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Case Study: Memory Suppressor as Cognitive Enhancement¹

Anthony is a neurobiologist who works as a researcher at a government-funded lab to develop memory-altering drugs. Recently, he has been studying the beta-blocker, Propranolol, to treat soldiers with Post Traumatic Stress Disorder (PTSD). Propranolol is a promising drug to act as a prophylactic and treatment for PTSD by reducing consolidation of emotional memory (Henry *et al.* 2007).

Here is how this pharmacologic intervention is thought to work: Shortly after experiencing or observing traumatic events, one's memory of such an event is encoded in the brain. During this process, endogenous stress hormones, such as adrenaline, are released in the body. Memories with strong emotional content can lead to too much adrenaline release, which leads to high levels of noradrenalin (norepinephrine). That hormone helps to consolidate memories, and too much of it leads to over-consolidation and symptoms of PTSD, such as avoidance, anxiety, nightmares, irritability, and detachment. These effects can, in turn, lead to other conditions, such as depression and suicide. Propranolol can be administered before or after a traumatic event to block the effect of high levels noradrenalin, and thus block the consolidation of these traumatic memories and their emotional content (Henry *et al.* 2007).

Anthony's co-worker, Joey, has just returned to work after a week of absence, after experiencing a violent physical assault from a group of hateful, anti-gay men. Everyone was shocked to hear of his assault and they have been extremely supportive during this time. Joey has expressed how grateful he is to have such supportive co-workers and he claims that he just really wants to forget about the traumatic event by concentrating on his research.

Yet, both Antony and his boss have noticed that Joey still seems to be suffering from memories of the event. Joey even confided to Anthony that he has difficulty sleeping and eating regularly and he feels it might be affecting his ability to focus at work. Both Anthony and his boss are concerned about Joey's well-being. They have urged Joey to take more time off work to heal, but Joey is adamant that he wants to be back in the lab.

Yesterday, Joey confided to Anthony that their boss suggested that he should attempt the Propranolol treatment to help him recover from his traumatic experience and minimize any effect on his productivity as a researcher. He tells Anthony that the suggestion caught him off guard.

Joey explained to Anthony that while he believes in the aims of their lab's research to treat PTSD, he's not sure that he wants to take any drug that will alter his memories at this moment.

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He told Anthony that he currently volunteers in his community as a counselor for gay youth, and he thinks that his emotional memories of the traumatic event may serve him, not only in his own personal healing process as a survivor, but also as a voice for support of the LBGQT community. Anthony is unsure what advice to give to his friend and co-worker.

Discussion Questions

1. Anthony knows that his boss means well, but he can't help feeling like Joey is being coerced towards undergoing a treatment that involves potential memory-altering effects. He wonders how this may affect soldiers, the targeted group of his lab's research, if and when his lab is able to develop even more powerful memory-erasing drugs. Will soldiers be coerced into taking such drugs, or simply ordered to take them, even prior to combat as preventative measures against the symptoms of PTSD? Given the devastating effects of PTSD on soldiers and veterans, is that a morally-acceptable trade-off?
2. Anthony is also worried about the affect such a therapy would have on Joey's status as a credible witness in court when testifying against his aggressors. If the drug is administered to victims of physical and sexual assault, will the courts consider the intervention as tampering with valuable evidence? If so, does that entail an infringement on the right of the victim to seek treatment and recovery?
3. Joey's biggest worries are about whether these drugs will affect his sense of authenticity and personal identity. He wonders, what if these drugs become widely popular and accessible to treat all sorts of bad memories? Is it always morally acceptable to erase or alter undesirable memories?

Commentary

Most of the ethical discussion centered around psychopharmacology as cognitive enhancement has been focused on so called "smart drugs," or neuroenhancers, such as Modafinil and Methylphenidate (Ritalin), and their "off-label" use. These discussions address ethical topics of safety, informed consent, access and fair distribution, coercion, moral accountability and cheating (Bostrom & Sandberg 2009, Cakic 2009, Farah *et al.* 2004, Goodman 2010, Greely *et al.* 2008, Hall 2003, Maslen *et al.* 2014, Schermer 2008, Stix 2009).

Other psychopharmacological interventions that target memory forming neurochemical processes (either to enhance or erase memories) have raised additional moral concerns, such as whether these interventions will affect our concept of the good life and our notions of authenticity and personal identity, and whether the possibility of pathologizing bad memories can lead to exploitation by the pharmaceutical industry (Henry *et al.* 2007).

Moreover, some have argued that experiencing emotional events and having emotional memories may be a requirement for moral learning and exercising moral judgment. If that is the case, then perhaps we ought to think twice about developing therapies that involve altering our memories. For example, philosopher Elisa A. Hurley claims:

I think we have reason to worry about propranolol's effect of severing memories of traumatic events from the emotions that would ordinarily accompany them because it

seems to result in the permanent loss of epistemic access to certain information about those past occasions, namely, to their evaluative significance as registered by the emotions experienced at the time. We might say that using propranolol results in one's losing touch with the particular moral injuries to which trauma exposes its victims (Hurley 2007, 35).

Moreover, interference in the psychological mechanisms which involve emotional memories might have negative long-term effects on an individual and society. For perpetrators of violence, such as soldiers for example, emotional memories can cause regret, or the "sting of conscience," which can play a restorative role in individuals and communities recovering from the atrocities of war (Hurley 2007).

However, others have defended the development and use of memory-altering drugs to prevent PTSD and questioned the idea that emotional memories form the basis of one's moral judgments (Rosenberg 2007). Rosenberg argues that because patients who suffer from PTSD often have memories of events that can be so overwhelming that they can lead to serious physical symptoms, we cannot reasonably think that those same memories can in any way enhance an individual's moral sense or judgment. Rather, she claims, "patients often feel emotionally paralyzed and generally unable to complete desired life projects for fear of triggering a disabling PTSD episode" (Rosenberg 2007, 28). Therefore, Rosenberg concludes, if propranolol is found to be safe and efficacious for preventing PTSD, there seems to be a moral imperative to do so.

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