Memory Gallery

A psychotherapy tool to help process the traumatic memory through reconstruction and management

Combining GenAI and VR, Memory Gallery is grounded in the core principles of EMDR therapy while fully using the significant connections between visual recall, emotional regulation, and cognitive reconstruction.

2024.1-2024.6 *Individual Work*

BACKGROUND

Millions of people in the world are currently suffering from traumatic memories, which bring injury to both their physical and mental health. EMDR psychotherapy is one of the most effective ways to address this issue.

- An estimated ***69 million*** individuals worldwide sustain a traumatic brain injury each year
- In a random sample of 724 individuals across the United States, ***72%*** reported experiencing some form of trauma, with ***32%*** reporting delayed recall of the event
- In the criminal justice system, TBI prevalence varied widely, with rates between ***12% and 87% for adults***, and ***23% to 87% for youths***, suggesting a high burden of traumatic memories in these populations
- Traumatic stress ***affects brain structures*** involved in memory processing, such as the hippocampus and amygdala, causing alterations that contribute to the vividness and durability of traumatic memories, often experienced as flashbacks
- Trauma can lead to dissociative experiences, where individuals may split off parts of their self that are not fully mentalized, resulting in symptoms such as ***bodily pain, dissociative states, nightmares, and relational disturbances***

EMDR Therapy

- **Theory**
  - **Past**

    A disturbing event happened

    Be improperly processed and stored by the brain

    An isolated memory network

    The memory be trapped with the original images, sounds, thoughts, feelings, and bodily sensations.
  - **Future**

    Causing severe emotional and physical distress when recalled

EMDR therapy is a structured and evidnce-based psychotherapy that helps the brain to reprocess these trapped memories to release the distressing power

Traumatic memories often manifest vividly as images that can trigger intense emotional and physiological reactions in individuals. EMDR therapy specifically targets these images to reduce their distressing power and neutralize the traumatic memory

LIMITATION

- History taking and treatment planning
- Identify possible targets
- Identify a ‘saft place’

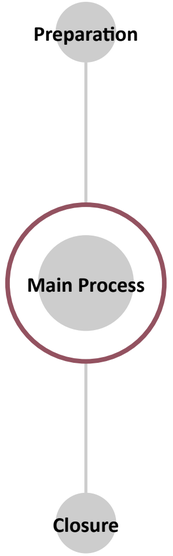
- **Identifying the most vivid visual image** related to the memory, a negative belief about self, related emotions and body sensations. The same for a preferred positive belief

- **Rate** the the intensity of the negative emotions and the validity of the positive belief

- **Focusing on the image** (20s-30s) while using **bilateral brain stimulation** (eye movements, tactile or auditory)

- The client is instructed to just go with **whatever image that comes up for them** through recalling

-Review the client’s current state and the effects of previous sessions



Patient

- Processing traumatic memories can initially increase distress or discomfort before symptoms improve
- Processing traumatic memories too quickly or intensely can overwhelm some patients
- It is challenging for some patients to focusing on the traumatc image in mind during recalling
- Patients need to keep actively engaging in the therapy process

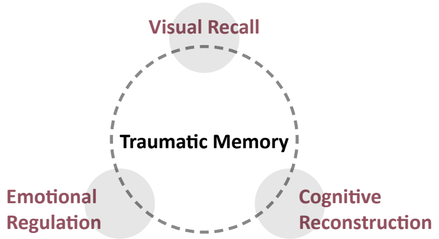
Therapist

- Extensive training and supervision to effectively deliver EMDR is required, which can be time-consuming
- Limited applicability to less experienced therapists for handling clients with complex trauma or dissociative disorders
- Need for continuous supervision and effective documentation
- Requires a controlled environment for the patient to recall

DESIGN TARGET

Based on the main theory of EMDR therapy

For both therapists and patients



Provide a psychotherapy tool to better support this process

MEMORY RECALL EXPERIMENT

Get insights from different types of memory recall process

I Memory recall of given content

Explore the characteristics of participants' **recall of positive and negative events with a given content**

/Text Analysis/

-Sensitivity to numbers and images
-Memorize exceptional plot developments

III Collective memory

Explore how the discussion of **collective memory** will affect the personal memory

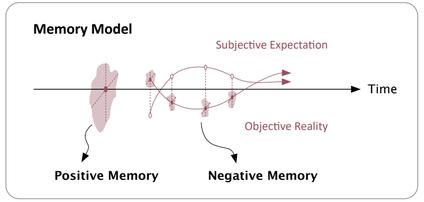
/Scale Comparison/

-Verbal description to others helps constructing a personal narrative identity
-Details added by others can affect one’s overall emotional feelings about a specific memory

II Personal Experience Recall

Explore how people's descriptions of the **positive and negative parts of long-term memories** can be characterized

/Text Analysis/



-The amount of details in length of time and depth of content is related to the emotional properties of memories

MEMORY RECONSTRUCTION WORKSHOP

[Explore what kind of tools can be helpful in memory recall]
[Explore the possibility of creating new feelings with past memory]

Process

- Use the provided materials to construct 3 key scenes in a specific memory
- Write down the reason for the scene to be a key moment
- Use 3 words to describe the feeling at that moment
- A seperate interview







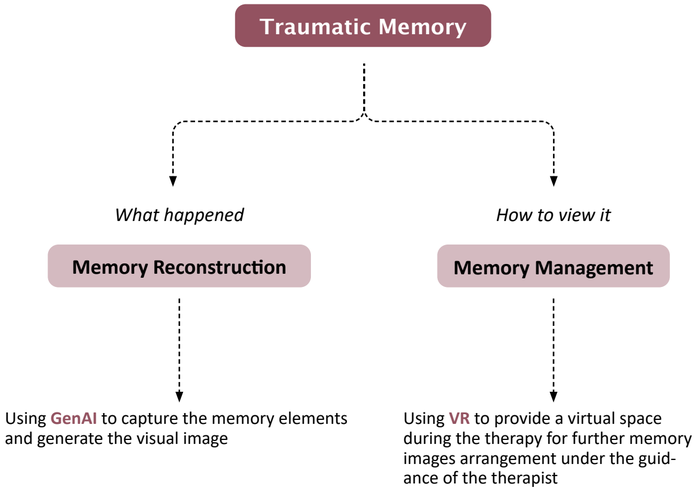





Insight:

-Limitation of physical tools in the constructing process
-Visualisation of the scene can guide to recall more details
-The process of Selecting is significant in memory review
-The constructing process is time consuming
-Passion to share the story after rebuilding the scene

DESIGN DECONSTRUCTION



AI-MEMORY RECONSTRUCTION

-To visualize the image in the mind and create a vivid proof for this memory
- Real-time visual feedback with personalized style to release the distress while recalling
- The difference between real photo and AI generated image implies the boundry between the past memory and the present reality while guiding the patient to recall more details
- AI provides a perspective without human emotions and biases

Therapist: What's the image that best represents the worst part of this experience for you?
Patient: The coach was out in the field and I was in the dugout and he was yelling at me from there. I remember it like vividly.

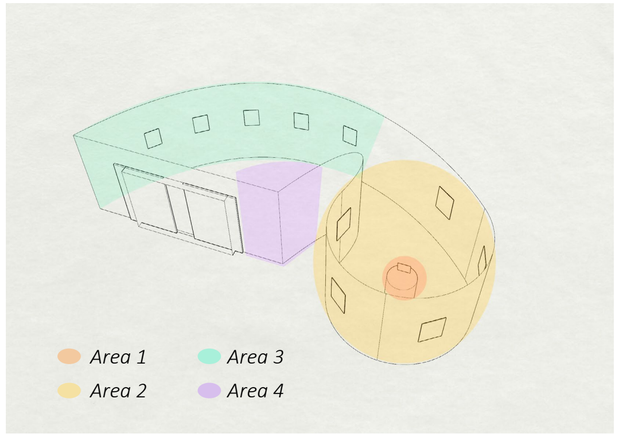



Therapist: OK, and then what were you believing about yourself?
Patient: That I was terrible ... ...
... ...
Therapist: OK, I invite you to pause agagin. What'd you get that time?
Patient: My dad was there and he stood up for me. He was like 'Don't talk to her that way. it's not gonna work out.'
... ...

Resource: Online EMDR Therapy Session by Dr. Alexa Altman (psychologist, trauma specialist)

VR-MEMORY MANAGEMENT

-An immersive environment for better concentration
-Seperated space to hold the image with different meanings in this memory
-Provide a feeling of taking control of the memory
-A platform to record the whole memory neutralization process for further review



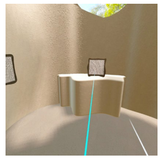
MEMORY GALLERY

- Video: https://youtu.be/p6WkUM1XqoE?si=G580BRvydc0OusyG

- User Journey

Contracting stage
Prepare the patient for the therapy

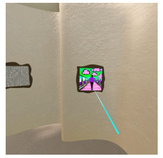
Both the patient and the therapist enter the virtual space together



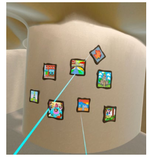
The patient choose the target photo frame with the guidance of the therapist

Identify a vivid image in the mind related to the target memory

The patient start to verbally describe this image

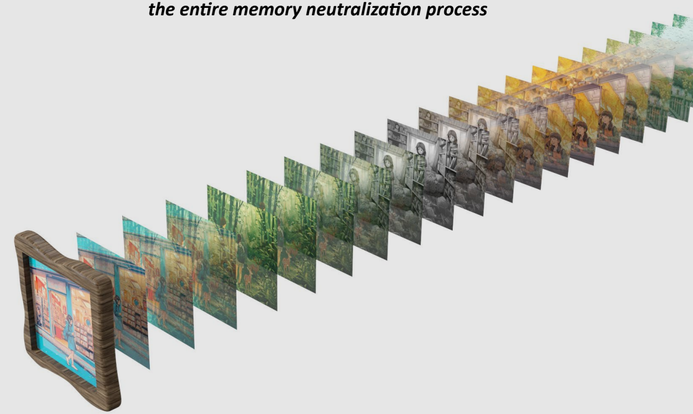


The image is generated by AI and showed in the photo frame



Keep manageing the images coming to mind during the therapy (Images can be changed while each change will be recorded)

Memory Gallery is a growing space that record the entire memory neutralization process



VALIDATION

[From Psychotherapists, people who had psychotherapy before, first time VR users]

"Seeing AI-generated images **in this gallery-like environment is very different** from the feeling we get when we're just facing a screen. I felt like I was **no longer just talking to the AI**."

"The setting feels **cosy**, a bit like a cave, and brings **a sense of security**. **Tactile and auditory feedback** during the process did provide **good guidance**."

"I think having a space like this to st-rore my memories gives me **a feeling of belonging**. And I love the interactive wall where I can place the frames by my self"

"I feel so **calm** in this space. I never used VR before but I found it **quite intuitive**. I love that you can just say anything and it will create the image. It can be **a quite helpful tool in more than just EMDR**. This tool made me realise **how innovative psychotherapy can be**."

"It would be great if I can **discuss with the client and then decide the visual style** of the image. The current cartoon style may not be suitable for some clients and topics."

"It's quite **interesting to really see the image in my mind**. In this process I'm also trying to **balance how much details** do I need to provide."

"The environment feels very **relaxing**. The footsteps and other sound effect helped me to **immerse** me in the environment-sound. I feel **healing** walking inside. But the image generated is a bit **different from the one in my mind**. "

"It's pretty **straightforward to use**. The images generated by AI are surprising. These visual feedback are really helpful when I tried to **remember more details**."

"I'm surprised about this new form of therapy. I'm a quite **visual person**. It's amazing to see how my memory image can be generated by AI. Sometimes it's actually **an abstract feeling** in my mind, but it can **make it intuitive**."

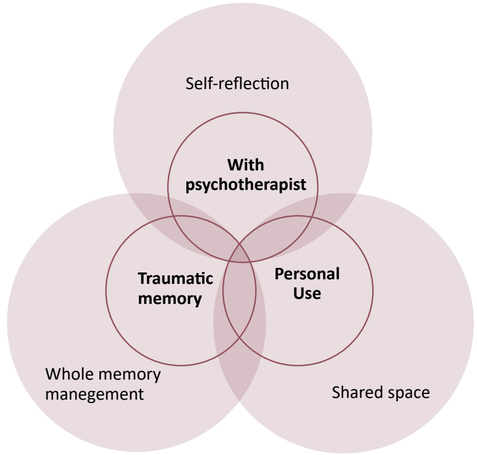
Danny Lee

Psychotherapeutic Counsellor

"Although **new technologies** may be resisted at the initial stage in psychotherap. Before covid people couldn't accept having an **online psychotherapy through zoom meeting**. In most people's mind, psychotherapy must be face-to-face with a counsellor. But now we see online therapy has become a very common form and is proved to be still effective."

"The modern and younger generation of therapists are quite open and creative. While using the old theories, they are trying to **combine them with new methods and forms**. "

FUTURE DEVELOPMENT



Memory Reconstruction

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Memory Management

- Self-reflection space for the past experience

- Collective memory space building

- Group psychotherapy

- More personalized virtual space building

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Based on the basic strategy of combining memory reconstruction and management through GenAI and VR, this tool can have borader application area in the future.

SPECIAL THANKS

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