

A magic bullet for the mind: Sigmund Freud and the quest for chemical transcendence

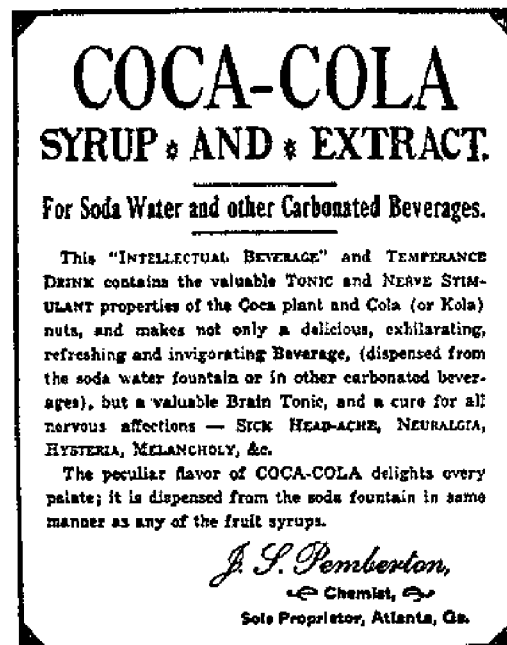
Stanley N. Caroff, MD, and Rosalind M. Berkowitz, MD

Dr. Caroff is Emeritus Professor, Department of Psychiatry, Corporal Michael J. Crescenz Veterans Administration Medical Center, and the University of Pennsylvania Perelman School of Medicine, Philadelphia, PA.

Dr. Berkowitz (AQA, SUNY Upstate Medical University, 1973), is a Hematologist/Oncologist in private practice, Moorestown, NJ.

Throughout history, and across cultures, people have sought mind-altering chemicals to enhance performance, elevate mood, find spiritual meaning, view mystical horizons, escape reality, or achieve guilt-free highs, all at considerable cost to society. Synthetic opioids have caused nearly half a million deaths from overdose in the United States alone, while stimulant abuse is reaching similar epidemic proportions. Notwithstanding these alarming statistics, recent reports laud the potential of psychedelic drugs for treating depression, post-traumatic stress disorder, grief, addiction, and for achieving higher levels of consciousness or “the betterment of well people,” despite well-documented adverse effects of intoxication in unsupervised settings and consequences of addiction.¹⁻⁴

This is not the first generation of physicians to be seduced by psychoactive drugs. Sigmund Freud recklessly embraced the supposed wonders of cocaine, getting it wrong, compromising his patients, and undermining his standing as a consummate sober-minded scientist. Freud’s role in the medicalization of cocaine may serve as a cautionary tale for physicians, providing insight into what can go



Advertisement for Vin Mariani, a cocaine-infused wine, 1894. Public domain

wrong when drugs with abuse potential are endorsed and marketed to the general public.⁵⁻⁸

Parallels between the enthusiasm for cocaine in the late 19th century and the current psychedelic movement are striking in the sequence of fascination with a panacea derived from exotic plants used by native peoples; exaggeration of its miraculous properties based on self-experimentation; and begrudging recognition of adverse effects



Sigmund Freud, 1884. Public domain

which are met with denial and disillusionment.

Über Coca (On Coca)

The pleasure that indigenous populations in South America derived from chewing leaves from the *Erythroxylum* coca plant was well known to early Spanish

explorers. It was not until the mid-19th century that imported coca leaves and isolation of cocaine enabled profitable commercialization in Europe and America.^{5,9} The French chemist Angelo Mariani ground coca leaves in Bordeaux wine producing an addictive beverage that became a worldwide sensation.⁵

The American pharmacist John Stith Pemberton, produced a similar “French Wine Coca” while experimenting with ways to cure the morphine addiction he developed after treatment of a saber wound to the chest during a Civil War battle.⁵ To comply with local prohibition laws, Pemberton later reconstituted his product without alcohol as the popular carbonated drink Coca-Cola, which he promoted as a cure for neurasthenia, impotence, headaches, and morphine addiction.

At the time of his death from stomach cancer in 1888, Pemberton was impoverished and still addicted to morphine. His son, Charley, continued to market his father’s formula but succumbed to opium addiction. Shortly before his death, Pemberton and his son sold the patent rights for Coca-Cola to a fellow pharmacist, Asa Griggs Candler, with cocaine maintained as a key ingredient until 1903.

In the early 1880s, nascent pharmaceutical companies entered the market by promoting cocaine hydrochloride as a therapeutic agent. In America, Parke, Davis and Company launched a marketing campaign sponsoring publications, including the *Detroit Therapeutic Gazette* and *Index Medicus*, which advertised cocaine’s efficacy for a long list of indications.⁵ Endorsed by physicians and pharmacists,

sales of cocaine skyrocketed, packaged as powders, tablets, fluids, wine, cordial cheroots, cigarettes, and inhalants.

About this time in Vienna, Freud found himself at a critical juncture in his career. Brilliant and ambitious, but insecure, he decided to advance his scholarly credentials by publishing a review of cocaine. He was intrigued by reports of euphoria from coca leaves by the Italian neurologist Paolo Mantegazza, the effects of cocaine on physical prowess by the German physician Theodor Aschenbrandt, and an article by the American physician W.H. Bentley on the success of cocaine in alleviating morphine withdrawal.^{5,8} He ordered cocaine from the E. Merck and Company in Darmstadt, Germany, to experiment on himself and others. He was also eager to help his close friend, Ernst von Fleischl-Marxow, withdraw from morphine. Fleischl-Marxow was a gifted pathologist and physiologist who became addicted to morphine after an infection necessitated amputation of his thumb causing unbearable chronic pain from regenerating neuromata.

Freud’s scholarly review, *Über Coca* (“On Coca”), appeared in the July 1884 issue of *Centralblatt für die gesammte Therapie*.^{5,8,10} He covered the mythology of coca among native populations, botanical science, extraction methods of cocaine, and experiments in animal models. His findings on cocaine in humans were largely influenced by his own use. He was thrilled by the exhilaration after ingesting cocaine solutions, and his ability to work without fatigue, self-doubt, hunger, or the need for sleep. Rather than feeling intoxicated, he described a feeling of well-being. He claimed that protracted use in moderation was not detrimental and produced neither craving nor depression after withdrawal.

Freud knew of potential toxicity from animal studies, and of reports of physical and intellectual deterioration, moral depravity, apathy and cachexia associated with immoderate use of coca leaves or cocaine similar to chronic alcoholism or morphine addiction.⁸ However, he argued that claims of toxicity were without merit and slanderous, and declared that cocaine was an absolutely harmless, marvelous treasure.^{6,8}

Freud proposed potential indications for cocaine including its use as a stimulant to enhance energy and reverse debility in psychiatric disorders; for indigestion or dyspepsia; for cachexia of chronic disease; for asthma and altitude sickness; and as an aphrodisiac.⁸ The two indications that proved most consequential for Freud’s reputation were its use as a local anesthetic and for morphine addiction. The well-known numbing effect of cocaine on the tongue and mouth led Freud to suggest that it might

prove useful as an anesthetic. Based on case reports from America and initial success with Fleischl-Marxow, Freud recommended subcutaneous cocaine injections for morphine withdrawal. He firmly believed that cocaine acted as a morphine antagonist that could cure addiction, and disputed the notion that it was simply substituting one addiction for another.^{5,8}

Reaction and reproach

Über Coca initially received widespread acclaim fulfilling Freud's fondest hopes. His review added to the fervor, instigated by pharmaceutical and beverage companies, to try cocaine for an expanding catalog of ailments.

At the end of his review, Freud noted the anesthetic properties of cocaine, and discussed this with Leopold Königstein, an ophthalmologist, as a treatment for painful eye diseases.⁸ However, it was Carl Koller who realized that cocaine could be the anesthetic he had been searching for to enable painless eye surgery.^{8,11-13} Presented by a colleague, Josef Brettauer, at the Ophthalmological Congress in Heidelberg, September 1884, word of Koller's experiments confirming the anesthetic effects of cocaine on the eye spread rapidly around the world revolutionizing ophthalmologic surgery and ensuring Koller's fame. Despite his discovery, Koller's hopes for a position in Vienna were dashed after he injured another physician in a fencing duel over an anti-Semitic slur, forcing him to immigrate to New York where he became Chief of Ophthalmology at Mount Sinai Hospital.

Expanding on Koller's success, William Stewart Halsted and Richard John Hall published results of using cocaine for local and nerve block anesthesia at the College of Physicians and Surgeons and several other New York hospitals.⁵ Tragically, Hall and some of his students, residents, and fellow surgeons could not resist self-experimentation and were crippled by cocaine addiction and died early deaths.⁵ Halsted, who went on to become the father of modern surgery and one of the founders of the Johns Hopkins Hospital, later compounded his own addiction by using morphine to counteract cocaine, as revealed in a confidential report written by his colleague Sir William Osler, that was kept sealed for 50 years.⁵

Grave reproach against Freud came within a few years of his landmark review paper. He was accused of recklessness as reports of cocaine intoxication and addiction prompted increasing alarm. The dangers of acute paranoia, hallucinations, formication (Magnan-Saury sign¹⁴), addiction, and rapid decline in physical and social functioning became apparent. Johann Erlenmeyer, an expert

on morphine addiction, warned of double addiction and declared cocaine the third scourge of humanity alongside opium and alcohol.^{5,8} Louis Lewin, a pharmacologist, warned of two-fold cravings when cocaine was used for morphine addiction, leading to criminal behavior, trafficking, and smuggling.^{5,8,15}

A more harrowing and personal setback for Freud was the aftermath suffered by Fleischl-Marxow. Although Fleischl-Marxow rallied for a few weeks, his use of cocaine not only failed to cure his morphine addiction but escalated into a raging cocaine habit that caused psychosis and delirium leading to the end of his career and death at 45-years-old. Contrary to Freud's assertion that he was the first morphine addict in Europe cured by cocaine,^{5,8} Fleischl-Marxow may have been one of the first fatal cases of combined morphine/cocaine addiction recorded in Europe.⁷

Response and rebuttal

After publication of his review, Freud extended his observations on cocaine in a number of abstracts, articles, and lectures. He conducted studies on cocaine-induced increases in muscle power and reaction times, and the bioequivalence of cocaine products from



competing companies. He expanded on the potential of cocaine as a stimulant to counter low energy in neurasthenia and melancholia. During 1885 and 1886, while on a grant to study with Charcot

Top left, Ernst von Fleischl-Marxow, 1882; above: Carl Koller, 1884. Public domain



Antique syringes. Istock photo

in Paris, Freud continued to rely on cocaine to sharpen his wit and sociability.

Freud was generous in crediting Koller for his demonstration of cocaine as a local anesthetic.⁵ At the time, he had grander ambitions for cocaine as a universal cure for apathy and dysphoria, apart from surgical indications. But, as the therapeutic possibilities of cocaine faded, he came to envy and regret missing out on the renown that Koller received. He derisively inscribed a reprint of his *Über Coca* paper to him as, “To my dear friend, Coca Koller, from Sigmund Freud.”¹²

Though he blamed himself for not being conscientious enough, Freud reminded others that he had discussed applications in ophthalmology with Königstein before Koller’s discovery.⁵ As a bittersweet irony, Koller applied cocaine as the anesthetic in a successful operation for glaucoma performed by Königstein on Freud’s own father.^{6,8}

Feeling increasingly attacked for ignoring toxicity, Freud stubbornly doubled-down on his defense of cocaine. He continued to claim that cocaine was harmless, and referred to success in treating an unnamed morphine addict, even though he knew by this time that Fleischl-Marxow had descended into a downward spiral of cocaine and morphine addiction.

In a paper published in 1887 entitled, *Remarks on craving for and fear of cocaine with reference to W.A. Hammond*, Freud argued that morphine addicts themselves were to blame for adverse events.^{8,16} William A.

Hammond, a former Surgeon General of the U.S., advocated therapeutic use of cocaine which he compared to tea or coffee, but acknowledged nearly dying after self-injecting increasing doses.⁹ Freud claimed that ingesting cocaine as he did was perfectly safe, and that adverse effects were limited to injecting cocaine contradicting his earlier recommendations for subcutaneous injections to treat morphine withdrawal and overdose.

Freud also proposed that the response to cocaine depended on individual disposition. People, like himself, enjoyed enhanced well-being, some experienced no effects, while others were likely to become toxic or addicted. He rationalized his own drug use while rejecting the growing evidence of the disastrous effects cocaine had on many others.

Reflections on cocaine in later years

After his last publication on cocaine in 1887, Freud increasingly turned his attention to the psychoanalytic understanding of unconscious processes. The inner conflict to reconcile disappointment and remorse over his infatuation with cocaine was revealed in correspondence and self-analysis as published in *The Interpretation of Dreams* in 1900.^{5,8}

Freud reflected on cocaine in two dreams he used to illustrate the importance of latent content and wish fulfillment. In “The dream of Irma’s injection,” he responded to a patient who confronted him for failing to cure her symptoms. He interpreted the dream as expressing a wish to be exonerated for both a mishap in prescribing cocaine for a woman who nearly hemorrhaged to death after a nasal operation by his friend, Wilhelm Fliess, and more poignantly, for hastening the death of Fleischl-Marxow.⁸ He also wished for justification and retribution at being reproached for his work, even blaming Fleischl-Marxow for poisoning himself with cocaine injections.⁵⁻⁸

In “The dream of the botanical monograph,” Freud deduced that the monograph on a plant he visualized in the dream represented a similar wish for self-justification and recognition as a conscientious student who contributed to the benefits of cocaine as a local anesthetic by authoring *Über Coca*.^{8,12}

Perhaps as a benefit of insight from his self-analysis, along with frightening bouts of drug-induced palpitations, chest pain, and dyspnea, and in reaction to his father’s death, Freud wrote to Fliess in 1896 that he had finally



Bottle of cocaine solution, Germany, circa 1915. Public domain

put aside cocaine use (perhaps replaced by addiction to nicotine in cigars).^{5,6}

With the exception of brief correspondence in 1908 and 1916, in which he acknowledged that cocaine causes paranoia, Freud avoided references to his earlier work.⁵ Although he distanced himself from substance use, in the end he turned to a fatal dose of morphine prescribed by his physician, Max Schur, for comfort and relief from the ravages of terminal cancer.⁵

A painful lesson

In a rare instance of convergence between psychoanalysts and psychopharmacologists, Freud's studies of cocaine are often cited as evidence of his neuroscience bona fides.⁶ Despite insisting in later life that cocaine had been merely an idle pursuit, Freud's experiences with cocaine may have driven the trajectory of his career away from neuroscience.⁶ While the initial objective to investigate cocaine in an evidence-based scientific review was well-intentioned, his professional ambition and narcissism were intensified by cocaine use, thereby clouding his judgment and leading him to overlook inconvenient and contrary facts with dire results. He denied the toxicity of cocaine evident in Fleischl-Marxow and others to protect his reputation and rationalize his own use of cocaine. He learned that fulfillment in life was not to be found in a bottle, pill or potion.

Despite Freud's wish for a chemical substance to enhance mental energy, the lesson for physicians investigating or advocating psychedelic or other potential drugs of abuse is that there are no magic bullets for the mind,⁶ no shortcuts to a higher plane of consciousness, no panaceas for the complexity of human emotions. Ambition and hubris can blind one to contrary facts.

Anecdotal reports extolling the wonders of mind-altering drugs based on self-experimentation are unreliable and cannot be generalized without compromising public health. Scientific integrity and progress depend on humility, willingness to acknowledge facts and errors, and honesty in recalibrating assumptions. Lewin captured the lessons from Freud's cocaine misadventures in his book on narcotic and stimulating drugs published in 1924,^{8,15} which could apply to research with any mind-altering drug:

During recent years I have seen among men of science frightful symptoms due to the craving for cocaine. Those who believe they can enter the temple of happiness through this gate of pleasure purchase their momentary delights at the cost of body and soul. They speedily pass through the gate of unhappiness into the night of the abyss.

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The corresponding author's E-mail addresses are caroffs@pennmedicine.upenn.edu or sncaoff@comcast.net.