



EST. 1597

GRESHAM
COLLEGE

Should We Manipulate Emotions?

Professor Robin May

20th May 2026

Humans experience a huge range of emotions - joy, fear, anxiety, loathing and many others. We may think of these as involuntary; an automatic response to environmental stimuli like reuniting with friends or experiencing loss. However, like all of our thought processes, emotions are the product of brain chemistry and, as a result, they can be modified by changes to that chemistry. In recent years, advances in neuroscience and microbiology have started to reveal just how powerful such changes can be, as well as the surprising aspects of our biology that may impact mood, ranging from the volatile organic compounds we inhale to the trillions of microscopic organisms residing within our tissues. A deep understanding of these influences offers the prospect of being able to manipulate emotions with relative precision. But even if we can, should we? And, if we do, what does that mean for our concept of 'self'?

Emotions and Physical Space

Like all of our biology, emotions have arisen because they confer an evolutionary advantage. Nowhere is this more powerfully demonstrated than in infancy, when the sound of an infant crying (even one to which we are not related) causes a surge in stress hormones, whilst positive sounds such as laughter have the opposite effect. We also respond strongly to the body language of other adults. Changes in interpersonal distance that impinge on our 'Freudian bubble' invoke feelings of anxiety – unless, of course, the approaching individual is an object of our affection. This emotional response impacts on our day to day lives, whether through office arguments or a crowded train journey home. More subtle environmental changes also impact strongly on mood. For instance, a range of scents have been shown to modulate emotion. Volatile compounds like linalool (found in lavender) or citrus extracts exert anxiolytic (relaxing) effects by directly interacting with central neurotransmitter pathways. Appetising odours such as baking bread or fresh coffee provoke feelings of warmth and openness, such that people exposed to them show a significant increase in altruistic behaviour.

Pharmacological Control: Psychoactive Agents and Antidepressants

Since emotions arise from brain chemistry, a much more direct form of emotional manipulation can be achieved by approaches that directly alter that chemistry. Modern antidepressants, such as Selective Serotonin Reuptake Inhibitors (SSRIs) or monoamine oxidase inhibitors, modify human moods by altering the rate at which neurotransmitters, such as serotonin, are broken down. Since serotonin broadly contributes to positive mood, by slowing its removal such drugs can help tackle conditions such as anxiety or depression. More dramatically, psychoactive agents such as psilocybin (the active ingredient of 'magic mushrooms') alter human emotion by fundamentally changing synaptic activity – for instance, by chemically mimicking serotonin. As a result, they can achieve hyperemotional states, resulting in feelings of euphoria as well as altered experiences such as hallucination. While these interventions hold valuable therapeutic potential, they spark ongoing ethical debates regarding emotional authenticity: if an exogenous chemical can fundamentally alter a person's temperament, resilience, and outlook on life, which version of the person is the 'real' one?

Microscopic Puppet Masters: Pathogenic Manipulation of Behavior

Perhaps the most startling evidence that emotions can be manipulated comes from evolutionary biology and parasitology, where pathogens actively hijack host neural circuits to maximize their own reproductive fitness. The rabies virus offers a definitive example of this phenomenon. Upon entering the mammalian central nervous system, the virus selectively targets limbic structures to induce profound aggression, agitation, and frenzy. This extreme behavioral modification is essential for the virus's transmission, as it is shed in the host's saliva and relies on violent biting behavior to infect a new host. Similarly, the protozoan parasite *Toxoplasma gondii* engages in sophisticated neurochemical manipulation. In its intermediate rodent hosts, *Toxoplasma* selectively abolishes the innate, deep-seated fear of feline predators, replacing it with a bizarre, fatal attraction to cat urine. This specific behavioral change significantly increases the likelihood of predation, allowing the parasite to return to its definitive host—the cat—to complete its sexual reproductive cycle. Recent studies reveal that *Toxoplasma* achieves this by carrying genes encoding tyrosine hydroxylase, allowing it to directly synthesize dopamine within the host brain and dysregulate reward and fear circuits. In humans, latent toxoplasmosis has been correlated with subtle personality shifts, increased impulsivity, and elevated risk-taking behavior. Since one in three people worldwide are thought to be asymptotically infected with this parasite, the question of how much human behaviour is actually 'human' rather than parasitic, is an interesting one.

The Microbiota-Gut-Brain Axis: Microbial Foundations of Mood

Beyond acute pathogens, the trillions of symbiotic microorganisms residing within the human gastrointestinal tract—collectively known as the gut microbiome—are now thought to exert a profound, continuous influence on daily human emotion. Many species of gut bacteria are capable of either synthesizing, or degrading, human neurotransmitters such as gamma-aminobutyric acid (GABA) or dopamine. Since the gut is highly enriched in neurons that link directly to the central nervous system, it is highly likely that fluctuating levels of these neurotransmitters within the gut lumen may impact strongly on mood. Indeed recent randomized clinical trials have shown promising results in the treatment of anxiety or depression via regular consumption of combinations of microbial species, such as specific strains of *Lactobacillus* and *Bifidobacterium*.

Of course this raises the interesting prospect that some aspects of our personalities may arise not from our own thought processes but from the activity of gut microbes happily fermenting whatever we ate in our last meal. And in fact recent work from several groups has shown interesting correlations between the abundance of particular bacterial species and emotional traits that we think of as being highly personal, such as conscientiousness or neuroticism. Since emotional mood is also linked to dietary intake (think 'comfort food!'), we therefore have a bi-directional link between our emotional experiences and our internal microbial ecology

Conclusion

The realization that human emotions can be systematically steered by olfaction, pharmacology, viral pathogens, and commensal gut bacteria calls into question our understanding of the human mind as an independent, autonomous entity. Emotional manipulation is not a futuristic possibility, but rather a permanent feature of our biology. The question is, as we start to understand more and more about the molecular 'levers' that affect our emotional state, how far should we go in pulling them?

Further Reading

- Berdoy, M., Webster, J. P., & Macdonald, D. W. (2000). Fatal attraction in rats infected with *Toxoplasma gondii*. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, 267(1452), 1591–1594.
- Cryan, J. F., & Dinan, T. G. (2012). Mind-altering microorganisms: the impact of the gut microbiota on brain and behaviour. *Nature Reviews Neuroscience*, 13(10), 701–712.
- Mayer, E. A., Nance, K., & Chen, S. (2022). The Gut–Brain Axis: Emerging Concepts in Clinical Gastroenterology. *Annual Review of Medicine*, 73(1), 311–325.
- Sapolsky, R. M. (2003). Bugs in the brain. *Natural History*, 112(2), 26–30.
- Sharma, R., Gupta, D., Mehrotra, R., & Mande, S. S. (2021). Psychobiotics: Mechanisms of action and evaluation of power for anxiety and depression. *Frontiers in Psychiatry*, 12, 621123.
- Tillisch, K., Mayer, E. A., Gupta, A., Gill, Z., Labus, J., Brazeilles, R., ... & Guyonnet, D. (2013). Consumption of fermented milk product with probiotic modulates brain activity. *Gastroenterology*, 144(7), 1394–1401.