

“Should traumatic memories be selectively weakened through Neurotechnology?”

Focus: Neuroethics

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I. Introduction

At first glance, the idea feels almost merciful. Human beings naturally avoid pain. The last conversation with a loved one, years of bullying, a traumatic accident, the sound of a hospital machine before everything goes quiet. These are certain memories people wish they could forget forever. The endurance of certain memories clashes against our will to not have them in our consciousness, leading to the conundrum that an object or event becomes more conscious the more you try to ignore it, especially in combination with other thoughts (Wegner et al., 1987). If neurotechnology one day made it possible for us to choose to erase painful memories, many people would immediately say yes. After all, why should anyone be forced to relive suffering they never chose? Yet, when we consider what memories truly are, the question then becomes: If humans gained the ability to erase suffering of the mind, would they also erase parts of who they are?

Some researchers tend to believe that neurotechnologies could provide an ethical treatment option for people who are trapped by psychological disorders such as severe PTSD, rather than act as a threat to their identity. But on the other hand, bioethicists have cautioned that memory-modification technologies (MMTs) might be exploited commercially or used by governments and corporations as a tool for manipulation in the future. If memories became editable, people would delete embarrassment after social failure, and we as a society might begin questioning whether identity itself, including that of oneself and others, can still be trusted at all. This can be self-defeating, adding to an already existing issue. Thus, coming back to the original question, a more logically sound answer would be: Traumatic memories should not be erased, but weakened enough that people can live without being consumed by them, forcing society to confront which forms of suffering remain humanely meaningful in life.

Now this raises questions: Where do we draw the line between human suffering that leads to growth and human suffering that leads to psychological damage? And can society realistically control such a tool that manipulates memory? These are questions that must be answered before reviewing the potential ramifications of MMTs.

II. The Burden of Suffering

A person who goes through grief or loss learns to appreciate relationships more deeply. Correspondingly, facing regret or failure promotes maturity and moral choices. Post-traumatic

growth indicates that individuals may undergo positive change after suffering highly challenging life crises (Tedeschi & Calhoun, 2004), and memories are foundational to maintaining a consistent sense of identity over time (Conway & Pleydell-Pearce, 2000). Regardless, the line is crossed when suffering no longer furthers reflection or growth, but instead prevents a person from functioning altogether. One might suggest therapy as a treatment for natural recovery. Treatments like cognitive behavioral therapy (CBT) and exposure therapy do not try to erase traumatic memories. Instead, they aim to assist patients in understanding and reinterpreting them in healthier ways. Through this lens, painful memories should be confronted rather than neurologically weakened. Hence, this approach transcends MMTs in several meaningful ways, mitigating the clinical and ethical concerns mentioned earlier. Yet this argument assumes that all individuals are capable of healing through conventional treatment alone.

A review examining the treatment of cognitive behavioral therapy (CBT) studied individuals with post-traumatic stress disorder (PTSD) — a mental disorder with risk of symptoms such as somatiform, cardiorespiratory, musculoskeletal, gastrointestinal, and immunological disorders, among other physical health issues, also associated with significant psychiatric comorbidity, increased risk of suicide, and financial hardship (Bisson et al., 2015). The results showed that up to 50% of PTSD patients fail to fully recover or achieve remission through standard therapy alone (Kar, N., 2011). Thus, the results strongly suggest that the use of MMTs might be beneficial in such cases.

The most effective MMT in terms of altering reactivated trauma memory in a therapeutically relevant manner is propranolol. The first line of research in humans has demonstrated that administration of propranolol before or immediately after the reactivation of trauma memory modifies the memory trace and helps to diminish fear responses, including high blood pressure, stress, and anxiety (Else & Kindt, 2016), significantly softening the intense fear and physiological arousal linked to memory.

III. Ethical Concerns Regarding the Aftermath of MMTs

The Right to Self-Identity

For many individuals, the intense emotional pain caused by trauma strips away their sense of self, leaving them psychologically trapped within recurring anxiety and intrusive memories. In such cases, MMTs have become a means of reclaiming control over one's life rather than escaping reality. However, Schetchman's narrative self-constitution theory proposes that identity depends on constructing a truthful personal narrative. Since memories form the foundation of this narrative, modifying them may distort an individual's understanding of themselves, ultimately reshaping not only what they remember but also who they believe themselves to be (Schetchman, 2011).

Though it is important in considering the potential aftermath of MMTs, this argument assumes that traumatic memories themselves are what define identity, rather than the individual's ability to meaningfully engage in life beyond those traumatic memories. In cases of severe PTSD, trauma may no longer shape the person's narrative identity at all; instead, it can control and dominate it. Thus, selectively weakening the intensity of traumatic memories through MMTs restores the conditions required for identity to develop naturally again.

Commercialization of MMTs

The existence of MMTs itself introduces risks to society. The challenging question, then, is whether society can safely and responsibly manage a technology that directly interferes with our own perception of emotions and lived experiences. History repeatedly demonstrates that technologies influencing human behavior rarely remain confined to their initially intended use. Social media, surveillance systems, and the pharmaceutical industries all expanded beyond their initial beneficial intentions once commercial or political incentives became attached to them. Antidepressants, painkillers, and psychiatric treatment are all part of industries capable of profit, yet society still accepts them because relieving suffering is considered morally valuable. From this perspective, the possibility of commercialization alone may not be sufficient to claim MMTs as morally unethical. Moreover, completely erasing a specific memory is currently impossible, and if it were, it would pose a bigger risk than current technologies that are used for dampening emotional trauma, like propranolol. Though still an important concern, this is not the only potential ramification of MMTs that scientists should anticipate. We should also be aware of what more tangible potential consequences are, while considering what current MMTs are actually capable of.

IV. Conclusion

In finding whether traumatic memory should be selectively weakened through neurotechnology, it becomes necessary to question the standard model of therapy, given that: *1. Not all individuals are capable of healing through therapy, because re-traumatization causes avoidance, or neurobiological deficits hinder processing, or co-occurring issues such as substance abuse and chronic pain invalidate the traditional talk-therapy approach*. As well as to question when suffering causes psychological destruction, given that: *2. Recurring trauma may dominate consciousness so intensely that the ability to live freely or construct a sense of self is deeply compromised*. Ultimately, the question is no longer whether humans should weaken traumatic memories through neurotechnology, but whether humanity possesses the wisdom to decide which forms of suffering should remain part of human experience.

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