased the power of NLP to foster confidence and positive behaviour in students with special needs, while other techniques demonstrated how different phobias can be battled. The therapeutic intervention for pain management revealed that sometimes the fear itself is the problem and also showed how to fight pain using just your imagination. Battling disorders, improving mental health, developing various different skills, the list goes on. Creating an immersive experience that is individualised personally based on the user's habits, memories, etc, proved to enhance learning, self-awareness and personal growth showcasing that it holds the potential to better the effectiveness of health care.

It must be understood that despite talking about the exiting prospects that this idea holds, addressing the risks and effects becomes crucial. In this day and age, it is important to be mindful of the problems that arise with data collection and the technology of AI and the ethical concerns related to deepfakes. Being aware of how and where an image of your face is being stored and collected is very important. In the world of scams and deceits, its vital to know who to trust and who to give consent to if you want to take part in any form of healing yourself.

To conclude, the fusion of neurolinguistic programming in virtual reality presents a promising future and has the prospects to revolutionise therapy and mental health. Despite not having much research done on NLP in VR specifically, it can be seen from the various different NLP and VR case studies, how easy it would be to combine one with the other, be it in special education, in medical cases or even in personal development. As the possibilities of integrating neurolinguistic programming in VR further develop, it opens doors to a better future where the main tool for fostering healthcare, self-discovery, therapy and overall wellness is technology.

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