

The background of the entire page is a photograph of three mushrooms on a piece of aged, yellowish paper. Two large mushrooms are positioned on the left and right sides, their stems curving upwards to frame the central text. A third, smaller mushroom is located at the bottom center. The mushrooms have light brown caps and gills, and their stems are a pale, almost white color. The paper has a mottled, textured appearance with some darker spots and fibers visible.

A DOORWAY TO CHANGE

*Psychedelic drugs are in the vanguard of treatment for addiction,
raising the paradoxical question of whether one mind-altering
substance can override dependence on another.*

by Jennifer Bleier

photographs by Daan Brand



PSILOCYBIN, a psychoactive alkaloid that occurs naturally in more than 100 species of mushroom, causes perceptual distortions and an acutely altered psychological state. Scientists are now considering whether it can curb addiction to alcohol, nicotine, cocaine, and opiates.

JASON DIDN'T FIT

the hackneyed stereotype of an alcoholic. A 39-year-old marketing executive with a master's degree, he never blacked out or erupted in a stormy rage. His family's home in Albuquerque wasn't strewn with empty liquor bottles. He had never crashed his car. Yet Jason—a pseudonym—had been viscerally drawn to alcohol ever since his first sip of beer at age 8, and it was typical for him to have half a dozen drinks after work. He was crushed but not entirely shocked on the spring afternoon in 2015 when his wife announced that she couldn't tolerate his inebriation anymore, packed up their kids, and moved out. ¶ The next day Jason saw a notice in the local alternative weekly newspaper: "Concerned about your drinking? Interested in alternatives to the treatments that are currently available?" The ad announced that University of New Mexico researchers were seeking participants for a trial involving an experimental medication that might help curb alcohol abuse, a spectrum of disorders estimated to afflict 17 million adults in the United States, about 7 percent of the population. Jason dialed the phone number on the ad and was surprised to learn that the experimental medicine was psilocybin, the active ingredient in so-called magic mushrooms.

The trial was part of an upswell of interest during the past decade in the clinical value of psychedelic drugs, which might seem strange given their controlled status and popular image. Psilocybin, among other hallucinogens, was classified as a Schedule 1 narcotic under the 1970 Controlled Substances Act, making it illegal to manufacture, distribute, or possess. Government warnings cite that the substance has a high potential for abuse and no legitimate medical value and caution that its negative effects can include nausea, vomiting, panic attacks, psychosis, and even death.

Despite such alarms, the landscape is changing: Over the past 20 years, psychedelics have become the subject of an intriguing stream of clinical research—and one area of particular interest is their capacity to curb addiction. In addition to the UNM study of alcohol dependence, researchers at Johns Hopkins University have tested the ability of psilocybin to halt nicotine addiction and have seen striking outcomes. At the University of Alabama at Birmingham, a trial of psilocybin-assisted therapy for cocaine users is underway. In February, a team of researchers affiliated with Boston University and Harvard Medical School, among other institutions, published a

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study in the *Journal of Psychopharmacology* reporting that illicit opioid users were at markedly less risk of becoming dependent on opioids if they also had experience with psychedelic drugs, suggesting a protective effect. Scientists are also testing the antiaddictive influence of ayahuasca, an Amazonian hallucinogenic brew, and ibogaine, a psychoactive alkaloid derived from a plant native to west central Africa.

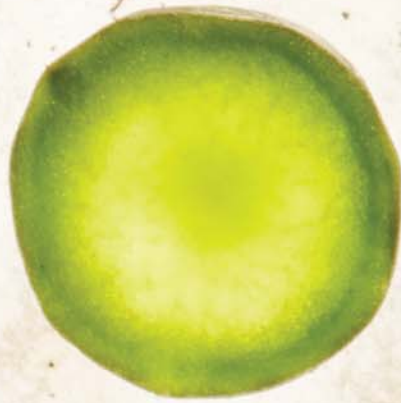
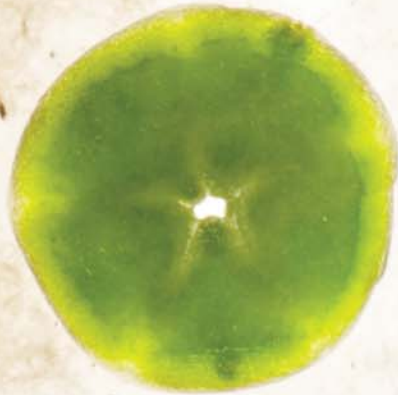
The research is not unprecedented. It's a revival of a field that flourished decades ago, beginning in 1943 when the Swiss chemist Albert Hofmann accidentally discovered the extraordinarily potent psychoactive properties of lysergic acid diethylamide, or LSD, which he synthesized in pursuit of a treatment for migraine headache. Hallucinogenic substances have been used by indigenous people for millennia in the contexts of ritual and healing, though not until Hofmann's revelation were they subject to widespread scientific inquiry. Throughout the 1950s and '60s, hundreds of psychedelic experiments were conducted, involving tens of thousands of patients. Regarded by scientists as an entirely legitimate area of inquiry, the research was pursued in relation to a wide range of mental processes and disorders, including autism, schizophrenia, and the existential distress associated with terminal illness. The most extensively studied indication, by far, was as a treatment for alcoholism.

Then it all came to a halt. Beginning in 1960, Harvard psychologists Timothy Leary and Richard Alpert—later known as Ram Dass—conducted unorthodox experiments with hallucinogens, eventually promoting them as consciousness-expanding agents that should be available to all. LSD escaped from the lab and spread rapidly among American youth, helping fuel some of the political and cultural upheavals of the '60s and, by some accounts, threatening the social order. The drug was decried as a trigger of mania and violence, and Hofmann eventually lamented that “wrong and inappropriate use has caused LSD to become my problem child.” By the early 1970s, the entire research domain was shut down and essentially swept into the dustbin of psychiatric history.

Michael Bogenschutz, the primary investigator of the UNM alcohol abuse trial, was only vaguely aware of this history when he entered the field of addiction psychiatry in the early 1990s. Trim and bespectacled, Bogenschutz has spent 25 years investigating things like the effects of buprenorphine, a



A seed of
the *Banisteriopsis*
caapi vine, which
is brewed with
leaves that contain
DMT to make
AYAHUASCA,
a hallucinogenic
concoction used ritually
by indigenous people
of the Amazon basin.
Anecdotal evidence
and observations have
suggested that
ayahuasca can help
halt addiction, and
research to address the
question is underway
in Peru, Mexico,
and Brazil.



PEYOTE, a cactus containing the psychoactive compound mescaline, has been consumed for millennia by indigenous people of Central and North America as a medicine and in religious sacraments. For decades, psychiatrists and anthropologists have observed Native Americans successfully using peyote in a shamanistic context to overcome alcoholism.



treatment for opioid addiction, on liver enzymes. During much of his career, what little he knew about the psychedelic inquiry of yore he disregarded as not meeting today's rigorous scientific standards. "I didn't think much of that research was credible," he says.

But by the early 2000s, psychedelic research was slowly resurfacing as methodological protocols improved, and scientists were granted hard-won permission to pursue clinical interest in the drugs. Some intriguing developments caught Bogenschutz's attention. A colleague at UNM, psychiatrist Rick Strassman, tested dimethyltryptamine, or DMT—the active ingredient in ayahuasca—on 400 people and concluded that it was safe for humans in controlled settings. A few years later, a Russian addiction researcher, Evgeny Krupitsky, gave grand rounds at UNM and reported astounding results from his work treating both alcoholics and heroin addicts with a single dose of ketamine, an anesthetic that can have powerful hallucinogenic effects.

A pivotal moment for Bogenschutz was the 2006 publication of a landmark study led by Roland Griffiths, a prominent substance abuse researcher at Johns Hopkins. Intended to gauge both the immediate and long-term psychological effects of a high dose of psilocybin delivered to 36 healthy volunteers, the study found that the drug reliably occasioned the kind of "mystical-type" experience that's well defined in classical scholarship of religion, including a sense of awe, ineffability, and profound awareness of the unity of all things. Among the momentous results was that, beyond the acute effects felt during the session itself, participants reported positive changes in their mental well-being and behavior many months afterward. A third of the participants rated the session as the most spiritually significant experience of their lives, and 80 percent rated it among their top five meaningful life experiences.

For Bogenschutz, the findings pointed to central facets of addiction and recovery. "As a clinician and scientist, I've always been interested in how

people change," he says. "It's very hard to predict or understand. Especially with addiction, sometimes it happens based on nothing we can discern, and sometimes people achieve a categorical change in behavior as a result of some big religious epiphany or spiritual awakening." Though the Hopkins study participants weren't addicts, he says, "the fact that they had mystical experiences that were extremely meaningful to them and were associated with positive behavioral change, which was corroborated by their family members, got me motivated to study this."

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Bogenschutz would soon jumpstart an area of addiction research that had lain dormant in North America for 40 years—one that may yield compelling findings not only about the peculiar effects of certain chemical compounds, but about the nature of addiction itself. While the modern medical establishment routinely refers to addiction as a brain disease, psychedelic treatment suggests that it's neither chronic nor entrenched, but rather something far more nuanced, involving the brain's natural process of learning and habituation. Still, it seems paradoxical: Can

one mind-altering drug suspend an addiction to another?

SPIRITUALITY HAS BEEN linked to the study of addiction since at least the late 19th century, when the philosopher and psychologist William James observed alcoholics achieve sobriety on the heels of what he termed "conversions." In his 1902 book, *The Varieties of Religious Experience*, James described men gripped by a compulsion to drink who, often in concert with fasting or intense prayer, felt a divine presence that radically changed them—and subsequently they were relieved of their cravings.

Perhaps the most significant conversion in modern times was that of Bill Wilson, the cofounder of Alcoholics Anonymous, though a possibility often omitted from A.A.'s history is the likelihood that his epiphany was in part chemically induced. In 1934, Wilson was a hopeless drunk who guzzled two quarts of cheap whiskey daily and whose repeated attempts to get sober had ended in failure. For the fourth time, he checked himself into Charles B. Towns Hospital, an uptown Manhattan clinic where wealthy alcoholics went to dry out—and where doctors administered a treatment they called the "belladonna cure." A plant in the nightshade family that contains nerve receptor-blocking alkaloids, belladonna has been known since the Middle Ages to produce vivid hallucinations and delirium.

After two or three days on the belladonna regimen—a point at which some think Wilson may also have been experiencing the hallucinatory delirium tremens associated with severe alcohol withdrawal—he witnessed a blinding white light shining through his hospital window and felt "caught up into an ecstasy which there are no words to describe," he later wrote. "A great peace stole over me, and I thought, No matter how wrong things seem to be, they are still all right." The vision of what he called the

“essential All-Rightness of the universe” ultimately led Bill W., as he became known, to abstain from drinking for the rest of his life and to form A.A. based on principles of honesty, accountability, social support, and acceptance of a higher power.

A.A. grew rapidly in the 1940s and '50s, helping to usher in an era in which alcoholism shed its reputation as a personal moral failing and began to be seen as an illness. It was also a time when psychoanalytic explanations for mental disorders were dominant, though some pioneering scientists began to consider biological explanations instead. Among them was Humphry Osmond, a gentlemanly British psychiatrist who arrived in the Canadian prairie province of Saskatchewan in 1951 to serve as the deputy director of a mental hospital and to pursue his interests in biochemical experimentation. First using mescaline—a hallucinogenic compound found in the peyote cactus native to Mexico and the American southwest—and later LSD, Osmond observed that both drugs generated symptoms of psychosis like those seen with schizophrenia, and he theorized that mental illness had biological roots.

In 1952, it occurred to Osmond and his colleague Abram Hoffer, a Canadian psychiatrist and biochemist, that the psychosis-like nature of the LSD experience also resembled that of delirium tremens, which alcoholics often cite as the “hitting bottom” moment that galvanizes their recovery. To test whether they could intentionally induce this state, Osmond and Hoffer gave LSD to two severe alcoholics. Both stopped drinking afterward, at least for a time. Other studies Osmond and Hoffer conducted showed equally intriguing results.

They and their colleagues would come to test LSD on at least 1,000 alcoholics at six hospitals across Saskatchewan. The patients were acutely afflicted with the disorder, their lives shattered by unemployment, imprisonment, and broken families, and their bodies damaged by years of heavy drinking. They were treated with LSD after conventional treatments, includ-

ing participation in A.A., had failed. For a population notoriously resistant to change, the results were remarkable. About half of the participants reportedly became sober or significantly curtailed their drinking after the treatment. One study put the number at 70 percent.

Within a few years, the Saskatchewan researchers discarded their theory of an artificially induced delirium tremens, surmising that it was not terror but insight that drove the stunning behavioral changes they witnessed. As Hoffer also explained, it was “not just substances themselves, but the setting in which they’re administered and the

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therapist—everything about the experience must be carefully calibrated to obtain therapeutic effects.” The researchers outfitted the clinical setting with such elements as fresh flowers, music, and art. They required an attitude of gentle openness and optimism from attending therapists, and they built in preparatory and integrative counseling before and after the LSD sessions. All of these conditions, they believed, were instrumental to the outcome.

Exactly how LSD worked and why its efficacy depended on the social and environmental context in which it was delivered was a mystery, though its psychological effects were clear.


Colin Smith, a psychiatrist and colleague of Osmond and Hoffer, reflected in a 1959 article in the *Quarterly Journal of the Study of Alcohol* that LSD aids and accelerates the psychotherapeutic process by stimulating a clear-eyed perception of one’s life—a perception that alcohol essentially shellacks over.

“What is remarkable about successful cases is that they have an increased readiness to accept unpleasant aspects of themselves without catastrophic loss of self-esteem and to handle their conflicts in a constructive way,” Smith wrote. “They felt different about themselves and their fellow men. It was not simply a question of gaining new intellectual insight into their motives. They appeared to resolve in a satisfactory way ambivalent feelings toward parents, parent surrogates, and so forth.”

Word of the research made its way to Bill W. in what would amount to another surprising chapter of A.A. history. Although he hadn’t drunk in decades, Wilson himself used LSD for several years, beginning in 1956, in part to address his crippling depression. Wilson was friends with the English novelist Aldous Huxley, who by then was a central figure among a group of artists, intellectuals, and psychologists experimenting with LSD. In a letter to the Catholic theologian Thomas Merton, Huxley wrote that Wilson had compared the LSD experience to the “spontaneous theophany which changed his life as completely as St. Paul’s was changed on the road to Damascus.”

Wilson advocated for the drug to figure into A.A.’s program, believing that it could unleash in resistant alcoholics the kind of revelation he’d had at Towns Hospital in 1934 and help get them into recovery. The organization’s leadership strenuously opposed the idea, and Wilson stopped using LSD. Huxley, however, wrote that his friend’s testimony was evidence that “there is, obviously, a field here for serious and reverent experimentation.”

DOORWAY continued on page 86



ERGOT, a natural fungus that grows on rye, was the basis for a number of compounds synthesized by the Swiss research chemist Albert Hofmann—among them lysergic acid diethylamide, otherwise known as LSD. From the 1950s to the early '70s, thousands of alcoholics were experimentally treated with LSD.

MICHAEL BOGENSCHUTZ launched a proof-of-concept study of psilocybin-assisted treatment for alcohol dependence in 2012. It bore a resemblance to the work carried out more than a half century before—but only to a degree. His research team screened out people from the most extreme end of the spectrum, which accounts for just 15 percent of those with alcohol use disorders, as well as those with other medical issues or drug dependencies. They also made sure subjects had no family history of psychosis, schizophrenia, or suicide, as psychedelic drugs can provoke serious mental illness in those with an underlying susceptibility.

The study was tiny, involving only 10 people and meant to show just feasibility and safety. Yet the results were arresting. On a whole, the participants showed dramatic declines in drinking that persisted through their final nine-month follow-up visit. As the findings were significant enough to warrant further exploration, Bogenschutz forged ahead to the next phase of the clinical drug trial—a much larger, double-blind, placebo-controlled study designed to more clearly demonstrate whether psilocybin facilitates a lasting change to problem drinking.

Jason was accepted into the second trial, which included 12 weeks of psychotherapy intended to motivate him to change his drinking behavior. After four weeks of psychotherapy, he arrived in a clinical room that had been appointed with art, homey furniture, and soft lighting and was given a pill of synthetic psilocybin. He lay down on a couch and donned eyeshades and headphones that piped in a programmed selection of music. Sitting nearby throughout the session were male and female cotherapists, who did little more than direct Jason to focus his attention internally and go where his mind took him. Within minutes, he burst into tears.

“I wept for the better part of six hours,” he recalls. “It was a really heavy

purging, as if I had just needed an excuse to stop the world and take this emotional ride.” He sensed some of his primary relationships—with his father, a former administrative court judge whose own lifelong alcoholism had driven their family apart and himself into isolation; with his wife, whose personal insecurities had contributed to their alienation from each other; and most of all, with his 16-year-old stepdaughter, his wife’s child from a previous relationship and a challenging kid who, Jason came to realize, was a major stressor in their family’s life. “I went through a sort of grieving about the impact she was having on our marriage, along with feeling deeply how much I loved and cared about her.”

He also gazed with unalloyed clarity at his own lack of commitment to the most important things in his life—his marriage and kids. “I believed that I had screwed up in every way,” he says. “There was so much internal guilt bottled up.” After several hours, the emotional tempest settled, and Jason was left with an incandescent feeling of love for his family, and forgiveness of himself.

Four weeks later, he arrived for the second psilocybin session, which he described afterward in a journal. “The initial fall was swift and intense,” he wrote. “I wanted to immerse myself in the sounds from every corner and crevice of the room. Fully aware that I had no control over any circumstance or train of thought, I simply took the ride. There came a point where I realized I could in fact navigate.”

With a greater sense of control this time, he focused his attention again on his life and aspects of himself that felt broken. He saw himself and his wife far in the future, happy and profoundly connected, and envisioned his stepdaughter and the couple’s then 4-year-old daughter both as strong women he and his wife had lovingly guided into adulthood. Jason’s attention barely drifted toward his relationship with alcohol. It was all about his relationship to himself and his loved ones.

Even though there was little explicit content about drinking in his two psilocybin sessions, Jason was effort-

lessly abstinent after their completion. He eventually drank again, but moderately, with a conscientiousness he’d never experienced with alcohol before.

Jason’s outcome mirrors that of the participants in the proof-of-concept study. In addition, it aligns with other work showing credible long-term change in addiction. At Johns Hopkins, psychiatrist Matthew Johnson had led a 2014 pilot study of 15 longtime smokers treated with psilocybin and had found that 80 percent abstained from smoking six months after the trial—an especially compelling result as nicotine dependence is often thought to be primarily physiological, and the participants had all previously tried to quit using other methods. And in 2012, a pair of researchers in Norway had extracted data from the best-designed studies from the 1960s and early ’70s of LSD treatment for alcoholism, and in a meta-analysis had found that of 536 total participants, those dosed with the drug showed significantly better outcomes in their drinking behavior than those in the control groups, and that the change persisted for at least six months.

The consistency across the findings raises a fundamental question: How could a singular experience have such indelible impact on behavior? If there’s a straightforward neurobiological process at work, Bogenschutz suggests that it could be related to the downregulation of the serotonin system provoked by a psychedelic. “That could be associated with a lot of short-term benefits, such as decreased impulsivity and improved mood,” he says. “The problem is that the downregulation probably lasts only for a week or so, so it alone couldn’t account for long-term changes.”

Another possibility is that psychedelics cause neurons to change their shapes and connections—that the brain, essentially, may undergo the kind of remodeling that’s the basis of all learning, including the learning that underpins the development of addiction in the first place, not only to alcohol but to all substances of abuse.

There are certainly acute changes in brain activity when someone takes

a psychedelic—changes that have become clearer with advances in neuroscience. A study by Robin Carhart-Harris of Imperial College London that was published last year had 20 healthy volunteers undergo brain scans while under the influence of LSD and found a sharp increase in communication between areas of the brain that normally don't talk to each other—a phenomenon that likely helps explain the perceptual distortions and sense of unprecedented insight. At the same time, the drug was found to dial down activity in the default mode network, the network of brain regions thought to place the construct of an independent self at the center of conscious experience.

Nobody knows if these neural patterns persist once the drug is metabolized, yet Johnson says that the brain's-eye view of what happens at the height of the experience offers a possible bridge between its neurobiological and psychological effects. "For decades people have used terms like 'ego death' to describe these experiences," Johnson says. "Even if they don't always have a complete mystical revelation, the sense of self is softened so they can look at their life in a different way. Given what we know about the default mode network, this may be a key way in which these drugs work. It's helping us understand the cascade of events that happens at the receptor level when you give someone a pill and they come out at the end of the day saying they reflected on their entire existence and the nature of reality."

Bogenschutz points to the long psychological tail of a traumatic experience as an inverse analogy to how psilocybin might confer its benefits. "With PTSD, there's a whole process that happens when a toxic memory is seared into the brain," he says. "The only physical effect is probably light hitting the eyes. It's the meaning made of that memory, and the brain and body's reaction to the meaning, that can cause lasting damage. So if there are experiences that are so toxic and so horrible that they can cause physical

and psychological damage, it's not a crazy idea that there are some experiences that are so positive, so beneficial that they can have a healing effect."

IN 2015, BOGENSCHUTZ joined the faculty of the New York University School of Medicine, which has emerged alongside Johns Hopkins and UCLA as a leader in the new era of psychedelic research. With NYU as its lead sponsor, the phase 2 trial is set to enroll up to 180 participants and to be completed, Bogenschutz anticipates, by 2020.

Not all substance abuse experts are enthusiastic about this direction of inquiry. To George Koob, the director of the National Institute on Alcohol Abuse and Alcoholism, the legacy of psychedelics from the '60s erases any interest in their potential value. "These are Schedule 1 drugs for a reason," Koob says. "I taught undergraduates for 30 years, and I had numerous cases where people came up and told me about their brother or sister or cousin who had taken a psychedelic and it ended up triggering a long-term schizophrenia-like illness. As a scientist I don't have any objection to studying their mechanism of action. But I'm not going to be funding any grants for people to treat alcoholism with psilocybin, or LSD, or any other psychedelic. In my view, the danger outweighs the benefits."

Researchers counter that hundreds of people have now participated in highly regulated psilocybin studies, having been carefully screened, therapeutically prepared, medicated in controlled settings with trained monitors, and administered integrative therapy afterward, and in these conditions the substance has been shown to be overwhelmingly safe. The only significant risk that Bogenschutz sees, and which he addressed earlier this year in the *American Journal of Drug and Alcohol Abuse*, is that as evidence accumulates about the therapeutic potential of psilocybin, it will cloud the public perception of its risks and lend a sheen of ac-

ceptability to its illicit use. "We make no claims about the safety of psilocybin when it's used outside the settings in which we've been conducting our trials, and we absolutely discourage people from taking things into their own hands," he says.

As to whether the benefits in fact outweigh the dangers, Bogenschutz says that like all science, the proof will ultimately be in the empirically tested pudding. Still, he concedes, skepticism is understandable. "People who are used to more traditional psychotherapeutic models, where long-term work is what's necessary to make substantial progress, would naturally tend to be suspicious of these experiences because they're sudden and drug-induced," he says. "If it turns out to be the case that one or two experiences with psilocybin help people make lasting changes in behavior, it might seem too good to be true."

For Jason, at least, it does seem to have been true. Two years after completing the UNM study, his drinking remains limited and under control. He may have a couple beers or glasses of wine after work, but, he says, "I'm not using it to medicate myself anymore. I've come to see drinking as an individual decision—one I can decide against."

His wife took him back and moved home with their kids. They entered marriage counseling, and Jason credits the "inner peace" he found in the sessions as one of the most important factors in his success. The couple strengthened their communication and renewed their bond. Their family life now feels harmonious and connected. And though the psilocybin trial seldom crosses his mind, the insights it catalyzed reverberate in his life daily.

"I think alcohol was a way for me to disassociate from the here and now," he says. "The sessions taught me to hit the 'Pause' button and take time for things that actually matter. I learned the importance of really being present." ■

JENNIFER BLEYER is a senior editor at PT.