



Virtual Reality Technology: Treatment for Mental Illness

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VR Treatments In Behavioral Health

Exposure

Cue/sensory Desensitization
Habituation
Stress Inoculation

Distraction

Pain- acute, physical
Emotional Distress
STIMULATION- behaviorally, cognitively, sensory
(depression, behavioral deactivation, sensory
deprivation, pseudodementia)

Training

i.e. mindfulness, diaphragm breathing, progressive
muscle relaxation, social and interpersonal skills,
cognitive strategies, psychoeducation, simulation
learning in the future.



Anxiety Disorders

The most prevalent mental disorders.

Up to 33.7% of the population affected during their lifetime.

An estimated 40 million adults in the U.S.(18%) have an anxiety disorder.

Approximately 8% of children and teenagers experience an anxiety disorder.

Treatment:

Psychotherapy, first time with superior long-lasting effects, cognitive behavioral therapy usually includes exposure-based treatment.

Medications, including antianxiety medications and antidepressants

Complementary health approaches, including stress and relaxation techniques.



Eating Disorders

Virtual Reality (VR) is a beneficial tool for the treatment **Eating Behavior Disorders (EBD), especially Bulimia Nervosa (BN), Anorexia Nervosa (AN) and Binge Eating Disorder (BED).** Studies suggest that 1 in 20 people will be affected at some point in their lives. Eating disorders can take over a person's life and lead to serious. Potentially fatal medical complications.

Treatment:

Cognitive behavioral therapy (CBT) is often successfully used in the treatment of eating disorders because it helps people understand relationship between their thoughts. Feelings and behaviors. CBT that is developed for the treatment of bulimia is very effective at changing the binge-purge behaviors and eating attitudes.

Wellness and Nutrition Counselling involves professionals helping a patient return to a normal weight. Dietitians and other health care providers can help change old habits and beliefs about food, dieting and exercise with healthy nutrition and eating information and planning. Sometimes planning and monitoring responsibilities are shared with mental health professionals or family members.



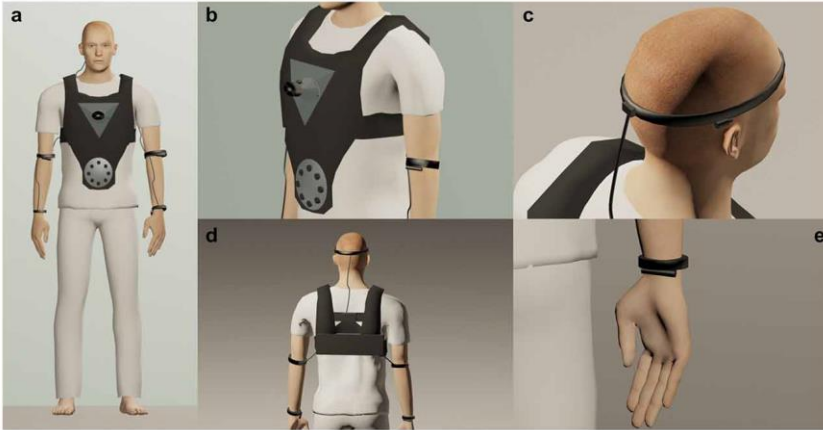
Schizophrenia/Psychosis/Paranoid Delusions

Psychosis is characterized as disruptions to a person's thoughts and perceptions that make it difficult for them to recognize what is real and what isn't. As many as 3 of 100 people will have an episode at some point in their lives.

Psychotherapy

Therapy is essential in treating psychosis. Common therapies include the following:

1. **Cognitive behavioral therapy (CBT):** teaches people to observe and change ineffective patterns of thinking. For psychosis, CBT teaches someone to critically evaluate an experience to determine whether or not the experience is real. *(Reappraisal)*
2. **Supportive psychotherapy:** teaches a person to cope with developing and living with psychosis. The therapist attempts to reinforce a person's healthy ways of thinking and reduce internal conflict. *(Distress tolerance)*
3. **Cognitive enhancement therapy (CET):** builds brain capacity through the use of computer exercises and group work. Increasing cognitive functions, such as the ability to organize thoughts, is the ultimate goal. *(executive functioning).*



Evidenced Based Uses Of Embodied VR

- **Stroke Rehabilitation** – good evidence base. Physical therapy for stroke often involves strengths and mobility training and range of motion exercises. A physiotherapist can help you improve the function of impaired limbs with motion relaxing technique. VR emerged as a new approach over 10 years. By simulating real life activities, stroke patients are able to work.
- **Motor Skills Training for Surgeons**
- **Parkinson's Disease** – May be adjunct to improve balance
- **Cerebral Palsy** – conflicting evidence[1]



Image source:

<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.saebo.com%2Fblog%2Fbenefits-virtual-reality-stroke-rehabilitation%2F&psig=AOvVaw1sJMsZe9jKrpdg4KJXgtVe&ust=1606605398934000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCPDIrtLto-0CFQAAAAAdAAAAABAD>

Mirror Therapy

First use of Virtual Sensory Feedback Therapy

Mirror therapy:

Mirror therapy or mirror visual feedback is a therapy for pain or disability that affects one side of the patient more than the other side.

Virtual mirror therapy and other forms of immersive VR allow the creation of a variety of visual distortions for therapeutic purposes.

Image source:

https://www.google.com/url?sa=i&url=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FMirror_therapy&psig=AOvVaw3AyKD5Z9OLzBkpiCLeJTQL&ust=1606851678141000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCKizg46Dq-0CFQAAAAAdAAAAABAD





Embodiment Illusions Bodily Illusions Rely On Simultaneous Visuo- Tactile Stimulation

Rubber Hand Illusion (RBH):

<https://www.youtube.com/watch?v=sxwn1w7MJvk>

Novel uses of Embodied VR

- Mirror Therapy
- Integration with Biofeedback
- Physical Therapy
- Body Image Disorders – ED's, BD
- Teletherapies

Possible Uses Of Embodied VR in Mental Health

Skills Acquisition: increased memory retention from level of engagement, multisensory learning, specific and immediate feedback, gamifying practice to increase motivation.

Implicit Bias Retraining/Reprogramming

Proteus effect: people unconsciously alter behavior to conform to the implicit traits of the avatar they inhabit (Yee & Bailenson, 2007)- implicit biases reprogramming.

Forced Allocentric Viewpoints: Empathy training, implicit self-beliefs and other beliefs can passively and actively be changed which can help with interpersonal skills.

“Allocentric Lock Theory”. In some disorders third person/ allocentric view (internalization of observer’s perspective/ self-objectification) is not updated by egocentric view/perceptual data. Top-down predictions are disconnected from bottom-up perceptions. VR body swapping illusions may be update negative stored representations of the body[1]. Body-swapping illusions may be useful in body image disorders (Eds, body image, psychosomatic Sx’s)-Multisensory conflicts modulate body representations- the brain abhors discrepancies, when mismatches occur internal models update.

Virtual Reality Barriers



Cost

Technological Difficulty- perceived or real

Possible Side Effects

- Cybersickness (proposed to be due to sensory conflict between perception and vestibular system or expectations);
- Dry mouth, salivation, apathy, disorientation, palor, sweater, headache; only small percentage experience[1].
- Visual disturbances/ visual fatigue
- Postural Instability
- Lucid Dreaming – reported with games spending long hours
- Sensory- Motor Symptoms - varied

Merci!

