

Special Edition
BULLETIN



Psychedelics in Psychology and Psychiatry
Spring 2013



Beer Ya'akov Mental Hospital



Treatment room



Clinical Research Associate Mimi Peleg with Study Coordinator Dafna Bornstein-Lavi

Israeli Study of MDMA-Assisted Psychotherapy for PTSD Enrolls First Subject

On February 12, 2013, the first subject was enrolled in our new Israeli study of MDMA-assisted psychotherapy for PTSD. This study will enroll 10 subjects with chronic, treatment-resistant PTSD, some of whom will be referred by the Israeli Defence Forces.

This study is taking place at Beer Ya'akov Mental Hospital, and is led by Principal Investigator Moshe Kotler, MD, and monitored by Clinical Research Associate Mimi Peleg. This study has the approval of the Israeli Ministry of Health, an independent Ethics Committee, and the US Food and Drug Administration.

\$468,000 estimated study cost. Please consider donating to help complete this important study: maps.org/donate.

Study Timeline

February 12, 2013: First subject enrolled

December 12, 2012: Subject screening begins

August 30, 2012: Site preparations finalized

February 1, 2012: Independent rater training complete

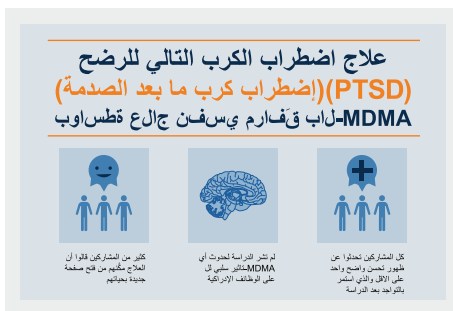
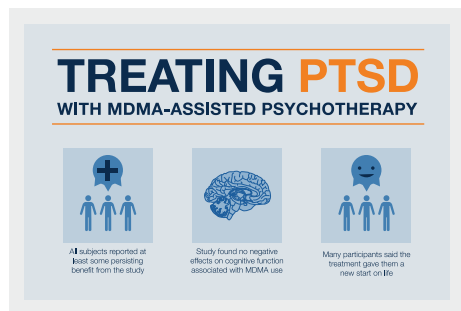
July 24, 2011: Study initiated

June 1, 2011: Israeli Ministry of Health approves protocol

January 23–27, 2011: Therapist teams trained

January 19, 2011: Ethics committee approves protocol

Learn more at maps.org and mdmaptsd.org.



Our Treating PTSD with MDMA-Assisted Psychotherapy infographic is now available in English, Hebrew, and Arabic.



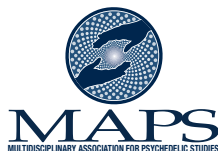
Art supplies for treatment sessions



Site team discussing the first subject's enrollment



Beds for overnight visitors



Founded in 1986, the Multidisciplinary Association for Psychedelic Studies (MAPS) is a **501(c)(3) non-profit** research and educational organization that develops medical, legal, and cultural contexts for people to benefit from the careful uses of psychedelics and marijuana.

MAPS furthers its mission by:

- Developing psychedelics and marijuana into prescription medicines.
- Training therapists and working to establish a network of treatment centers.
- Supporting scientific research into spirituality, creativity, and neuroscience.
- Educating the public honestly about the risks and benefits of psychedelics and marijuana.

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From the Desk of Rick Doblin, PhD



Rick Doblin, PhD

THIS SPECIAL EDITION OF THE *MAPS Bulletin* is focused on the contributions that psychedelic research and the mind-manifesting process of Holotropic Breathwork have made and continue to make to the fields of psychology and psychiatry: past, present, and future. As Dr. Stanislav Grof has written, “Psychedelics, used responsibly and with proper caution, would be for psychiatry what the microscope is for biology and medicine or the telescope is for astronomy.” The articles contained in this volume tell a large part—but still just a part—of the story of how pioneering psychedelic studies first revealed the benefits that psychedelics could have for science, psychotherapy, and Western society. These articles also hint at the profound expansion of knowledge and healing techniques that is just now beginning, after so many have worked for so long to overcome four decades of repression and cultural stigma.

This Special Edition Bulletin contains original articles on the contribution of early LSD research to our understanding of the serotonin (5-HT) neurotransmitter system, on the surprising effectiveness of LSD and psilocybin to treat cluster headaches, on MAPS’ latest research into LSD-assisted psychotherapy for people with anxiety due to life-threatening illnesses, on how ketamine research is providing new insights into the study and treatment of depression, on the successful integration of Holotropic Breathwork into the treatment of over 11,000 psychiatric inpatients, on how ayahuasca is being used in the treatment of addiction, and on the psychotherapeutic approaches underlying our promising research into MDMA-assisted psychotherapy

in the treatment of posttraumatic stress disorder (PTSD). Additional articles explore the development of a graduate school course on psychedelic research, propose a cultural strategy for integrating psychedelics into mainstream psychiatry, review an important new book on the future potential of psychedelic research, and offer a tribute to the pioneering psychedelic researcher Myron Stolaroff, who died in January 2013.

As the renaissance in psychedelic research and therapy continues to develop, we recognize with respect and gratitude the contributions of the early psychedelic pioneers as well as the growing community of younger researchers who are taking psychedelic research to the next stage. In these challenging and turbulent times, after 40 years of hard work to restore the legitimacy of psychedelic research, we have a precious and unprecedented opportunity to integrate psychedelic experiences more deeply into our culture.

One of the key lessons we have learned over the past four decades is that psychedelic researchers in the 21st century need to fully acknowledge and address the potential risks of psychedelics as well as their potential benefits. For the Food and Drug Administration, and for society as a whole, we need to make careful and comprehensive assessments of the benefits and the risks of psychedelics. We need to embrace and present a balanced perspective that earns the trust of a culture that is still skeptical and fearful (this is changing, but cultural traumas are at least as hard to heal as personal ones).

We also need to communicate that the benefits and the

We have a precious and unprecedented opportunity to integrate psychedelic experiences more deeply into our culture.

risks of psychedelics do not flow from the drugs themselves, but from the contexts (or settings) within which they are used. MDMA, psilocybin, and LSD are not inherently therapeutic tools. In our clinical drug development research, we're evaluating how psychedelics are used to assist the psychotherapy process, with the main emphasis on the psychotherapeutic process within which the drugs are used. One of the principle fallacies of our current system of Prohibition is to ascribe properties to drugs in and of themselves, with some drugs being "good" and others being "bad." This approach misses the point that the key factor determining the relative risks and benefits of a drug is our relationship with it.

This Special Edition of the *MAPS Bulletin* is being released at the same time as our international conference on psychedelic research, Psychedelic Science 2013, co-sponsored by MAPS and our colleagues at the Beckley Foundation, the Council on Spiritual Practices, and Heffter Research Institute. I have great hope for the future, knowing that the past contributions and current promise of psychedelics explored in this *Bulletin* and at Psychedelic Science 2013 will further encourage the growth of psychedelic science and therapy and the mainstreaming of psychedelic experiences into our culture at a time of challenge and transformation when psychedelics, used wisely, can contribute so much.

Rick Doblin

Rick Doblin, PhD

MAPS Founder and Executive Director



Carmelo Blandino

COVER ARTISTS

Front cover:

***A Love Song* by Carmelo Blandino
48" x 48"**

oil and spray paint on canvas

Carmelo Blandino was born to Sicilian parents in Tübingen, Germany, and raised in the culturally charged city of Montreal, Quebec. Blandino studied art and design at the city's local colleges and began a successful career as a freelance illustrator, working with architects, designers, and advertising agencies. In 2002, Blandino shifted his focus to the world of fine art. Today, his paintings are widely known for their immediacy and their sensual, even lascivious expressions of colour, movement, and shape. His work is exhibited in New York, Palm Beach, Naples, Stockholm, Calgary, Vancouver, Toronto, and his beloved Montreal. He has conducted summer workshops at Von Liebig Art Center of Naples, Florida, and taught drawing for many years at Dawson College in Montreal before transplanting himself to Naples, Florida where he lives today. Blandino's greatest inspiration comes from the simplicity of being within nature.

Blandino offers his flowers not as mere ornamentation of little consequence but as a focus for the meditative experience, for that is at the root of his work and thus the greatest gift he can bestow upon those who view his canvases. "The exercise of meditating," he says, "is comparable to that of being a painter in its demands—dedication, consistency, faith, truth, and persistence. Both disciplines offer me a means of relaxation, as well as frustration at never quite reaching a finish line that is in truth illusory. Both are about the journey and each ends only with further paths opening up ahead."

View more of Blandino's work at blandino.ca. Contact Blandino at carmeloblandino@gmail.com for purchasing information.



Larry Carlson

Back cover:

***Orange Star Tree* by Larry Carlson
digital photography, 2011**

Larry Carlson is a groundbreaking visionary artist. G4Tech TV called him "The Salvador Dali of the Next Century," and *High Times* magazine labeled him an "artistic mastermind." His work spans a variety of forms including photography, video-art, web-art, collage painting, digital art, film-making, animation, and sound art. Larry Carlson has exhibited his artwork in the U.S., Sweden, Mexico, Brazil, France, Canada, India, and Germany. He is a modern day renaissance man who has changed the way art is perceived in our world today with revolutionary mind-expanding artwork that pushes the possibilities for consciousness exploration within contemporary art.

"Through my artwork I aim to offer the viewer a new way of seeing the world, to describe life as magical, and rich with wonder, mystery and possibility."—Larry Carlson

Check out more of Larry Carlson's amazing artwork at larrycarlson.com. Prints and canvases can be purchased directly from Larry Carlson at larrycarlson.bigcartel.com.



Andrew Penn, NP

Stories Engage, But Data Convinces: Support for Psychedelics in Psychiatry

ANDREW PENN, NP

IT IS CLEAR THAT THE cultural zeitgeist has turned towards the therapeutic use of psychedelics. Recent articles in *The New York Times* and CNN are slowly informing the public of the exciting research that MAPS supporters have known about for some time—that some psychedelics, even with their historic baggage, their potential for misuse, and vilified reputation, have some of the most promising therapeutic potential that we have seen in psychopharmacology in a generation.

However, what are the attitudes of those clinicians who would be empowered to prescribe these substances, should the FDA approve them as safe and effective therapeutic agents and the DEA reschedule them to make them able to be prescribed legally?

Unfortunately, the discussion around drugs in the United States, for at least the last 50 years, has largely been polarized between drugs that are therapeutic and drugs that can be abused. Even though some of our most effective psychotherapeutic agents (e.g. stimulants and benzodiazepines) are also some of the most likely to be abused, there is a distinct discomfort that arises among clinicians when a substance, which historically has been abused, is suggested to be therapeutic.

Perhaps it is because, as clinicians, when it comes to substance abuse, we often only see the casualties, and this perspective has created a bias that a substance that can be abused can never have therapeutic utility (witness MDMA for the treatment of PTSD or the dramatic response to ketamine from sufferers of severe major depression). Rarely do we hear about how a drug changed someone's life for the better.

In some ways, the more esoteric the substance, the less reflexive resistance it elicits. It was interesting to see attendees at last November's U.S. Psychiatric and Mental Health Congress in San Diego stop by the understated MAPS booth in the convention hall, where it shared space with much glitzier displays for conventional psychiatric medications. Many people would

ask, "What's MDMA?" having not associated it with the cultural baggage associated with "Ecstasy." Scientists who want to study compounds such as ibogaine or psilocybin will likely have an easier time getting past the negative biases that have accreted against more commonly used (and abused) substances such as cannabis and LSD.

I would propose that the attitudes that most people have regarding psychedelics fall into one of four broad categories:

- (1) *I have tried them and they have changed my life for the better*
- (2) *I have tried them and was unchanged or had a negative experience*
- (3) *I have never tried them but have an open mind about them*
- (4) *I have not tried them and can only imagine they are more dangerous than helpful.*

I suspect that there are more than a few clinicians who fall into category 1, but feel uncomfortable sharing their experiences for fear of compromising their professional reputations. However, I suspect most mainstream psychiatric providers, having seen the negative outcomes of patient substance abuse and influenced by 45 years of anti-drug propaganda, would ally themselves squarely with those in category 4.

I suspect most people reading this *Bulletin* are in category 1. They are the converted. Through whatever experiences they have had, they believe in the power of these substances to serve as tools to help people towards greater health and emotional wholeness. However, most psychiatric providers have not had these same experiences, and are prone to view the effusiveness with which those in category 1 may share their experiences with a certain degree of suspicion.

This is why we must have data to support the assertions that these substances are therapeutic. We need to have the sci-



Participants converse at the U.S. Psychiatric and Mental Health Congress in San Diego, November 2012.

ence that supports the theories of why these compounds can have the profound effects that they do. Data is the currency of practice change, and without it, all the tales of the converted are relegated to low grade, “anecdotal data”—interesting, but nothing that most people in a professional role would be willing to risk the sanctions of loss of license, professional status, or clinical/academic position to pursue.

That’s why what MAPS is doing is so critical for changing the attitudes around these substances and the role that they can play in mainstream psychiatry. By focusing on conditions such as PTSD that suffer from a dearth of effective treatments and by generating robust research findings, their studies provide both hope for difficult-to-treat conditions and compelling data for effective treatments. Hopefully, it will be only a few short years before the data that MAPS-sponsored studies have generated can be leveraged to make these substances legal as prescribed medicine.

When that day comes, MAPS would be wise to take a lesson from the more mainstream pharmaceutical industry and use marketing as a means to change attitudes and encourage appropriate use of these agents. The pharmaceutical industry spent \$27.7 billion dollars in 2004¹ to market medications because that investment was returned many times over in increased sales. MAPS has a mission that is even more important than increasing returns to stockholders: making effective medications available to patients who need them and to advance a more enlightened attitude towards psychedelics. Armed with the data from these studies, the medium of advertising can shift the attitudes of

clinicians who will prescribe these medications. The aesthetics of these marketing messages should reflect the controlled and sober use of these compounds for therapeutic purposes. Psychedelic imagery, for example, may appeal to those who have had positive experiences with these compounds, but may also serve to alienate a more conservative medical establishment.

As important as marketing is the impact that respected fellow clinicians have on the practice patterns of other clinicians. The mainstream pharmaceutical industry has long known this, and has used “key opinion leaders” or “thought leaders” to deliver marketing talks about new drugs.² Clinicians trust their peers more than a sales representative. Those who are well versed in the research findings and convinced

about the benefit of these compounds can engage peers in compelling conversations about the value of these drugs. At the end of the day, stories engage, but data convinces. 🌀

As clinicians, when it comes to substance abuse, we often only see the casualties, and this perspective has created a bias that a substance that can be abused can never have therapeutic utility.

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Ido Hartogsohn

The American Trip: Set, Setting, and Psychedelics in 20th Century Psychology

IDO HARTOGSOHN

“Too much of the psychedelic therapy literature reads like the Middle Eastern story of the blind men, each allowed to touch part of an elephant, an animal that none of them knew existed. Each man concluded that his part of the elephant—the tail, a tusk, a leg—was the whole animal.”—Psychedelic research pioneer James Fadiman, PhD¹

IF ONE WERE TO READ the accounts of 1950s and 1960s psychiatrists and psychologists about LSD, with the word “LSD” blacked out, one might have thought that the writers were discussing entirely different drugs.

One group of scientists regarded LSD and the other psychedelics as psychotomimetic (“psychosis-inducing”) drugs which mimic the effects of mental illness: “essentially anxiety-inducing drugs.”² The advocates of this approach were reporting cognitive impairments, psychological distortions and a variety of “disturbances” in those who were given the drug.

Yet another group of scientists described the effects of LSD with entirely different terms. For this group, LSD and the other psychedelics represented consciousness-expanding drugs—cognitive tools to enhance thinking, creative tools to expand creativity, and spiritual tools to increase spirituality. For them, LSD was not a psychosis-inducing drug but rather a revolutionary psychotherapeutic tool ushering in a “new sanity.”³

The truly fascinating fact about 1950s and 1960s psychedelic research was that when proponents of the two approaches were talking about LSD, they didn’t just sound as if they were talking about two entirely different drugs—in a way, they actually were. The reason for this is that—as some writers started suspecting in the late 1950s—the effects of LSD and the other psychedelics, far from being invariable, are fundamentally and crucially determined by the set and the setting in which the experience takes place.

THE SET-AND-SETTING HYPOTHESIS

It is difficult to think of many other concepts which are as fundamental and widely accepted in the study of psychedelics as “set-and-setting.” The concept, which was first proposed by Timothy Leary and his group at Harvard, claimed that the char-

acter of a psychedelic experience is determined first and foremost by the user’s character, expectations and intentions (Set), as well as by the social and physical surrounding in which the drug experience takes place (Setting). Leary went as far as to claim that 99% percent of the specific response to LSD is determined by set-and-setting.

Set-and-setting go a long way in explaining the highly variant results published by the LSD psychiatrists of the 50s and 60s. 1950s psychotomimetic drug experiments normally took place in highly impersonal surroundings like stark hospital rooms and mental wards. The subjects were often mental patients, and other socially disadvantaged populations such as prisoners, drug addicts, and ethnic minorities who had little choice about participating in the studies. The social sur-

rounding was not very much in the way of relaxation, unless one enjoys the company of unfamiliar medical personnel looking for signs that their patients are becoming psychotic. During the experience, long batteries of physical and psychological tests were often conducted. The subjects usually knew little about the drug experience, except for the suggestions by doctors and other personnel that the drug turns those who take it into schizophrenic madmen.

By contrast, completely different set-and-setting conditions are to be found when one examines the experiments conducted by many of the prominent psychedelic scientists of the late 1950s and early 1960s whose focus was on LSD as a therapeutic, creative, and spiritual tool.

The LSD subject who participated in these sessions was often an artist or graduate student. He had come to the study voluntarily, had often been given a preparatory introduction to the session, and brought to expect a positive and meaningful experience. The relationship with the researcher was of a more personal nature. Sessions were often performed in living

LSD’s action is thus primarily not psychotomimetic, psychotherapeutic, creative, or even spiritual—but just what it is: mind-manifesting. It acts as a mirror and magnifying glass to its user’s state of mind.

rooms, or in cozily furnished rooms, where much attention has been dedicated to creating a pleasant surrounding by offering music, flowers, candles, and sometimes a small collection of art books. The person going through the experience would usually have the time to explore the experience for himself, without being asked to go through endless batteries of tests.

The thesis that the extremely different set-and-setting conditions used by different groups of LSD scientists have led to the highly divergent accounts on its effects has been suggested by a number of researchers including Timothy Leary, Ralph Metzner, and Sidney Cohen in the 1960s as well as by later observers such as Lee and Shalin (1985), Dyck (2008), and Fadiman (2011).

In my research, I tested the “Set-and-Setting Hypothesis” by examining the set-and-setting conditions in 1950s and 1960s psychedelic studies, according to nine variables of set-and-setting.

In examining psychotomimetic vs. psychedelic research, significant and even polar differences have been found in eight of the nine variables of set-and-setting. The evidence strongly supports the claim that set-and-setting conditions had played a crucial role in shaping the results of 1950s and 1960s LSD research, and in molding the contours of the psychedelic controversy.

The implications of this theory exceed the boundaries of 1950s psychiatric research significantly. They teach us a valuable lesson about how psychedelics function as a technology, and about the way psychedelic drugs interact with societies and cultures.

THE PSYCHO-SOCIAL CONSTRUCTION OF TECHNOLOGY

Technology scholars have invented a theory by the name of Social Construction of Technology (SCOT) theory. The theory suggests that technology is shaped by social and cultural conditions, as much, if not more, than by “objective” scientific and technological concerns.

According to Pinch and Bijker, each technological artifact has an “interpretative flexibility”—its function and use can be understood in a variety of ways which determine its fate. For

example, they show that the course of the technological development of the 19th century high-wheeled bicycle was determined by the varying interpretations of the function of the bi-

cycle. Athletic young men viewed the high-wheeled ordinary bicycle—an unsteady vehicle which demanded great physical dexterity to ride—as an exhilarating sports vehicle and a way to show off their masculinity. However, for women and older men, who wanted to use the bicycle for transportation, the high-wheeled bicycle was simply an unsafe bicycle which demanded fundamental improvements. These different interpretations

of the bicycle and its uses led to two different traditions of bicycle design seeking to address different problems and challenges.⁴ According to Bijker, “the interpretative flexibility of an artifact can be demonstrated by showing how for different social groups, the artifact presents itself as essentially different artifacts.”⁵

The story of LSD demands adding another layer to the standard SCOT model. Because the character of the effects created by the LSD technology was dependent not only on the social conditions but also on the psychological conditions, and because the experience itself mirrored the interaction of the drug with the user’s state of mind, LSD demands adding a psychological layer to its SCOT interpretation and creating a new model which I call PSCOT: Psycho-Social Construction of Technology.

Different relevant social groups might look at a bicycle and interpret it to be two different things, but that won’t hinder the concrete technological artifact, in this case the bicycle, from behaving identically when operated by users with different conceptions of what a bicycle might be. That, however, was not the case with LSD.

Because the content and character of the LSD experience is determined and shaped by the user’s state of mind, LSD is

LSD played as a kind of psychopharmacological trickster that fooled the entire psychiatric and psychological establishment of its time by presenting itself in different forms to different groups of people in different times and places.



The high-wheeled bicycle.



Popular reading on LSD: (from left to right) Saturday Evening Post, Nov. 2, 1963; This Week Magazine, Nov. 8, 1959. Images courtesy of psychedelic researcher Patrick Lundborg, www.lysergia.com.

indeed a mind-manifesting drug: a technology which manifests its user's state of mind, as suggested by the literal meaning of the word "psychedelic" (*psyche*: mind, *delos*: manifest).

LSD's action is thus primarily not psychotomimetic, psychotherapeutic, creative, or even spiritual—but just what it is: mind-manifesting. It acts as a mirror and magnifying glass to its user's state of mind. If the state of that mind is anxious, LSD could easily function as an anxiety-inducing drug. If it is creative, then it could equally serve as a creativity enhancer. Should it be spiritual, then spirituality will be enhanced.

The variety of uses for LSD in the 1950s and 1960s was staggering. It included no less than nine main conceptions of LSD, among them: as a psychotomimetic, a psychotherapeutic tool, a creativity enhancer, a spiritual sacrament, a mind control tool (by the CIA), a battlefield weapon (by the U.S. Chemical Corps), and a revolutionary molecule (by groups such as the Yippies and The Weathermen).

For each of these groups, LSD represented something different. Each of them created a set and a setting which was distinctly different and which reproduced the effects of the drug in a novel form, much in the way that each psychedelic experience recreates LSD in the unique form created by the psychological and social conditions in which it is taken, never to be recreated.

Because each state of mind is singular and non-replicable, each LSD experience was singular. The nature of LSD as a technology is singular itself, because it is formed in numberless ways in numberless different LSD trips. LSD as a technology reminds us of the Deleuzian concept of the "imperceptible"—it slips any attempt at characterization by playing as a kind of psychopharmacological trickster that managed to fool the entire psychiatric and psychological establishment of its time by presenting itself in different forms to different groups of people in different times and places.

THE COLLECTIVE SET-AND-SETTING

The LSD of the 1950s differed from the LSD of the 1960s because they reflected two dissonant eras in the history of America: the 1950s with its Protestant work ethic and conservative Cold War mentality, versus the 1960s with its turbulent political, cultural, and spiritual movements.

Set-and-setting are socially constructed—they are shaped by the wider society and culture in which the psychedelic experience takes place. All the most important variables of Set-and-setting are determined by social surroundings. The character of a person is formed to a great extent by his surrounding society and culture, as are his expectations and intentions when coming to a drug experience. Physical and social settings are also the reflection of the society and culture in which the experience takes place. Different societies in different times in history would have different set-and-setting conditions which shaped the character of the LSD experience in different ways.

One can thus differentiate between two types or levels of set-and-setting: individual and collective. *Individual set-and-setting* represents the concrete set-and-setting conditions in which the psychedelic experience takes place for an individual: the concrete character, expectations, and intentions of that person, as well as the concrete physical and social environment in which the experience takes place. *Collective set-and-setting*, by contrast, represents the social and cultural context in which the psychedelic experience takes place, and which frames the individual set-and-setting in the most intimate of ways. It is composed by the society's character, its knowledge and attitude towards the psychedelic experience, as well as by the physical and social settings provided in that society.

The collective set-and-setting conditions presented by a society are its values, its social structure, and its culture. As a result, the set-and-setting conditions provided by the two

Americas diverged crucially, reflecting the turbulent shift in the American society of the 1960s.

THE AMERICAN TRIP

The late 1950s and early 1960s were a crucial time for the evolution of the American culture and society of the 1960s. Influential writers such as Kenneth Galbraith (*The Affluent Society*), William Whyte (*Organization Man*), and C. Wright Mills (*The Power Elite*) were casting a critical look at American capitalism, corporate culture, and power structures. Subjects such as ecology and women's rights received increasing attention following the writing and activism of figures such as Betty Friedan (*The Feminine Mystique*) and Rachel Carson whose seminal book *Silent Spring* brought the issue of ecological damage to the fore. Social theorists such as Hebert Marcuse, Norman O. Brown, and Paul Goodman decried Western culture as repressive and raised doubts over the whole project of civilization. Fictional pieces such as Salinger's *Catcher in the Rye*, Heller's *Catch 22*, and Kubrick's *Dr. Strangelove* poked at the "phony" and authoritative society. In the world of psychiatry, a series of books by writers such as R.D. Laing, Thomas Szasz, and Ken Kesey launched the anti-psychiatry movement which questioned the traditional definitions of sanity and insanity and offered that "mental illness" is in fact a normal reaction, of sometimes spiritual dimensions, to the conditions created by an insane society.

Such factors shaped the collective set-and-setting conditions, the social and cultural background against which LSD made its appearance, and which shaped the reception of LSD into American society and culture.

Robert Forte once stated in an interview that it is remarkable that one decade before Leary and Alpert were driven out of Harvard for giving LSD to undergraduate students, the Boston Psychopathic Hospital doctors working under the psychotomimetic paradigm used Harvard undergraduate students in their LSD research and nothing happened "in terms of social movement, controversy, or visionary breakthroughs." Forte's surprise is justified. The explanation for this discrepancy in the impact which LSD had in the 1950s and in the 1960s in two research facilities just a few kilometers away, is rooted of course in the essentially different set-and-setting conditions, individual and collective, into which LSD was brought.

When LSD was used by 1950s Harvard students there was so little happening in terms of "social movement, controversy, or visionary breakthrough" because the array of set-and-setting which allowed LSD to become what it became in the 1960s was not yet in place. In an era governed by the communist scare and a conservative mentality, LSD was in the hands of the CIA, and the young generation who would take LSD and turn it into a countercultural symbol was not yet in sight, as well as the

whole cultural and spiritual climate which would sustain such a movement.

John Perry Barlow once said something to the effect that the 1960s could be regarded as one long and collective trip experienced by the American nation when it confronted psychedelics. The concept of collective set-and-setting explains why it is indeed so. The LSD of 1960s America was a unique technological artifact shaped by the unique social and cultural conditions of 1960s America. It is different in its action and properties from the same molecule used in different places or times. The American trip of the 1960s was a singular collective psychedelic event expressing the collective set-and-setting conditions of America at the time.

In the 1960s American society had a difficult trip with psychedelics which resulted in their prohibition. It has taken 20 more years for psychedelic research to be resumed. The fate and outcome of the nascent psychedelic renaissance of the new millennium could be completely different. It is dependent first and foremost on the collective set-and-setting conditions of our present society and culture. ●

The LSD of 1960s America was a unique technological artifact shaped by the unique social and cultural conditions of 1960s America.

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MDMA-Assisted Psychotherapy: How Different is it from Other Psychotherapy?

MICHAEL MITHOEFER, MD



Michael Mithoefer, MD

“HAVE A BIG STORY OR no story at all, but don’t have a small story.”

These words resonated deeply for me when I first heard them from Stan Grof over 20 years ago. They’re always in the mix when I think about what we know and what we’re discovering about psychological healing—even the term “psychological healing” implies a small story separating psychology from physiology, spirituality, and other possible levels of healing. In research we need to formulate and test hypotheses, which are of necessity small stories or only small parts of a much bigger story. However elegant and illuminating our hypotheses may be, there is the danger that they will become conceptual traps limiting our capacity to observe and respond to the unexpected. A comprehensive understanding of the human psyche remains elusive and is no doubt far beyond any of our limited hypotheses.

For me, doing MDMA research in a rigorous, scientific way always involves a tension between striving to understand and not needing to understand. The ongoing challenge is to balance my intention not to be attached to any story at all—to be open and receptive to unexpected discoveries when we’re sitting with people in MDMA psychotherapy sessions—with the inescapable and potentially fruitful propensity of my rational mind to weave new discoveries into our evolving understanding of therapeutic methods and mechanisms. Without losing sight of this compelling tension, which is inherent to some degree in any psychotherapy, I want to discuss some of the similarities and differences between MDMA-assisted psychotherapy and other approaches to psychotherapy for Posttraumatic Stress Disorder (PTSD).

No one knows how any psychiatric treatment, psychotherapy, or psychopharmacology actually works, even when we understand the essential elements or many of the physiologic effects. MDMA-assisted psychotherapy is especially complicated in this regard because it combines psychotherapy and psychopharmacology. There are many papers describing MDMA’s effects in the brain and the rest of the body, and some speculating on the mechanisms of its therapeutic effects, but there are no published studies designed to test hypotheses about pharmacological and psychotherapeutic mechanisms of MDMA-assisted psychotherapy. MAPS-sponsored studies thus far are designed to measure safety and effectiveness, but not to determine mechanism of action. As funding allows, we hope to investigate potential mechanisms by adding neuroimaging and other physiologic measures to future protocols. In addition, other researchers are beginning to conduct qualitative analyses of our session recordings in attempts to discover more about the psychotherapeutic process involved. In the meantime, our observations about possible therapeutic mechanisms are speculative, based on clinical observations

during MDMA research sessions and limited in precision by the complexity of the process.

Psychotherapy exerts effects on many levels, emotional, cognitive, physical, energetic, and spiritual. The course of therapy is determined by the individual's own inner healing intelligence interacting with facilitation by the therapists in the context of the therapeutic relationship. In MDMA-assisted psychotherapy, the direct pharmacologic effects of MDMA are occurring in conjunction with this complex psychotherapeutic process, hopefully acting as a catalyst to its healing potential. Further, this interaction is a two-way street: Neurophysiologic effects influence psychotherapy and psychotherapy itself changes the brain. At this stage, no discussion of the therapeutic elements involved can encompass more than part of the picture. We can learn from this reductionism but should be careful not to "confuse the map with the territory." We strive to do rigorous science without losing sight of the remarkable richness of the process as we observe and participate in it.

My wife Annie and I have had the opportunity to act as co-therapists in MDMA-assisted psychotherapy for PTSD in our first MAPS-sponsored study completed in 2008 and our ongoing study with veterans, firefighters, and police officers suffering from chronic PTSD. We've also learned from many others by reading and sharing observations and insights with other researchers: Jose Carlos Bouso, Marcela Ot'alora, Peter Oehen, and Verena Widmer, who have done or are doing similar studies, and with George Greer, Reque Tolbert, Stanislav Grof, Ralph Metzner, Torsten Passie, and others who had experience doing MDMA-assisted psychotherapy before it became a scheduled compound. The comparisons I draw below are based on these

opportunities to learn about MDMA-assisted psychotherapy contrasted with my training and clinical experience using other methods over the years.

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At first glance, MDMA-assisted psychotherapy looks very different from any conventional treatment: participants lying on a futon, sometimes with eyeshades and headphones listening to music with male and female therapists sitting on either side for at least eight hours (not exactly the approach I was taught in psychiatry residency, though very much like the approach we learned in the Grof Transpersonal Training). Despite these obvious dramatic differences, with a closer look most

therapists would recognize that MDMA-assisted psychotherapy includes familiar elements that play important roles in the beneficial effects of other models of therapy. This is not surprising since each approach, in the context of a therapeutic relationship, is stimulating access to the

individual's innate, universal healing capacity. Many of the therapeutic elements that are directly elicited by therapists in more established methods occur spontaneously with the less directive approach we use in MDMA-assisted therapy.

For me, doing MDMA research in a rigorous, scientific way always involves a tension between striving to understand and not needing to understand.

ELEMENT 1

Establishing a Safe and Supportive Therapeutic Setting and a Mindset Conducive to Healing

These are essential elements of any safe and effective treatment for PTSD. At the outset of all established therapies and in the introductory sessions preceding MDMA-assisted therapy, therapists play an active role in establishing a therapeutic alli-

ance. In order to safely proceed, therapists must assess and possibly augment a client's support systems and their own resources for affect management and self-care. People with PTSD often have difficulty trusting, so trauma therapists of all kinds know that the therapeutic alliance and the client's resources may be thoroughly tested during the emotional challenges of trauma processing. MDMA-assisted psychotherapy is by no means immune from these challenges, but does have a potential advantage. The effects of MDMA appear to increase the likelihood that participants will be able to maintain enough trust in the therapists and a broad enough perspective about their own inner experience to process their fears without emotionally or physically withdrawing from the therapeutic alliance. (Sections in italics are quotes from study participants.)



Michael Mithoefer, MD working with study data.

"I keep getting the message from the medicine, 'trust me.' When I try to think, it doesn't work out, but when I just let the waves of fear and anxiety come up it feels like the medicine is going in and getting them, bringing them up, and then they dissipate."

"Without the study I don't think I could have ever dug down deep, I was so afraid of the fear."

"Maybe one of the things the drug does is let your mind relax and get out of the way because the mind is so protective about the injury."

ELEMENT 2

Anxiety Management Training (AMT)/Stress Inoculation Training (SIT)

Any psychotherapy that involves revisiting and processing trauma is likely to temporarily increase anxiety and other powerful emotions, so participants should have tools for managing symptom exacerbations as needed throughout the course of therapy. Cognitive Behavioral Therapy (CBT), including Prolonged Exposure (PE) and others, usually includes teaching a relaxation method at the outset. Eye Movement Desensitization and Reprocessing (EMDR) calls for this as well, often using guided visualizations. During introductory sessions in MDMA-assisted psychotherapy we teach mindful diaphragmatic breathing or reinforce any other method the participant may have

found effective. It's important not to underestimate the degree to which participants in MDMA-assisted psychotherapy for PTSD may need and benefit from ongoing support during the integration period in the days and weeks following MDMA-assisted sessions. MDMA catalyzes deeper processing during

MDMA-assisted sessions, so it often requires closer attention to the challenges of integrating these deep experiences into everyday consciousness and daily life.

"Now that the medicine has worn off I sometimes feel guilty for saying the things I did about my parents not being emotionally available. I know it wasn't about blame, but there's still that judging voice that says we don't talk about any of this."

"I got a glimpse of more of what I'm capable of growing into...I'm motivated to keep practicing openness until it gets more developed."

ELEMENT 3

Exposure Therapy

Revisiting traumatic experiences during therapy is a mainstay of Prolonged Exposure, Cognitive Processing, and other types of Cognitive Behavioral Therapy for PTSD. In these models, "imaginal exposure" is accomplished by asking the participant to repeatedly read or recite an account of their traumatic experience. Likewise, EMDR starts with a "target," usually an image, associated with a traumatic event that carries an emotional charge and associated negative cognitions.

In MDMA-assisted psychotherapy we have an agreement with participants that the therapists can bring up the index trauma at some point during each MDMA session if it does not come up spontaneously, but in almost 100 MDMA research sessions to date we have never had to do so. The trauma always comes up, and we think it is preferable to allow it to come up at whatever time and in whatever way it does so spontaneously for each individual. This is in keeping with the principle that the optimal tactic is for the therapists and the participant to approach each session with a largely non-directive stance, or "beginner's mind," in order to allow the individual's own healing intelligence to determine which course the session will take. At some point in the session this will result in a form of exposure

therapy in which MDMA acts as a catalyst by providing emotional connection, increased clarity about trauma memories, and a sense of confidence that painful experiences can be revisited and processed without becoming overwhelming. In many cases this imaginal exposure occurs early in the session, but sometimes it comes up only after affirming experiences have provided greater inner strength from which to face the trauma memories. These affirming experiences are important elements of the therapy and we encourage participants to accept them as such, rather than assume, as some participants do, that facing pain is the only productive use of the time.

"I had never before felt what I felt today in terms of loving connection. I'm not sure I can reach it again without MDMA but I'm not without hope that it's possible. Maybe it's like having an aerial map so now I know there's a trail."

The effects of MDMA appear to increase the likelihood that participants will be able to...process their fears without emotionally or physically withdrawing from the therapeutic alliance.

"The medicine just brought me a folder. I'm sitting at this big desk in a comfortable chair and the medicine goes and then rematerializes in physical form bringing me the next thing—this is a folder with my service record. It says I need to review it and talk to you about it from the beginning so it can be properly filed."

"It's like, every time I go inside I see flowers and I pick one, and that's the thing to work on next. And there are things that are hard to take, but each time I move through them it feels so much better."

"I realize I'm not trying to break through anything. It has to be softly opening. With the medicine nothing felt forced. I know I'm going to have to feel the feelings and there's still fear that the grief will be overwhelming, and I know feelings are unpredictable and the currents can be swirly, but yesterday when I put my toe in it felt so wonderful to feel. I remember every detail, it's a pristine, pristine image."

"It wasn't an easy experience but it was so worth it. It was a very spiritual experience, very expansive. I feel a sense of calm and stability now."

ELEMENT 4

Cognitive Restructuring

Cognitive Behavioral therapy teaches people to recognize negative thoughts and beliefs and cognitive distortions, to challenge them using the Socratic method and then modify them by arriving at a rational response. In EMDR the approach is largely nondirective and cognitive restructuring often occurs spontaneously, sometimes catalyzed by the therapist adding a

"cognitive interweave" if needed. In psychodynamic therapy, with the help of interpretations from the therapist, clients come to understand the meaning of traumatic experiences and the associated reactions and beliefs based on developmental history and prior relationships and psychological conflicts.

In MDMA-assisted psychotherapy, cognitive restructuring may result from dialogue with the therapists using elements of CBT, psychodynamic therapy, and other methods according to the individual therapists' training and experience as allowed for in our research Treatment Manual [available at maps.org]. In addition, the effects of MDMA can lead to profound insights

about cognitive distortions with little or no intervention from the therapists. Our largely nondirective approach often results in spontaneous cognitive restructuring resulting from qualities engendered by MDMA: increased mental clarity, confidence, and the courage to look honestly at oneself.

"I feel like I'm walking in a place I've needed to go for so long and just didn't know how to get there. I feel like I know myself better than I ever have before. Now I know I'm a normal person. I've been through some bad stuff, but...those are things that happened to me, not who I am...This is me, the medicine helps, but this is in me."

ELEMENT 5

Transference and Countertransference

These terms refer respectively to the feelings that arise in the client toward the therapists and vice versa, as they are unconsciously influenced by earlier experience, especially childhood experiences with parents. Awareness of these feelings is important in any psychotherapy and is specifically addressed in psychodynamic psychotherapy, aimed at making the unconscious conscious as this becomes tolerable in the course of therapy. In MDMA-assisted psychotherapy we discuss transference and countertransference in the introductory sessions in preparation for the fact that these feelings can be considerably heightened by MDMA and the setting of all-day sessions. We introduce them as normal phenomena that provide an opportunity for discovering and processing previously unconscious material in the present moment.

We know that participants taking MDMA can be exquisitely sensitive to verbal and nonverbal expression from the therapists, and we encourage honesty and openness about any feelings that arise. We make explicit our intention to be forthcoming about any questions participants may have about us and not to take it personally if they are angry or displeased in reaction to anything we say or do. MDMA may make the unconscious conscious at a rapid rate while also increasing the partici-

part's capacity to acknowledge and discuss transference issues and to tolerate and benefit from this faster rate of change. At the same time the therapists are challenged to be aware of their own reactions and to be honestly and empathically engaged with the participant from moment to moment. Happily, if the therapists are honest about their own limitations and blind spots the participant taking MDMA is likely to be empathic toward them.

"OK, I'm ready to talk to you now Michael. Have you noticed that every time I've talked to you before I've tried to impress you with how smart I am? That's what I did with my father because he was smart and wasn't around much. Now I'm ready to have a real conversation with you."

ELEMENT 6

Working with the Multiplicity of the Psyche

The human psyche is not unitary; we all have different parts. This phenomenon is widely recognized, but in psychiatry the terminology and theories about it are far from unified. Nevertheless, I think "dissociation," "parts," "sub-personalities," "selves," and "complexes" are all referring to the same or to overlapping phenomenon. When manifestations of multiplicity are on the extreme end of the spectrum they're called Dissociative Identity Disorder (formerly Multiple Personality Disorder). In the soon-to-be-released DSM-V there will be a new "dissociative subtype" of PTSD—a recognition that people with PTSD often have increased levels of dissociation or blending with their parts.

Several psychotherapy models recognize multiplicity as a normal phenomenon (though problematic at the more extreme ranges of the spectrum), and provide specific methods for working with it therapeutically. These models include Psychosynthesis, Voice Dialogue, and Internal Family Systems Therapy (IFS). In our experience, MDMA in a therapeutic setting often raises awareness of different "parts" of the psyche and simultaneously brings forth more "self-energy" to allow exploration of the parts with greater compassion and clarity ("parts" and "self-energy" are IFS terms; other models would describe the same phenomenon somewhat differently). We've been conducting a small internal pilot study within our current study of veterans, firefighters, and police officers with PTSD, tracking how often awareness of parts comes up. Our preliminary analysis reveals that study participants have spontaneously brought up their awareness of different parts of themselves in 81% of the MDMA-assisted sessions, and greater understanding and acceptance of these parts have often been important elements in the therapeutic process.

"I realize that part of me is not a monster, he's a warrior, a valuable part of me, and he needs healing too."
(paraphrased)

ELEMENT 7

Somatic Manifestations of Trauma

CBT, EMDR, and psychodynamic therapy may bring attention to somatic experiences, but do not include working directly with the body through movement or physical touch. There are, however, a number of innovative and effective methods that emphasize connections between psychological symptoms and physiological states. These methods—Sensorimotor Psychotherapy, Somatic Experiencing, Holotropic Breathwork, Hakomi, and others—use focused attention, breath, movement, and/or touch to encourage expression and release of sensations that come up in the body during trauma therapy. MDMA-assisted psychotherapy often includes focusing attention on body sensations and using breath and movement to facilitate awareness, expression and release of tensions, or pains in the body. Our approach can also include either nurturing touch or focused bodywork, always with careful attention to permission from the participant. Working with these body sensations led to release of much of the anger and sadness.

"The anger feels like a volcano, I'm afraid of being a one man wrecking crew, I feel such sadness, loneliness, nausea."

The factors that lead to healing in MDMA-assisted psychotherapy are no more mysterious than those in any other method of therapy. Some factors are recognized and can be refined and disseminated, others are on the brink of being discovered, and many remain hidden in the complexities and mysteries of a much bigger story about the true mechanisms of human growth and healing. Since imagery is the language of the unconscious, images may come closest to describing what occurs. As an Iraq war veteran who participated in our study recently put it:

"It feels almost like the inner healer or the MDMA is like a maid doing spring cleaning. It's as if you thought you were cleaning before but when you got to things you didn't really want to deal with you'd just stick them in the attic. If you're going to clean the house you can't skip the stuff in the attic." 🌀

Michael Mithoefer, MD is a psychiatrist practicing in Charleston, SC, where he divides his time between clinical research and outpatient clinical practice specializing in treating posttraumatic stress disorder (PTSD) with an emphasis on experiential methods of psychotherapy. He is a certified Holotropic Breathwork Facilitator and trained in EMDR and Internal Family Systems Therapy. He can be reached at mmithoefer@mac.com.

*"If you're going to clean
the house you can't skip
the stuff in the attic."
—study participant*



Peter Gasser, MD

Update: LSD-Assisted Psychotherapy for Anxiety Associated with Advanced-Stage Life-Threatening Diseases: A Phase-II, Double-Blind, Placebo-Controlled Dose-Response Pilot Study

PETER GASSER, MD

THIS STUDY ON LSD-ASSISTED PSYCHOTHERAPY was designed after the 100th birthday symposium for Albert Hofmann in Basel, Switzerland in 2006, and was fully approved in November 2007. Since then, we have finished the treatment phase of 12 persons with life-threatening somatic diseases (e.g. cancer) with associated anxiety due to existential threat. Eight persons received two day-long experimental sessions with a full dose of 200 µg of LSD about 3 weeks apart, supplemented by weekly non-drug psychotherapy sessions for preparation and integration purposes. Four participants received an active placebo dose of 20 µg of LSD, supplemented by weekly non-drug psychotherapy sessions for preparation and integration purposes, with the possibility of crossing over to the full-dose treatment on an open-label basis after having had two low-dose/placebo experiences. Three of the four placebo participants crossed over to full-dose LSD experiences. We conducted 22 full dose LSD sessions in 11 participants.

Two and 12 months after the second LSD sessions, we conducted follow-up interviews and completed measures of anxiety. By July 2012, all of the 12-month follow-up interviews had been completed. We are presently preparing the final report to the Swiss drug control authority (Swissmedic) and a scientific paper is in progress, reporting the treatment safety and efficacy and the results of the 12-month follow-up.

The study was a success in the sense that we did not have any noteworthy adverse effects, all participants reported a personal benefit from the treatment, and the effects were stable over time. [Editor's note: The results were clinically significant, but not statistically significant due to the small sample size of 11 subjects.]

In their follow-up interview, participant #10 reported:

"The crucial thing with LSD is that you can explore these spaces of consciousness...You can be relaxed when

you queue up in the supermarket...I am sure that you can enter these spaces of consciousness without LSD. Meditation is the tool, but there is more power with LSD and in shorter time. You don't take LSD like daily meditation."

The therapeutic method we used involved exploring the spaces of consciousness in safety and gently guided by experienced therapists. Participant #10 says:

"I felt gratitude, that I was allowed to do that. That these people [the co-therapists] have made it possible. They supported me...I could cry or shout out loudly out of happiness. Such a happiness this was...I got a copy of the music that was played throughout the day and when I play it, [it] is like a gas station; I can fill myself with positive energy."

I am looking forward to continuing to investigate LSD as an adjunct to psychotherapy. We already have positive signs from the Swiss Ministry of Health that further investigations could be approved.

I am presenting the study and results at the Psychedelic Science 2013 conference in Oakland on April 19, 2013, the 70th anniversary day of the discovery of LSD by Albert Hofmann. 🌐



Setting for LSD-assisted psychotherapy.

Peter Gasser, MD is a physician of psychiatry and psychotherapy, working in private practice in Solothurn, Switzerland. He was trained in psychodynamic methods as well as in therapy with mind altering drugs, i.e. psycholytic (psychedelic) therapy. He has been a member of Swiss Medical Society for Psycholytic Therapy (SAePT) since 1992 and President since 1996. Dr. Gasser conducted the first study of the psychotherapeutic use of LSD in over 35 years. He can be reached at pgasser@gmx.net.

Psychedelic Breakthroughs in Neuroscience: How Psychedelic Drugs Influenced the Growth and Development of Psychopharmacology

NICHOLAS V. COZZI, PhD



Nicholas V. Cozzi, PhD

IN THE MID-20TH CENTURY, the prevailing views in psychology and psychiatry were that mood, desires, feelings, memories, behaviors, and personalities were determined by environmental histories, childhood experiences, the interplay among reward, punishment, repression, and reinforcement, the unconscious mind, and psychosexual mechanisms, among others. Brain activity was believed to be essentially electrical in nature. Before the 1940s and early 1950s, the notion that consciousness was influenced, if not determined, by the actions of chemicals produced in the brain, was completely foreign. Important events that transformed the existing paradigms and birthed the fields of neurochemistry and neuropharmacology, leading directly to the development of psychopharmacology as a scientific discipline, are in fact centered around the discovery and investigation of the psychoactive effects of lysergic acid diethylamide (LSD), *N,N*-dimethyltryptamine (DMT), psilocybin, and other psychedelic substances.

Perhaps the most important discovery springing from psychedelic drug research was the revelation of the role of serotonin in mental processes. Serotonin, whose chemical structure was determined in 1949 (Rapport, 1949), was known to be present in clotted blood since the late 1800s (Ludwig and Schmidt, 1868). Here, it has a hemostatic role: it helps prevent bleeding when tissues are damaged. Upon injury, serotonin is released from blood platelets, producing local vasoconstriction and stimulating further platelet aggregation, helping to form a clot and stanch bleeding. When serotonin was also found in brain tissues in the early 1950s, a potential role for serotonin in brain function and consciousness was hinted at. The discovery of serotonin in the brain was made independently and simultaneously by a team in the United States (Betty M. Twarog and Irvine H. Page) and another team in Edinburgh, Scotland, led by Sir John H. Gaddum (Amin *et al.*, 1954; Twarog and Page, 1953). But it was Gaddum's self-experiments with LSD that were especially important in shaping early theories of the involvement of serotonin in consciousness.

Sir John H. Gaddum was a British pharmacologist who was involved in early serotonin research. On four separate occasions in 1953, Gaddum ingested LSD to learn of its effects in him (Green, 2008). Thanks, no doubt, in part to these self-experiments and in part to observations from his *in vitro* laboratory experiments with LSD and serotonin, Gaddum became the first person to propose a relationship between LSD and serotonin (Gaddum, 1953a) and to then suggest that the effects of LSD on serotonin function were responsible for LSD's psychedelic effects. His handwritten notes from a self-experiment with 86 micrograms of LSD on June 1, 1953 read as follows (Gaddum, 1953b):

9:48 My hand looks queer like a monstrous picture of a hand—that writhes about until I fix it with a look. It has interesting contrasts in its colours. I see it like an over-real picture—feel rather strange to it—as if it was someone else's [sic]. Everything in the room is rather unstable. Methedrine has not abolished the effect on sensations.

He went on to write: "The evidence for the presence of HT (n.b., HT refers to serotonin) in certain parts of the brain may be used to support the theory that the mental effects of lysergic acid diethylamide are due to interference with the normal action of this HT." (Amin *et al.*, 1954). Thus, in the person of Sir John Gaddum, there is a confluence of first-hand LSD experience and a fledgling chemical neuroscience.

Independently, D.W. Woolley and E. Shaw in New York proposed "...that the mental disturbances caused by lysergic acid diethylamide were to be attributed to an interference with the action of serotonin in the brain." (Woolley and Shaw, 1954). They further state that "Gaddum also was cognizant of the mental effects of lysergic acid diethylamide and of the occurrence of serotonin in the brain. We have surmised that he has been thinking,

just as we have, about the relationship of serotonin to the mental disturbances induced by the drug.” Unlike in the case of Gaddum, however, there is no evidence that Woolley or Shaw ingested LSD themselves. Later, they wrote (Woolley and Shaw, 1954):

“The thesis of this paper is that these pharmacological findings indicate that serotonin has an important role to play in mental processes and that the suppression of its action results in a mental disorder. In other words, it is the lack of serotonin which is the cause of the disorder. If now a deficiency of serotonin in the central nervous system were to result from metabolic rather than from pharmacologically induced disturbances, these same mental aberrations would be expected to become manifest. Perhaps such a deficiency is responsible for the natural occurrence of the diseases... In summary, the suggestions we wish to make are the following: (1) serotonin probably plays a role in maintaining normal mental processes; (2) metabolically induced deficiency of serotonin may contribute to the production of some mental disorders; (3) serotonin or a long-acting derivative of it may prove capable of alleviating disorders similar to schizophrenia.”

In these early reports, one finds the seeds of ongoing research and development of modern psychotherapeutic drugs, which has produced a billions-of-dollars-a-year pharmaceutical industry aimed at modifying the actions of serotonin and other neurotransmitters in the brain to treat mental diseases.

DMT has also had an important influence in the evolution of our thinking on normal and extraordinary states of consciousness. In 1961, Nobel laureate Julius Axelrod made the remarkable discovery that mammalian tissue (rabbit lung) had the ability to synthesize DMT (Axelrod, 1961). This finding was extended in the early 1970s when it was reported that biopsied human brain tissue could carry out this same biotransformation (Mandell and Morgan, 1971; Saavedra and Axelrod, 1972). The discovery that human brain tissue could produce, at least *in vitro*, small amounts of DMT, led to much speculation regarding the possible role of DMT in human consciousness. However, the analytical technology at that time was not as sensitive or robust as current methods. While some investigators were able to confirm the presence of DMT in human tissues and fluids, others failed to do so. Some scientists at the time believed that the *in vitro* observations of Axelrod and other researchers were experimental artifacts. The issue was unresolved for almost 30 years. Then, in 1999, Michael Thompson and coworkers at the Mayo Medical School in Rochester, Minnesota, using cloning and sequencing techniques of molecular biology, discovered the human gene that codes for the enzyme (indolethylamine-*N*-methyltransferase; INMT) that synthesizes DMT from tryptamine (Thompson *et al.*, 1999). The Thompson discovery renewed discussion in, and significantly strengthened hypotheses about, a role for endogenous DMT in states of consciousness such as spiritual exaltation, dreams, creativity, near death experiences, and other possible physiological roles. The view that the presence of DMT in mammalian tissues is only an artifact now seems untenable. More recently, our group at the University of Wisconsin School of Medicine and Public Health in Madison, Wisconsin, using immunohistochemical techniques, has extended the original work of Thompson *et al.* by identifying the INMT protein itself in several primate central nervous system

tissues (Cozzi *et al.*, 2011; Mavlyutov *et al.*, 2012). To couple the presence of the INMT protein in brain tissues with the biosynthesis of DMT within these tissues, in real-time, remains a challenging research objective. For interested readers, a critical review of the scientific literature of the past 55 years regarding the presence of DMT and other tryptamines in human tissues and fluids was recently published by Steven Barker, Ethan McIlhenny, and Rick Strassman (Barker *et al.*, 2012). Incidentally, DMT is present as a core structure in the antimigraine drugs almotriptan, rizatriptan, sumatriptan, and zolmitriptan, though these drugs are devoid of psychedelic activity.

Since the time of Gaddum, research into psychedelics, serotonin, and other neurotransmitters and receptors has continued apace. Building upon the early theories of Gaddum, Woolley, and Shaw regarding the role of serotonin in the pharmacology of LSD, in the 1980s Richard Glennon and colleagues at the School of Pharmacy at Virginia Commonwealth University were the first to name the serotonin 2 receptor (now called the 5-HT_{2A} receptor) as a major binding target for lysergamide, phenylalkylamine, and indolealkylamine psychedelic agents (Glennon *et al.*, 1984; Lyon *et al.*, 1988; Titeler *et al.*, 1988). Over the following two decades, additional binding sites have been discovered and now 40 or more additional psychedelic drug receptor sites have been identified (Ray, 2010). While the 5-HT_{2A} receptor is still widely considered to be a common receptor for psychedelic drug action, it is increasingly becoming recognized that activity at this receptor alone is not sufficient to explain the effects of psychedelic drugs. For example, other serotonin receptors, at least, have been implicated in the behavioral effects produced by indolealkylamine psychedelics in animals (Halberstadt and Geyer, 2011). There is also evidence for the direct or indirect involvement of dopamine, glutamate, norepinephrine, gamma-aminobutyric acid, and other neurotransmitters and their receptors in the actions of these drugs. The 5-HT_{2A} receptor may therefore serve as a “gateway” receptor, activation of which is necessary, but not sufficient, for psychedelic drug activity. Apparently, the simultaneous actions of psychedelic drugs on many or all of the 40+ currently identified receptor sites, with each psychedelic agent having a unique receptor binding and activation profile (a pharmacological “fingerprint”), shapes the variety of subjective experiences produced by these substances. Thus, although the term “psychedelic” is often used as a simplifying term, psychedelic drugs, while producing some *similar* subjective effects in humans, do not produce *identical* subjective effects, as people who have ingested these agents will readily affirm. LSD is experienced differently from mescaline, which is different from DMT, which is different from TMA-2, which is different from psilocybin, which is different from 2C-B, etc. In fact, while *in vitro* data and animal behavioral models are commonly used to study these materials, these approaches are limited in that they tend to blur the qualitative, experiential differences among psychedelic drugs, differences which human beings can easily distinguish. *In vitro* and animal data can supplement, but in no way substitute for, human experience, which of course is the *sine qua non* of psychedelic drug effects. The problem of choosing uniform criteria to define psychedelic drugs and the experiences they produce is certainly not new. According to Alexander Shulgin, “If there is confusion in choosing a term to describe the class of drugs that we shall call the [psychedelics],

then there is chaos in agreeing upon a description of their effects.” (Shulgin *et al.*, 1969). One approach suggested in the 1970s was to define psychedelic drugs to the extent that they mimic the effects of LSD. Although this definition is rather circular, it does put the psychedelic experience itself squarely at the center of the discussion. Lester Grinspoon and James Bakalar proposed that “Whether a drug should be regarded as psychedelic or not can be said to depend on how closely and in what ways it resembles LSD; the resemblance must be judged by the drug’s cultural role as well as by its range of psychopharmacological effects. From this point of view, the group of psychedelic drugs has a clearly defined center and a vague periphery...” (Grinspoon and Bakalar, 1979).

Linking drug-receptor binding to animal behavior to human psychopharmacology remains a tantalizing but incompletely realized goal. Much of the progress that has been made in this area has been thanks to the work of Alexander Shulgin, who designed, synthesized, and characterized over 200 new psychedelic substances in his private laboratory (Shulgin and Shulgin, 1991; 1997). Shulgin’s discovery that the 2-, 4-, 5-substitution pattern on phenylalkylamine compounds led to increased potency in human experiments (Shulgin *et al.*, 1969) provided a preliminary generalization linking chemical structure to psychedelic effects, earlier variants of the LSD structure notwithstanding. While it is now known that several other chemical properties influence drug activity, Shulgin for the first time articulated a credible structure-activity relationship for psychedelic effects. The Shulgin compounds have been used by many other scientists around the world to study *in vitro* drug-receptor binding and activation, for computer-assisted drug modeling and receptor conformation mapping, for neuronal circuitry tracing, for animal behavioral studies, and others. Shulgin’s creations have also added considerable variety to human psychedelic experiences.

It is apparent from the discussion above and from other sources that much and more of present-day research into neurotransmitters and drugs that affect their function in the brain is directly traceable to the experiments and writings of scientists investigating the mechanisms of action of LSD, DMT, and other psychedelic compounds. For a superb historical treatment of this early research, told in autobiographical form by a veritable Who’s Who of the early psychopharmacologists themselves, see the excellent book: *The Rise of Psychopharmacology and the Story of CINP, As Told in Autobiography*, Volume 1; TA Ban, D Healy, E Shorter, eds., published by CINP Central Office, Scotland, UK (1998), ISBN 963-408-105-3; cinp.org. As a consequence of the early studies and discoveries in neurochemistry, the suppositions of psychology and psychiatry with respect to the origin and nature of consciousness and psychological diseases were required to undergo significant revision. It became necessary for psychology and psychiatry to incorporate observations from neurobiology into models of mental functioning. Neurochemistry and neuropharmacology began to as-

sume dominant roles in consciousness research and in the medical treatment of mental illness by the late 1950s and into the 1960s. In particular, it became necessary for psychotherapeutic practices to employ psychoactive drug therapy, rationally derived from the experimental discoveries of neuropharmacology, in their treatment regimens. Thus was psychopharmacology born as a medical and scientific discipline. Although there remains much that could be improved, the effectiveness of these drugs in treating mental illness has undoubtedly benefited countless lives.

Even though human clinical studies with psychedelics were temporarily suspended in the late 1960s and 1970s, research into their basic chemistry, pharmacology, and neuroscience continued (Nichols, 2004). In academia, major research involving the chemical synthesis and pharmacological study of psychedelics was centered in the laboratories of the aforementioned Richard Glennon and of David Nichols in the College of Pharmacy at Purdue University in West Lafayette, IN. George Aghajanian, in the School of Medicine at Yale University in New Haven, CT, added much to our understanding of the effects of psychedelics on neuronal signaling and brain circuitry.

In fact, while in vitro data and animal behavioral models are commonly used to study these materials, these approaches are limited in that they tend to blur the qualitative, experiential differences among psychedelic drugs, differences which human beings can easily distinguish.

Other scientists, too numerous to mention, have employed various animal behavioral models to study these substances. Ongoing academic studies focused on psychedelics can be found in various pharmacy and medical schools and in departments of medicinal chemistry, neuroscience, pharmacology, psychology, and psychiatry. If the interested student diligently examines the scientific literature (PubMed is probably the most useful tool for this), potential research opportunities can be identified at academic institutions around the globe. While many options exist for persons seriously interested in this field, PhD- or MD-level academic study or clinical training, at least, is usually necessary. Several years of post-doctoral training may eventually lead to a role as a principal investigator directing basic science research or as a clinical study director supervising human studies. In any case, post-baccalaureate graduate study at any level will lead to more opportunities to be involved, perhaps as a team member, in doing research with psychedelic agents.

Psychedelics have been used over the past several decades to answer mechanistic questions about receptors, neuronal processes, and animal behaviors, as recounted above. Research with psychedelics supports better understanding of brain function and continues to influence psychopharmacology and the development of improved drugs to treat mental disease. Meanwhile, though, studies of the possible enrichment of people’s lives through the psychedelic experience itself have stagnated until recently. But over the past few years there has been a resurgence in clinical studies with psychedelic agents in human volunteers and a renewed appreciation for their potential to facilitate therapeutic outcomes and for personal growth (Carhart-Harris *et al.*, 2012; Griffiths *et al.*, 2006; Grob *et al.*, 2011). Planned, ongoing, and completed clinical trials involving psychedelics can be found at clinicaltrials.gov; use search

terms such as “psilocybin” or “psychedelic.” The renewed interest in human studies with these agents is good news for people who are interested in the psychological- and spiritual-healing aspects of psychedelic agents, as well as for those interested in nonmedical applications of these substances including their apparent value in self-discovery, enhancing creativity, improving learning, problem solving, and promoting spirituality (Fadiman, 2011; Roberts, 2013). It now seems likely that these properties of psychedelic agents will be more fully explored and new uses for psychedelic drugs might even be discovered in the near future. ●

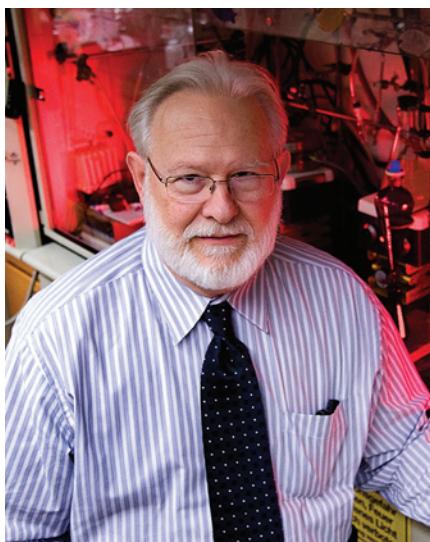
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Serotonin, and the Past and Future of LSD

DAVID E. NICHOLS, PhD



David E. Nichols, PhD

SEROTONIN (5-HYDROXYTRYPTAMINE; 5-HT) IS AN ancient neurotransmitter, biochemically derived in living organisms from the common amino acid known as tryptophan. Receptors for serotonin can be found all along the evolutionary tree, from single-celled organisms to humans. It has been speculated that the earliest serotonin receptor may have appeared around 750 million years ago. All but one of the serotonin receptors are members of what are called Family A type G protein coupled receptors (GPCRs). When something works in evolution, nature tends to keep it, so it is no surprise that serotonin plays roles in a variety of physiological processes in both nervous tissue (e.g. the brain) as well as in numerous other bodily functions. We recognize today that serotonin is involved in a number of behaviors, including perception, appetite, sex, sleep, and cognition, among many others.

Although it is known that the serotonin system is crucial for these actions, none of them are well understood even today, and because of the complexity of the brain it will be a long time before the exact mechanisms of control and modulation by serotonin there are really understood. In contrast to what much of the general public might believe, most of the serotonin in the body (about 90%) is found in the intestinal tract, with very little in the brain. Serotonin also accumulates in blood platelets, a fact that proved to be quite fortuitous for its isolation, as described below.

The discovery of serotonin began with extracts of enterochromaffin cells from the gastrointestinal tract. After a meal, these cells were known to secrete a substance that caused contraction of the intestines, promoting digestion. Vittorio Erspamer, a scientist working in the late 1930s in Rome, Italy, had discovered that acetone extracts of these cells could cause contraction of the smooth muscle from the rat uterus. In those early days a lot of pharmacology was done using tissues from laboratory animals; scientists had very little understanding of mammalian physiology and tried all kinds of experiments in attempts to understand what caused muscles to contract or relax. Erspamer named this substance enteramine, because it had been isolated from the enteric nervous system, the name for the nervous tissue in the gut. He also carried out simple chemi-

cal tests and determined that enteramine contained an indole, a known type of chemical nucleus consisting of two rings fused together. He and his research group published a number of experimental studies on enteramine.

Meanwhile, Irvine Page's laboratory at the Cleveland Clinic had been studying substances that could cause contraction of blood vessels, searching for some natural factor that might be responsible for causing high blood pressure (hypertension). Page's group had discovered that when blood coagulates, a substance is produced that causes blood vessels to contract. Maurice Rapport, an organic chemist in Page's laboratory, along with Arda Green, a biochemist, were able to isolate this contracting factor from two tons of coagulated beef blood that they had obtained from a local slaughterhouse. After allowing the blood to coagulate, it could be centrifuged to sediment out the coagulated cells, producing 900 liters of serum that was enriched in the contracting factor. Of course, they didn't do the preparation all at once, but rather did it in bucketsful over a period of time. Just imagine those two scientists trudging from the slaughterhouse to the laboratory carrying buckets of blood, day after day, and how many buckets it took to total two tons of blood! They were then able to isolate the pure factor from the serum,

*Just imagine those two scientists trudging from
the slaughterhouse to the laboratory carrying
buckets of blood, day after day, and how many
buckets it took to total two tons of blood!*

followed by a variety of chemical tests that culminated, in 1948, in the determination of the chemical structure known today as 5-hydroxytryptamine. The substance was named serotonin, because it had been derived from serum (ser) and caused blood vessel constriction, that is, increased blood vessel tone (tonin). The structure proposed by Rapport was confirmed in 1951 when Hamlin and Fischer, two chemists working at the Abbott Laboratories, prepared the first synthetic serotonin.

In 1952, it was determined that enteramine was identical to the serotonin that had just been identified by Rapport, Green, and Page. After synthetic serotonin was made available for scientific investigation it became the subject of intense

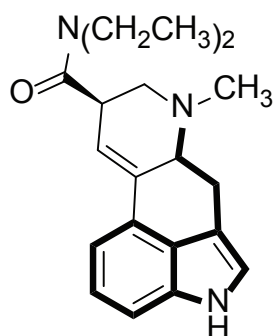
investigation by the scientific community. Whereas there was only one scientific publication on enteramine in 1950, and of course none on serotonin, by the end of 1955 serotonin had been the subject of 222 publications. Irvine Page was even featured on the cover of the October 31, 1955 *TIME Magazine*!

Although it was known that serotonin constricted smooth muscle in the intestines, as well as blood vessels, no one thought that serotonin had any role in brain function. But that notion was soon to change. Betty Twarog, a Harvard Ph.D. candidate, obtained a sample of serotonin from Abbott Labs and discovered

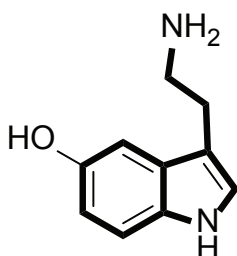
that it contracted the byssus retractor muscle of the edible mussel. She then developed a very sensitive bioassay for serotonin using the isolated heart of the hard shell clam *Venus mercenaria* (“quahogs”). She went to the Cleveland Clinic to work in Irvine Page’s laboratory, and began to assay various mammalian tissues for their serotonin content. Her proposal to test brain tissue for serotonin met with great skepticism from Page, but she readily detected serotonin in the brains of dogs, rats, and rabbits, publishing the surprising results of her work in 1953.

We now go back just a few years to Basel, Switzerland. It was there, in the Sandoz Laboratories in 1943, that Albert Hofmann had discovered the remarkable properties of what we now know as LSD. The first systematic clinical investigation of LSD was carried out in Zurich in 1947, and additional clinical reports on the effects of LSD began to appear in 1949. Initially, LSD was thought to produce a model psychosis and to be a potential aid in psychotherapy. Thirty scientific publications had appeared about LSD by the end of 1953.

In 1954, only one year after Twarog and Page reported finding serotonin in the brain, Woolley and Shaw recognized the structural relationship between LSD and serotonin and proposed that the mental effects of LSD might be caused by its interference with the actions of serotonin in the brain. Their hypothesis appears to be the first formal recognition that perhaps brain chemistry had something to do with behavior, and particularly with mental illness. That was what one might call an “ah-ha moment!” Suddenly, the role of brain chemistry became of more than academic interest. The chemical structure of LSD was known, and is shown below, alongside that of serotonin. The bonds that correspond in the two structures have been thickened to emphasize the similarity between them.



LSD



Serotonin

To put things in context, up until that time, mainstream psychiatry had no idea that behavior might arise from neurochemical events in the brain. Rather, if parents had a schizophrenic child, the mother might be blamed for not being nurturing enough, or for doing something wrong in the parenting of the child. Mothers of autistic children were sometimes referred to as “refrigerator” mothers, reflecting the belief that they had caused the autism by not having sufficient contact with the

child. Parents all across the world, and particularly women, who bore the brunt of childrearing, shouldered the guilt for a child with mental illness, including schizophrenia, believing that they had somehow failed as parents. It seems difficult to imagine such thinking today, but that was the reality of mainstream psychiatric theory back then.

The idea that disturbances in brain chemistry might be important to behavior was profound, and began to revolutionize thinking about the brain, and neuroscience in general, and we can see how LSD was the catalyst for that revolution. [Editor’s note: See Nicholas Cozzi’s article “*Psychedelic Breakthroughs in Neuroscience*” in this issue.] If neuroscience can be said to have a beginning, one could argue that it occurred in 1954, with the idea that the action of LSD might be related to its effects on the brain serotonin system. And if we look at the published scientific literature, we see a steadily increasing number of studies on the role of serotonin in the brain, which continues to the present day. In year 2012 alone, there were 3,859 scientific papers published that contained the key word “serotonin.” Drugs that affect the serotonin system such as fluoxetine (Prozac) and other SSRI type antidepressants, or the triptan class of drugs used to treat migraines, were certainly developed more quickly because of the discovery of LSD. The newest generation of drugs to treat schizophrenia also binds to one class of serotonin receptor. Would these medications have been developed without the discovery of LSD? Perhaps, but not nearly as soon as they were.

Where does that put us today? Unfortunately, when LSD became wildly popular among young people in the 1960s, the inevitable outcome of the resulting media frenzy was the passage of restrictive laws, both internationally through United Nations treaties, as well as at the national level. In the United States, we saw the passage of the Controlled Substances Act of 1970 (CSA). This law essentially ended not only clinical research on LSD, but basic research as well. LSD was placed into the most restrictive category of drugs, and required scientists to obtain a special license to work with it. Obtaining the license was an onerous process, requiring a secure storage facility and detailed record-keeping, even if the investigator was working only with tiny amounts of LSD. The few clinical applications that were submitted to the FDA were simply put on a shelf to languish and were never approved. The conventional wisdom quickly became “if you want to kill your scientific career, work on psychedelics.” Here was a novel substance that created intense interest among scientists and clinicians, and then suddenly it was anathema to work on it. As summarized by Grinspoon and Bakalar in their 1979 book, *Psychedelic Drugs Reconsidered*, between the 1950s and mid-1960s more than 1,000 clinical papers were published describing 40,000 patients, several dozen books, and six international conferences on LSD-assisted psychotherapy. All that came to a sudden stop.

There are few, if any, other events in science that can parallel what happened to LSD. Why and how it happened has been the subject of many books and essays, but no one can completely explain it, probably because there were so many different

factors in play. After the passage of the CSA in 1970, the first clinical protocols with *any* hallucinogen that made it through the Food and Drug Administration (FDA) review process were the studies of DMT carried out by Dr. Rick Strassman when he was at the University of New Mexico, Albuquerque. That was in the early 1990s, more than 20 years after the passage of the CSA.

Now that the media furor over psychedelics has had a chance to die down, renewed interest is developing in studies with LSD. Certainly, the promise and potential of LSD are still there. Sadly, no formal studies are underway in the United States, although one study has been completed in Switzerland (see below). But there have been several clinical studies with psilocybin, the use of which (instead of LSD) can be at least partially attributed to a continuing degree of social stigma attached to research with LSD. One also must keep in mind that the attitudes of the agencies responsible for enforcing the drug laws have not substantially changed; for them LSD is still a very dangerous drug with no redeeming virtues. Similarly, media echoes of the dangers of LSD from the 1960s still resonate in the minds of many members of Congress and federal regulatory officials, so changing the laws is unlikely to happen in the foreseeable future.

Nonetheless, given the opportunity, what studies of LSD might immediately be of greatest interest? The most well documented use for LSD was in the treatment of terminal cancer patients, where it could lead not only to a reduction in pain, but also improved mood and decreased fear of death. MAPS funded a randomized, active placebo-controlled double-blind dose-response, phase 2 pilot study of LSD-assisted psychotherapy in 12 subjects with anxiety related to advanced-stage illness. The study was recently completed in Switzerland under the direction of Dr. Peter Gasser, although the results have not as yet been published. [Editor's note: See Peter Gasser's article in this issue.]

The second area where we now know that LSD was effective was in the treatment of alcoholism. Although this latter indication was not appreciated for many years, a 2012 meta-analysis by Krebs and Johannsen of published studies using LSD treatment for alcoholism found it to be at least as effective as any current therapy. There also are fairly remarkable case and anecdotal reports of dramatic recovery from illnesses that do not ordinarily respond to conventional therapies. For example, there is a published report of an individual who suffered from debilitating obsessive-compulsive disorder (OCD) who recovered completely from the illness following monthly treatments with LSD. LSD also was reputed to enhance creativity, but no properly designed study has ever been carried out to test that idea in a definitive way. As another idea, Albert Hofmann believed that low doses of LSD ("microdoses") could enhance cognitive function. Would low doses of LSD be useful in treating Alzheimer's disease? We simply don't know. Would low doses of

LSD enhance working memory as we all grow older? No one knows. And some recent evidence suggests that psychedelics might be a novel treatment for depression that might eliminate the need for chronic antidepressants. We also must not forget the extensive studies by Dr. Stan Grof, who used high doses of LSD to treat psychotic patients, with many of them reported to become symptom-free. Although in today's climate it might be very difficult to get a protocol approved to treat mentally ill persons with high doses of LSD, if it was possible actually to cure

certain psychiatric disorders with LSD, what a huge advance that would be!

Perhaps one of the most tantalizing potential uses for LSD would be in the study of consciousness.

Now that advanced brain imaging techniques are available, it would be fascinating to see the changes in brain activity that occur following LSD administration. LSD can produce such a range of behavioral effects and altered moods, perhaps it could be an important tool to help map out correlations between feelings, moods, and changes in brain activity.

The sad fact remains, however, that because regulatory agencies still consider LSD to be such a dangerous drug, it will be a long time before many of the possible uses of LSD can be investigated. There are no government agencies that are interested in funding studies of LSD (or any psychedelic) where the goal is to identify a positive benefit of the treatment. And as we all know, once laws are put into place it is very difficult to get them taken back off the books. LSD is a Schedule I controlled substance not only in the United States, but in most major countries, and is included in UN treaties. To move it into a less restrictive schedule so that it could be more available for research is not something that will come soon, or easily, if at all. Things do occasionally change, however, and perhaps we will witness events that ultimately allow new research to take place in the near future. 🌀

Until his retirement in June 2012, David E. Nichols, PhD was the Robert C. and Charlotte P. Anderson Distinguished Chair in Pharmacology, and a Distinguished Professor of Medicinal Chemistry and Molecular Pharmacology at Purdue University. He also was an Adjunct Professor of Pharmacology and Toxicology at the Indiana University School of Medicine. He currently is an Adjunct Professor of Medicinal Chemistry at the University of North Carolina, Chapel Hill. He founded the nonprofit Heffter Research Institute in 1993. He consults for the pharmaceutical industry and has served on numerous committees and government review groups. He can be reached at drdave@purdue.edu.

A Clinical Report of Holotropic Breathwork in 11,000 Psychiatric Inpatients in a Community Hospital Setting

JAMES EYERMAN, MD



James Eyerman, MD

ABSTRACT

Context: Holotropic Breathwork is a powerful, spiritually oriented approach to self-exploration and healing that integrates insights from modern consciousness research, anthropology, depth psychologies, transpersonal psychology, Eastern spiritual practices, and many mystical traditions.

Objective: Holotropic Breathwork offers many opportunities that may enhance treatment, including entering non-ordinary states of consciousness to seek healing and wisdom via a natural, non-addictive method, a direct experience of one's Higher Power, and for physical and emotional catharsis associated with stress and prior trauma.

Design: The experiences of 482 consecutive patients were documented.

Patients and Setting: 11,000 psychiatric inpatients from a variety of psychiatric units dedicated to various diagnoses participated in Holotropic Breathwork over 12 years at community hospital.

Main Outcome Measure: Transpersonal ("mythopoetic") experiences were reported by 82% of participants.

Results: This procedure was well received. No complaints of adverse reactions were recorded during the sessions nor afterwards on the clinical units.

Conclusions: Holotropic Breathwork offers a non-drug alternative for the induction of psychedelic therapeutic experiences.

INTRODUCTION

After a hiatus of several decades, research into psychedelic therapies has returned to psychiatry due, in large part, to the advocacy efforts of the Multidisciplinary Association for Psychedelic Studies (MAPS). Holotropic Breathwork was developed by Stanislav and Christina Grof during this interval as a non-drug alternative to psychedelic therapy. The Grofs designed Holotropic Breathwork to give cathartic, therapeutic, transpersonal¹ experiences similar to the psychedelic experiences induced by LSD, DMT, mescaline, psilocybin, MDMA, ayahuasca, and other entheogens [*Editor's note: from the Greek, "manifesting the divine within"*]. Group Holotropic Breathwork sessions were offered weekly in a community hospital to a psychiatric inpatient population over 12 years.



Mandala drawings from Association for Holotropic Breathwork International members Martha Calhoun (top), Mojca Studen (bottom right), Maria Avila (bottom center), and anonymous (bottom right).

METHODS

Holotropic Breathwork, as developed on the basis of psychedelic studies by Stanislav and Christina Grof,^{2,3} has six elements: (A) introductory presentation of a map of experiences in consciousness based on four themes of perinatal birth experience in four different realms: somatosensory, perinatal, biographical, and transpersonal;² (B) enhanced breathing (hyperventilation); (C) evocative music; (D) body work focused on amplifying somatic blocks until they resolve spontaneously; (E) mandala drawing of the experience; and (F) supportive group sharing of experiences without analysis or interpretation. Holotropic Breathwork induces a non-specific amplification of a person's psychic process facilitating the psyche's natural capacity for healing and utilizes precautionary measures similar to the medical use of LSD.²

Holotropic Breathwork was offered to inpatients every Tuesday evening before dinner at the Stress Center of Hyland Behavioral Health, Saint Anthony's Medical Center in Saint Louis, Missouri, from 1989 through 2001. 20 psychiatric inpatients attended weekly from a number of specialty units: sexual trauma, dual diagnosis, chemical dependency, anxiety, depression, adolescent, and acute intensive care (ICU) for psychoses. The best estimate of the total number of patients is 11,200 \pm 200.

Hospital staff music therapists selected patients, after screening each one based on four exclusion criteria: severe cardiac disease, severe musculoskeletal disorders, pregnancy, and paranoid ideation.

The Holotropic Breathwork session was structured for a two-hour time slot. This allowed for a five-minute presentation of the experiential map, 90 minutes of music-Breathwork,

10 minutes for drawing, and 15 minutes of sharing without interpretation of the experiences. This followed the 1988 Holotropic Breathwork format from the first certification training in Breckenridge, Colorado. The 90-minute music-Breathwork session format was the standard of that time. This allowed inclusion of a two-hour music-Breathwork group into the psychiatric hospital activity schedule.

The patients received a five-minute orientation to the Grof's map of Breathwork (psychedelic) experiences; many did not know what they were about to experience. They may have had preknowledge from other patients who had attended that the "music breathwork therapy" was a good group. These experiences are quite non-ordinary and unusual,² and participants were encouraged not to share them with others who had not been in their session.

This was a spiritually naïve population. Some patients were in 12-step programs and had some psycho-spiritual background, but none had previously experienced anything similar to this. We routinely asked if anyone had done any Breathwork or had a meditation practice; not one person reported that they had.

The self-reports of 482 consecutive inpatients were recorded during the sharing periods. Their experiences were rated according to the four experiential realms which Grof developed during his LSD studies:² (1) physical-sensory, (2) perinatal, (3) biographical, and (4) transpersonal. Often these were reported with different experiences mixed together. If they reported transpersonal experiences, that category was selected. If there were no transpersonal or perinatal themes but biographical stories were reported, they were listed as biographical. If they had perinatal plus biographical but not transpersonal experience, the

experience was rated as perinatal. If only sensory experiences were reported, they were listed in that category. These ratings were determined by the music therapists.

RESULTS

82% of the 482 psychiatric inpatients reported having transpersonal (mythopoetic) experiences. 16% reported experiencing prior life experiences, including what was reported as perinatal experiences in two patients. 2% reported “no experiences.” There were no adverse reactions or unresolved negative outcomes.

Among the 11,000 inpatients, the experience was well tolerated. There were no reports of problems with the experience during sharing periods. Furthermore, there were no nursing staff reports of untoward sequelae or complaints after the sessions during this 12 year period.

Specific DSM diagnoses and symptoms profiles were not obtained from the medical record; hospital rehabilitation music therapy staff screened patients for the contraindications.

TWO EXPERIENTIAL CASE REPORTS

(1) A 14-year-old adolescent was admitted with severe major depression. He had attempted to kill himself twice by cutting his throat. The second time he came close to succeeding. He had a significant issue with shame and guilt. He'd gotten the sheriff's daughter pregnant in his community. No one in the town would talk to him; nor would she. He felt rejected and isolated. In the hospital he received fluoxetine; he breathed with four other clients in the first inpatient group in 1988. He reported that he re-experienced the night when he tried to kill himself. This time he experienced death, successfully completing the suicide in his process. He then he became the universe. His drawing had a bloody knife on the side with a mandala circle containing a bunch of stars. Since this was a new therapy, a guarded approach was taken to his quick remission of affective symptoms. He stayed another week and participated in the Holotropic Breathwork again. After that session, he reported that he “became the universe right away.” Then he became “pure consciousness,” in his own words. Then he “became pure consciousness and the universe together.” I considered this to be a significant experience for anyone, especially a 14 year old from a small town in the Missouri Ozarks. He was asked, “Do you know who Aristotle is?” “No.” “Who Buddha is?” “No.” “Ever heard of Shiva?” “No.” “Jesus?” “I’ve been to Sunday school twice!” So this adolescent boy was spiritually naïve, but he had profound metaphysical experiences. He did well for nine months living with his uncle in another city. When he returned to his parents’ hometown, he again became dysphoric, but he was not seriously depressed nor was he suicidal.

(2) A 31-year-old woman with suicidal major depression had a history of alcoholism and polysubstance abuse. She first experienced Holotropic Breathwork after she admitted herself due to the deterioration of her mood and to prevent an alcoholic relapse. She had been abused by her stepfather during the

ages of 12–14, and later became a runaway living on the street as a drug addict after her older brother, her main support in her family, died in combat. She had recovered in her early 20s but continued to cycle through severe major depressive episodes as an anniversary reaction to the loss of her brother. At admission, she was being treated as an outpatient with fluoxetine (60 mg) and trazodone (50 mg). Her medication was unchanged during her two week hospitalization except for an increase in trazodone to 75 mg due to insomnia. After her first Breathwork session she refused to draw or share. Her affect, however, appeared improved. The next week, after hearing the reports of others in the group sessions, she decided to share her experience: “This is too weird, but here is what happened: In the first session my dead father and dead brother showed up. They lifted me out of my body and took me to a wonderful place full of light and joy; I was so comforted. But then they dropped me back into my body. I just couldn’t talk about it, it was just too weird! In my second Breathwork session, my father and brother showed up again. This time they held my hands and stayed in the room. I could see them with my eyes open; I thought you could see them too.” Her Breathwork facilitator reassured her that he could not see them but that did not invalidate her experience. This woman did well for over three years after which she was lost to follow-up; by that time she had become a leader of a 12-step program in her community.

DISCUSSION

The structure of Holotropic Breathwork allows the experiences to be private, in a safe and supportive environment, non-directive, and spontaneous. It is a non-intrusive therapy and offers significant benefits in terms of emotional catharsis and internal spiritual exploration, according to the participants. The lack of even one single reported adverse sequelae in more than 11,000 Holotropic Breathing in-patients over more than 12 years, indicates that Holotropic Breathwork could be considered a low-risk therapy to assist patients with an extremely broad range of psychological problems and existential life issues.

These reports support the proposition that therapy with non-ordinary states of consciousness is safe, when done in a supportive therapeutic environment. Specific therapeutic efficacy deserves further research. Holotropic Breathwork and other non-ordinary states appear to be a valuable therapeutic tool.

FURTHER DISCUSSION OF THE 2% WHO REPORTED “NO EXPERIENCE”

No other explanation may be proffered than an uneventful session. “No experience,” or consciousness without content, is a description of the yogic state of *turiya* (Sanskrit, fourth state). *Turiya* occurs in Holotropic Breathwork sessions with some frequency. Due to time restrictions for sharing in the groups of twenty patients, further questioning was not pursued regarding whether *turiya* criteria were met. These criteria include cessation of thought, and the suspension of breath while remaining awake, without sleepiness or fatigue afterwards.¹ *Turiya* also is

reported to occur as part of the mindfulness meditation experience and is described variously as “the space between thoughts” and “choiceless awareness.”⁶

The inpatients' endorsement in 1989 of Holotropic Breathwork as their best therapy at Hyland Behavioral Health exit interviews swayed the hospital administration to assign extra music therapists to assist in the groups. The four extra music therapists allowed groups of 20 patients, with one facilitator for every four patients. The groups were oversubscribed and filled every week.

Hyland Behavioral Health Center was publicly supportive of this work. Their Training Institute sponsored Holotropic Breathwork workshops for the professional therapists in the Saint Louis area. Some of the hospital administrators eventually also participated in the breathwork sessions.

ADDITIONAL THERAPEUTIC EXPERIENCE WITH HOLOTROPIC BREATHWORK

Epworth Children's Home, an adolescent residential program, also introduced Holotropic Breathwork after one of their adolescents returned from the hospital where he had a transformative transpersonal experience (conscious contact with his higher power) during the inpatient sessions.⁴ Epworth's music therapist, Hallie Huber, trained with the author of this article. We then offered Holotropic Breathwork to interested residents as individual sessions. Huber noted that approximately half of the 52 children-in-residence participated. She also noted no untoward experiences among the adolescents.

Holotropic Breathwork is similar to meditation/contemplation practices, but much more intense. Some participants termed it a “crash course” in spirituality. That enhanced breathing and evocative music can give experiences similar to LSD, or other psychedelic therapies, is remarkable and largely unknown to professionals and the general public.²⁻⁵

The experiences of 482 consecutive Saint Anthony Medical Center psychiatric inpatients with Holotropic Breathwork were presented at the Washington University Department of Psychiatry Grand Rounds in 1991. They were also presented to the American Psychiatric/Italian Psychiatric Association in Sienna in 1997, as well as the weekly University of California, San Francisco Depression Seminars in 2007. ●

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ABOUT HOLOTROPIC BREATHWORK

Holotropic Breathwork (HB) provides a non-pharmacologic means of attaining non-ordinary states of consciousness (NOSC). HB is a powerful approach to self-exploration and self-healing that integrates insights from modern consciousness research, anthropology, various depth psychologies, transpersonal psychology, Eastern spiritual practices, and other mystical traditions of the world. HB combines rapid, deep breathing, evocative music, focused body work, artistic expression and group sharing in a safe, supportive environment.

Holotropic Breathwork was created by the Czech-American psychiatrist and LSD researcher Stanislav Grof, MD, and his wife Christina Grof in the 1970s after studying the use of NOSCs in various cultures and settings.

“Holotropic,” or “moving toward wholeness” is derived from “holo,” meaning “wholeness,” and “tropic,” meaning “moving toward.”

ONLINE RESOURCES

Association for Holotropic Breathwork International (ABHI)
grof-holotropic-breathwork.net

Grof Transpersonal Training
holotropic.com

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Ketamine: A Light in the Darkness

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KETAMINE HAS BEEN FDA-APPROVED for use as an anesthetic in surgical procedures since 1970,¹ an indication for which it continues to be widely used, especially in disaster relief efforts² and battlefield operations.³ In more recent years, it has been increasingly used for the purposes of conscious sedation and analgesia for painful or anxiety-provoking procedures performed in emergency room settings, particularly in pediatric populations.⁴ For almost as long, however, ketamine has been earning notoriety as a drug used illicitly for a variety of non-medical purposes.

Throughout the 1970s, ketamine was used primarily by professionals in biomedical or related fields as a tool for consciousness exploration through the powerful psychedelic states of consciousness it can induce at relatively high doses;¹ this was described by a number of writers in the popular literature of the latter part of that decade, perhaps most famously in John C. Lilly's autobiography, published in 1978. Beginning in the mid-1980s and increasingly in the decades to follow, it gained popularity within the subculture populating nightclubs and dance parties, and later became a fixture, along with MDMA, of the rave scene that flourished in the United States and Europe throughout the 1990s.¹ It is in this context that ketamine obtained its famous street name, "Special K." Its use for recreational purposes has continued unabated to the present day; of late it has become particularly widespread among the youth culture of Asia. For example, a 2012 study reported that ketamine has been the most commonly abused substance amongst teenagers in Hong Kong since 2005.⁵

Since the turn of the century, a third narrative has developed around ketamine, which might ultimately prove to be the most interesting of all: its use as a novel therapeutic agent in the treatment of psychiatric patients suffering from severe, treatment-resistant depression. Unfortunately for the mil-

lions of people affected every year by this disease worldwide, with conventional approaches resistance to treatment seems to be the rule rather than the exception. In 2006, the landmark Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study, which followed over 2,800 patients in outpatient treatment for Major Depressive Disorder (MDD) over a period of several years, reported that more than 60% of patients receiving optimized treatment with the selective serotonin reuptake inhibitor (SSRI) citalopram failed to achieve remission of their depressive symptoms; a clinically significant response, let alone remission, was seen in only 48.6%.⁶ Of the treatment-resistant patients who then went on to receive the switching or add-on strategies the study was designed to investigate, failure rates ranged from 59% to 83%, with higher treatment resistance seen as more strategies were tried.⁶ Furthermore, this finding is not unique to citalopram: Other studies have shown that its efficacy is essentially equivalent with that of any other SSRI and these, if anything, are slightly less effective than older, more poorly tolerated classes of antidepressants.⁷

What the results of the STAR*D study clearly demonstrate is that the current standard of treatment addresses only a subset of depressed patients, and a seeming minority at that. This is perhaps not surprising given the fact that any illness that affects such a broad swath of the population (the WHO estimated in 2004 that 151 million people were affected by unipolar depression worldwide, with another 29.5 million affected by bipolar disorder⁸) is highly likely to represent a final common phenotype for a heterogeneous assortment of underlying disease processes, and the mechanisms by which our current medications work are not heterogeneous enough to address all of them. An analogy has been drawn between this situation and what we understand about the treatment of infectious disease:⁹ many



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different organisms cause infections and penicillin, for example, will only succeed in treating some of them. Infectious disease specialists, however, have the luxury of choosing from a variety of different classes of antibiotics, each with its own unique mechanism of action and hence with its own special niche in the arsenal. We psychiatrists, on the other hand, have essentially only one option when it comes to the pharmacologic treatment of depression, and this is to intervene at the level of the monoamine neurotransmitter system, which in the brain consists mainly of serotonin, norepinephrine, and dopamine.

In 1957, Nathan Kline published the first report of a pharmacologic compound demonstrating efficacy as an antidepressant. This was iproniazid, the first monoamine oxidase inhibitor (MAO-I), an anti-tuberculosis medication that itself had been discovered only a few years previously. Its effectiveness as an antidepressant had been discovered serendipitously, initially noted as a side effect of treatment in tuberculosis patients.¹⁰ Its mechanism of action was ultimately determined to be mediated by increasing levels of serotonin, norepinephrine, and dopamine in the brain by inhibiting the enzyme that degrades them. That same year, in Germany, Ronald Kuhn published his findings of the antidepressant effects of another compound, imipramine, the first tricyclic antidepressant¹⁰ and one that continues to be prescribed to this day. He had been testing it to see if it might be effective

as an antipsychotic, and though it failed utterly in this regard, he noted, again serendipitously, that some of his depressed schizophrenic patients showed dramatic improvements in their mood symptoms in response to taking it.¹⁰ Its major pharmacologic effect is to increase levels of serotonin and norepinephrine. In 1987, the FDA approval of the first SSRI, fluoxetine (Prozac), ushered in a new era of antidepressant treatment¹⁰ owing to its much safer and better tolerated side effect profile, and the SSRIs continue to dominate the contemporary therapeutic landscape. But again, this class, and its more recent descendants, the

selective serotonin-norepinephrine reuptake inhibitors (SNRIs), exert their effect by means of the monoamine system, as their names imply. Since 1957, in fact, every medication approved for use as an antidepressant has acted on one of these three molecules, or some combination thereof.⁹

This is not to underestimate the impact these medications have had. Unques-

tionably, they have revolutionized the treatment of depression and, along with the discovery in 1952 of the first antipsychotic, chlorpromazine, revolutionized the entire field of psychiatry. Untold millions of people have benefited from their use and continue to do so. For the patients that do respond to the monoamine-specific antidepressants, the effect can be life-transforming and literally life-saving. But just as penicillin has saved countless millions of lives and was arguably the most im-

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portant discovery of the 20th century, there remain vast numbers of people every year who acquire infections for which penicillin is completely ineffective, and for which alternative treatments must be sought. By analogy, this is precisely the problem faced by modern psychiatry where the treatment of depression is concerned. Our one-trick pony is desperately in need of new tricks.

This is where ketamine enters the picture. As a potent antagonist of the *N*-methyl-D-aspartate (NMDA) receptor, one of the brain's two major receptor types for glutamate, ketamine acts on a neurotransmitter system entirely distinct from the pathways involving serotonin, norepinephrine, and dopamine. Glutamate is the major excitatory neurotransmitter for the

central nervous system, and its effects are thus manifold and widespread, involving all aspects of the neuronal life cycle, from migration and differentiation, to the genesis of new axons, to the survival of the neuron itself.¹¹ And while the pathophysiological mechanisms underpinning depression are far from completely understood, there is mounting evidence to suggest that in addition to the monoamines, there is a significant and perhaps central role played by glutamate as well. For example, it has been found that depressed patients have elevated levels of glutamate in their blood and cerebrospinal fluid as compared to healthy controls, and these changes can be reversed by chronic administration of conventional antidepressants.¹¹ Additionally, postmortem analyses of brain tissue samples have shown significant alterations of the NMDA receptor in the frontal cortex of patients with MDD¹² and in the prefrontal cortex of completed suicides.¹³ Taken together, this evidence paints a picture in which treating depression with ketamine, despite its checkered past, starts to make a lot of sense, as surprising as this might be to laypeople and perhaps especially to most psychiatrists, who are accustomed to viewing it primarily as a drug of abuse.

The earliest reports on the use of ketamine in the treatment of psychiatric conditions date from the 1970s and describe its use as an adjunct to psychotherapy, with some anecdotal evidence for efficacy in reducing symptoms of depression and anxiety.¹⁴ This line of research was evidently not pursued much further, but interest in its potential as an antidepressant resurfaced in the late 1990s on the heels of the abovementioned evidence for the role of glutamate in the pathophysiology of depression, as well as a number of studies using animal models for depression that gave evidence for the effectiveness of NMDA receptor antagonists.^{15–17} In 2000, Robert Berman, John Krystal, and their colleagues at Yale University, who had previously been investigating high-dose ketamine as a model for the experimental induction of schizophrenia-like symptoms in healthy volunteers,¹⁸ published the first placebo-controlled study evaluating the use of ketamine as an antidepressant in humans.

In this study,¹⁹ ketamine demonstrated not only a robust antidepressant effect in seven of their eight acutely depressed

subjects, with significant improvement on scales measuring mood, suicidal ideation, helplessness, and worthlessness, after only a single intravenous administration of a relatively low dose (roughly 25 to 50% that used for anesthesia), but one that occurred within hours of treatment, and persisted for seven to 14 days. Compare this with the SSRIs, which show no acute antidepressant effect and typically take 6 to 8 weeks to achieve full efficacy. The rapidity of the response alone has important implications, especially in cases of severe depression with prominent

suicidal ideation, where a rapid resolution of symptoms is highly desirable and potentially preventative of self-harm. Berman's study would prove to become seminal, as it

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provided, for the first time in humans, evidence for a treatment with effects mediated independently of the monoamine system, showing an antidepressant response markedly different from that seen with conventional medications and, even more importantly, a ray of hope for the many patients who have been failing for years to respond to them.

Nonetheless, this small study initially failed to garner much notice, and another study investigating the use of ketamine for depression would not be published until 2006, when Carlos Zarate, Jr. and his colleagues at the National Institute for Mental Health reported their findings in a group of 18 depressed patients given the same intravenous dose used at Yale.²⁰ Their findings were impressive: One day following a single IV dose of ketamine, 71% of their subjects showed a response in their depressive symptoms, and 29% achieved full remission, compared to none for placebo. Of the subjects who responded, 50% sustained this response for a week or more. The fact that Zarate's group recruited their subjects on the basis of resistance to conventional antidepressants—all 18 had failed at least two of these prior to entering the study—made their results all the more intriguing.

Since then there has been a tremendous upsurge of interest in evaluating ketamine's antidepressant properties. Over the past seven years, more than 25 publications have appeared in the literature, involving over 160 patients, most with treatment-resistant depression. All of them, with the exception of one isolated case report, have confirmed its efficacy as an antidepressant, consistently showing the same pattern of rapid and relatively prolonged—compared with ketamine's half-life, which is measured in hours—response in symptoms.²¹ It has also been shown that ketamine effectively treats the depression seen in both major depressive and bipolar disorder, without exacerbating risk for mania in the latter.^{22, 23} There have been no serious adverse events in any of these studies; the side effects that have been reported have been typically mild to moderate in severity, and none have persisted beyond the time of the drug's administration.²¹ Among these are feelings of dissociation from reality, as well as so-called psychotomimetic symptoms, such as

visual hallucinations or other perceptual disturbances. Indeed, ketamine's propensity to elicit these symptoms, along with its perceived liability for abuse, has been cited by a number of authors as an argument against its adoption as a standard treatment for depression.^{9,24}

Nevertheless, enthusiasm for its use is only gaining momentum. As of this writing, 25 new studies investigating ketamine in depression are on file at the ClinicalTrials.gov database. Some institutions have already started offering it to the public, outside of a research context, as an off-label treatment for refractory depression. The University of California, San Diego, for example, operates an outpatient clinic devoted to this, with highly positive results reported thus far.²⁵ This is a trend that is likely only to continue, as the data supporting its safety and efficacy in otherwise difficult or impossible to treat cases of depression continue to multiply. Yet there remain some important unanswered questions, which some of the studies currently underway are intended to address. One of the most important is the question of how to most effectively maintain the antidepressant effect beyond the one to two weeks that is typically seen after the initial dose. One study has already reported on the efficacy of a repeat dosing strategy, which seems promising,²⁶ and there are others currently underway attempting similar protocols.^{27–29} Others are trying strategies involving bridging to daily use of an oral agent, such as a traditional antidepressant³⁰ or an orally active glutamate release inhibitor.³¹ Another important question has to do with optimizing the dose, as most of the studies to date have simply followed the protocol employed in the initial proof-of-concept study. It is not known, however, whether a lower dose would be as effective, and there is at least one study to suggest that it very well could be, with the added benefit of attenuating the undesirable side effects.³² There are currently two relatively large-scale dose-response studies underway designed to address this issue.^{33,34}

Regardless of the answers to these lingering questions, it seems clear at this point that ketamine has established itself as a viable, exciting, and long-awaited novel treatment for depression. It is exciting for the new hope it brings to the huge numbers of treatment-refractory patients that continue to suffer from depression's debilitating effects, as well as for the new possibilities it brings for the development of novel treatments down the road. The glutamate system and the role it plays in the etiology of mood disorders is only just now starting to be deciphered, and a new era of treatment appears to be looming on the horizon for psychiatry. For a field that has been groping in the dark for decades in search of more effective ways to alleviate the suffering of those who turn to it for help, this is a welcome ray of sunshine indeed. ☺

Data supporting [ketamine's] safety and efficacy in otherwise difficult or impossible to treat cases of depression continues to multiply.

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Robert Wold

LSD and Psilocybin for Cluster Headaches: Preventing Pain, Saving Lives

ROBERT WOLD

NICKNAMED “SUICIDE HEADACHES,” EXPERTS ACKNOWLEDGE cluster headaches to be the most painful condition known to medical science. With the suicide rate among sufferers in excess of 20 times the national average, and very limited medical options to treat the disorder, patients desperately seek alternative treatments to find relief from their life of pain.

In 2002, a group of determined cluster headache advocates armed with anecdotal evidence supporting the use of psychedelics to treat clusters sought the support of MAPS. This initial meeting signaled the beginning of a sea change in research and treatment plans as well as quality of life for thousands of cluster headache patients. Through generous and unwavering support from MAPS, the non-profit Clusterbusters was formed and began the task of fact-based legitimization of the positive effects of psychedelics on cluster headaches.

The publicity that continues to be generated through medical journals, documentaries, and major news outlets has educated thousands of patients, enabling them to make fact-based decisions on the use of psychedelics as a treatment option. Psilocybin and LSD are proven effective for treating cluster headaches. In many cases these treatment methods end a clus-

ter headache cycle and prevent a cluster headache cycle from returning. Despite evidence of medical use, current U.S. laws classify psilocybin and LSD under Schedule I of the Controlled Substances Act. This classification slows clinical research, stifles funding, discourages the dissemination of facts, and leads to a distorted view of psychedelics. Most importantly, lack of drug policy reform is needlessly costing the lives of cluster headache sufferers as many with the disease give up hope of obtaining

an effective medical treatment. Patients should not be forced to make the choice between taking an illegal substance and taking their own lives. Although Clusterbusters has made strides in education and advocacy, a recent discussion on a social

Patients should not be forced to make the choice between taking an illegal substance and taking their own lives.

media site illustrates the difficult road we still have ahead. When a fellow cluster headache patient mentioned the use of psychedelics as an effective treatment, one response was as follows: “All of this stuff about psychedelics is BS. If they really worked, the government would have made them legally available to us long ago.”

During our research, it has been discovered that an alarming percentage of people with cluster headaches also suffer post-traumatic stress disorder (PTSD) as a result of the disease.

Although it is common knowledge within the medical community that chronic pain can produce PTSD, until this recent study there had never been any associations made with clusters and PTSD. The PTSD Checklist for Civilians (PCL-C) is the commonly used test for diagnosing PTSD. The Civilian version measures the results of repeated trauma rather than singular events that can cause PTSD. Following treatment of cluster headache with psychedelics, PCL-C scores were reduced a staggering 48.4%. This is not just a byproduct of relieving the pain, as the scores of those people relieving the pain of clusters with prescription medications or surgeries did not fare as well with improved scores. This dramatic quality of life improvement is seemingly only produced with treatment of the cluster headaches with psychedelics and is accomplished completely through self-therapeutic measures. Our research on this topic continues.

Clusterbusters feels strongly about the need for psychedelic research for the relief it can provide for both mental and physical ailments, but also because it leads to offshoots into non-hallucinogenic treatments. Just as the early work by Hofmann led to such headache treatments as Sansert and Sumatriptan, our work has led to another possible cluster headache treatment in the non-hallucinogenic compound BOL-148 (Bromo-LSD). Early results from a small clinical trial in Germany are extremely promising. Confirming these results with larger clinical trials and bringing this

to market so it is available to everyone will be a time-consuming and expensive process; a process that has begun 40 years too late due to the legal status of LSD. (Following the publication of the promising results in Germany, many people have tried to procure BOL-148 through various sources. There are reports of a couple of people getting a prescription for it from their doctors in Europe, procuring the BOL-148 at great expense, and having similar successful results. Others have tried to obtain BOL-148 through various routes and have for the most part failed. Most labs will not make it due to the issues surrounding analogues of Schedule I drugs.) Our volunteer advocates are driven to educate the community and demand improvement in proper diagnoses and effective medical treatment. The cause of cluster headaches is unknown and there is no cure, yet Congress has never held hearings on this condition, which debilitates

approximately 400,000 Americans. In 2012, we began collaborating with the Alliance for Headache Disorder Advocacy by joining them in Washington, D.C., to urge Congressional hearings on the \$31-billion-dollar impact headache disorders have on the U.S. economy every year. We are returning again this year to continue stating our case. The National Institute of Health, which spends billions of dollars on research and developing medications for diseases and conditions, many affecting far fewer people in much less damaging ways, has never invested one dollar on cluster headaches. Never has a medication been brought to the market specifically for cluster headaches. We are currently working with other organizations and the FDA to get patients involved in the approval process of prescription medications. Additionally, Clusterbusters has reached out to the Substance Abuse and Mental Health Services Administration (SAMHSA)—the federal agency charged with suicide prevention in the USA—to develop training guidelines for all people working the phones on National Suicide Hotlines.

It is encouraging to see the positive results cluster headache patients have achieved due to treatment with psychedelics. Through our advocacy efforts, research, and patient testimony these alternative treatments are gradually being recognized and accepted among medical professionals. Clusterbusters has been accepted into major medical associations and is being sought out by the medical community as an educational resource to better assist

patients. Although Clusterbusters missions have not changed or been mitigated to fit acceptable practices, neurologists and researchers now attend and present during our annual conferences. Much of the above progress can be traced back to the belief shown by Rick Doblin of MAPS in what we are doing and his early support. 🌀



Robert Wold speaks at the 2011 International Drug Policy Reform Conference.

Robert Wold, as a businessman and 30-year-long cluster headache sufferer, formed Clusterbusters in 2002 to facilitate research on psychedelic treatments for cluster headaches. This followed a profound success story treating his own condition. Since that time, Clusterbusters has funded research, expanded on advocacy programs, and built education programs for headache sufferers, the medical profession, and government agencies. Learn more at clusterbusters.com. Robert can be reached at rwold350@comcast.net.

A Psychotherapeutic View on the Therapeutic Effects of Ritual Ayahuasca Use in the Treatment of Addiction

ANJA LOIZAGA-VELDER, DIPL-PSYCH



Anja Loizaga-Velder, Dipl-Psych

AYAHUASCA IS A TRADITIONAL PLANT preparation of the Amazon basin with psychoactive properties. In recent decades ayahuasca has gained the attention of researchers in multiple disciplines worldwide due to its acclaimed therapeutic and spiritual qualities. It is an admixture of two plants: the harmaline containing vine *Banisteriopsis caapi*, and the DMT-containing leafs from the *Psychotria viridis* bush. It is typically administered by a trained expert in a ritual context.

The use of ayahuasca has spread beyond the Amazon in the last few decades, reaching around the globe in contexts of religious, shamanic, psychotherapeutic, and hybrid ayahuasca rituals (Labate & Jungaberle 2011; Tupper 2008). Many participants report gaining benefits from ayahuasca rituals in ways such as acquiring deeper knowledge of oneself, personal and spiritual development, or healing for a variety of psychological and physiological afflictions, including substance dependencies (see Groisman & Dobkin de Rios 2007; Labate *et al.* 2013; Labate *et al.* 2010; Mercante 2009; Santos, Carvalho de Moraes & Holanda 2006; Schmid 2008; Thesenga & Thesenga 2012).

Based on observations of the positive therapeutic effects that ayahuasca ceremonies can have on people with addiction issues, informal and formal support for recovery from addictions is currently provided in diverse settings. These include rituals offered by indigenous healers, ayahuasca circles, or psychotherapists, and more or less structured ayahuasca-assisted, inpatient and outpatient addiction treatment programs. Such approaches are rooted either in indigenous Amazonian medicine traditions, the Brazilian Ayahuasca Religions, psychedelic-assisted psychotherapy, or consist in a hybrid combination of these. Some multidisciplinary intercultural pilot projects have shown

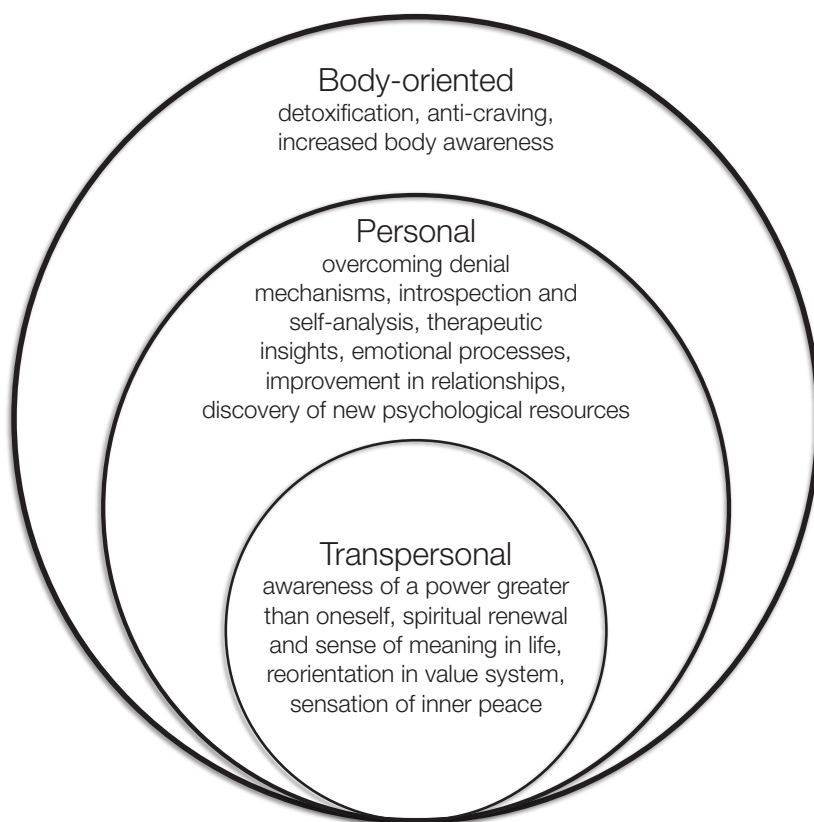


Figure 1: Therapeutic value of ayahuasca.

promising preliminarily therapeutic outcomes (Fernández & Fábregas in press; Giove Nakazawa 2002; Mabit 2007) that warrant further scientific confirmation through controlled clinical trials.

This author conducted an exploratory study using qualitative research methods based on a combination of participant observation and problem-centered interviews (Witzel 2000), in order to describe the therapeutic value of ayahuasca in addiction treatment from a psychotherapeutic perspective, and to provide guidelines that may help improve therapeutic efficacy for traditional and modern ayahuasca-assisted addiction treatment. Research data was evaluated and conceptually structured with qualitative data analysis according to Miles and Huberman (1994).

The qualitative study included: (1) a review of seven therapeutic projects

which apply ayahuasca in the treatment of addiction in diverse settings, (2) interviews with four traditional healers and 11 mental-health professionals with expertise in both treatment of addictions and therapeutic ayahuasca use, and (3) interviews with 14 individuals who had undergone ayahuasca-assisted therapy for addiction in diverse settings (Presser-Velder 2012).

THERAPEUTIC VALUE

The findings of this research indicate that participation in ayahuasca rituals can help certain individuals gain abstinence from, or reduce, the abuse of harmful psychoactive substances in a substantial way. In an appropriate context, ayahuasca can be a valuable therapeutic tool and can act as a catalyst that can render psychotherapeutic processes more effective in less time, and sometimes allow for

critical interventions when several other therapeutic strategies have been unsuccessful.

Substance dependency can be conceptualized as a multi-factorial problem that requires comprehensive and integral intervention strategies. Ayahuasca seems to provide multidimensional subjective experiences that can facilitate interconnected body-oriented, psychological, and spiritual processes with observable therapeutic outcomes.

The most relevant findings of this study concerning the therapeutic value of ayahuasca from the perspective of therapists and ritual participants are illustrated graphically in the figure to the left.

BODY-ORIENTED EFFECTS

Due to the intense physical experiences that are commonly associated with the ingestion of ayahuasca, ayahuasca-assisted treatment can be characterized as a body-oriented approach. Body-oriented effects of the ayahuasca experience may include subjective experiences of detoxification, anti-craving effects, and increased body awareness.

Intense experiences of purging that many participants undergo during the ayahuasca induced non-ordinary states of consciousness can, according to both the interviewed therapists and ritual participants, assist the detoxification process significantly and can also help release tensions, physical blockages, and psychological burdens, inducing a subjective feeling of relief, inner peace, and mental clarity.

The purging works on physical and psychological levels... there are many interesting cases were patients describe...expelling psychological issues and the accumulated intoxication of the drug...others expel emotional hang-ups like rage or anger through vomiting...this vomiting really has an impact [on the life of the patients]; it's not just symbolic. (Interview with Therapist G.)

Most of the interviewed ritual participants reported that purging during the ayahuasca experience was accompanied with experiences of unloading psychological burdens, such as guilt, negative emotions, negative attitudes, and negative thoughts. Purging was oftentimes followed by a sense of redemption, new beginning, and an increased awareness of responsibility toward their health and well-being. The emetic effect of ayahuasca can also contribute to attenuated withdrawal symptoms and drug cravings. Both psychological and physical mechanisms may underlie this effect (see also Brierley & Davidson 2012; Liester & Prickett 2012; Presser-Velder 2012). Further clinical studies on the anti-craving mechanisms of ayahuasca are highly recommended.

PERSONAL (PSYCHOLOGICAL AND PSYCHOSOCIAL) EFFECTS

Participation in ayahuasca rituals can help individuals gain a better understanding of their addiction and overcome the roots of their compulsions and other psychological issues that have impaired general functioning in the past. The ayahuasca-induced modified state of consciousness can facilitate introspection, the processing of unconscious psychological material, and emotional catharsis. Traumatic life events that underlie individual psychopathology can be experientially relived from a new perspective and integrated in a functional way. As stated by an interviewed psychiatrist:

Ayahuasca is a shortcut to the unconscious. It allows for the possibility to relive stressful biographical situations again, and repair them, reorder them. This has tremendous therapeutic value. For example, Western pharmacopeia and psychotherapy can be of little help in cases of deceitful abuse or childhood violence; however, ayahuasca provides the possibility of reliving these situations with the same emotional intensity of the original moment, but with a structure and the experience in the present. Then, one arrives at forgiveness: which is to liberate the conflict and remain in peace. Ayahuasca is one of the possible ways to achieve this (Interview with Therapist I).

Interesting cognitive dynamics seem to occur under the ayahuasca trance. Therapists and ritual participants alike referred to ayahuasca as an “inner mirror” that allows individuals to readily accept previously denied aspects of the psyche, which are difficult to address with conventional therapeutic methods.

Ayahuasca provides for a kind of mirror that does not

conform to the patient's sophisticated denial mechanisms. The mind is loosened up and maladaptive thinking and feeling is brought to the patient's awareness...the patient is then confronted not by treatment structures or therapists but by their own inner self. This aspect is, I believe, what makes ayahuasca especially effective in helping addicts because they are unable to deny their reality and must therefore accept change. (Interview with Therapist M)

Confrontation with denied aspects stemming from within or from a perceived “spiritual source,” such as “Mother Ayahuasca,” “Mother Earth,” or “the Divine,” are apparently better received, integrated, and contained than those stemming from a therapist. Ayahuasca can also lead to precise therapeutic insights that can become crucial turning points in the recovery process.

The above-mentioned ayahuasca-facilitated processes also include shifts in points of view and empathy that can improve the quality of relationships with family and significant others, allowing for forgiveness, reconciliation, and better interpersonal communication. This, in turn, may contribute to positive emotional feedback that can counteract the typical isolation of addiction. The shared collective experience of the ayahuasca ordeal can furthermore promote group cohesiveness and function as a catalyst for positive social processes, such as increased participation in activities with a peer group that ideally holds positive, health-oriented values.

Ayahuasca experiences can also contribute to personal growth and tend to facilitate an increased sense of self-efficacy and awareness of positive personal resources. As illustrated by one of the interviewed traditional *ayahuasqueros* (traditional healers specialized in the use of ayahuasca):

Ayahuasca helps addicts...to awaken parts of themselves that are asleep...helps one to find oneself, to value oneself, and to project oneself in a healthy way....All this can help one to achieve a lot of things...like finding oneself and one's inner potential. (Interview with Ayahuasquero C)

TRANSPERSONAL EFFECTS

Throughout this study, spiritual or transpersonal aspects of the ayahuasca experience were reported to have been pivotal in the recovery process. Many interviewed ritual participants reported spiritual peak experiences that fostered a connection with the divine: a spiritual power or existential values infusing life with meaning, providing a sense of relief from confusion, and pro-

moting feelings of wholeness and inner balance. These types of experiences can have therapeutic effects on inner, developmental, or existential wounds, helping patients to transcend such issues. For some patients, such experiences were followed by a complete absence of drug cravings, such as Steve [pseudonym], who stated:

They [ayahuasca ceremonies] made me feel that there was a presence of someone who loved me unconditionally and who gave me the strength to stop myself from drinking or drinking too much...the experience gave me a spiritual basis for my life and made me realize that life had a purpose and meaning...I [now] have a spiritual link to call upon. I can look back on my experience and [back on] that feeling of being in touch with God and realize that life isn't empty...My experience with ayahuasca stood out to me as a clear reminder of the beauty and the importance of life...Not drinking came naturally [as a result of this experience]...there was no void that needed to be filled anymore. (Steve)

Ayahuasca-induced transpersonal experiences helped several of the interviewed patients to reformulate a new vision of the world and generate new perspectives on life, leading to changes in attitudes. One of the interviewed psychologists further pointed out:

Another reason why shifting into non-ordinary states of consciousness (NSCs) is therapeutic, is that they can allow access to very different realities where people may find helpers...guides and allies and find strength and guidance through trials and tribulations. Now, whether these are real entities or projected parts of the inner self does not matter. The transformation that may occur in people who have been touched by these experiences is very real; and experience shows that it may have deep and long-lasting effects. These resources are essential for long-term recovery. This is why Alcoholics Anonymous makes such an emphasis on finding a power greater than oneself. (Researcher O)

In addition to spiritual peak experiences, another type of transpersonal experience credited with important therapeutic value was experiencing one's own death.

The encounter with the medicine was the most powerful experience I have ever lived. I have always lived on the edge and I am used to strong emotions, but never something similar to this...During my healing process, the spirit of ayahuasca showed me visions of the future if I

continued smoking. I saw my daughters' faces in my funeral. I could see their pain and feel their suffering. I felt a huge irresponsibility, because even when you know you might die from smoking, only when you experience your own death can you understand. (Ernesto [pseudonym])

VARIABLES THAT INFLUENCE TREATMENT OUTCOME

Although ayahuasca-assisted treatment can be very valuable therapeutically, it is, however, important to point out that it is useful only for certain individuals and under certain circumstances. Ayahuasca, in and of itself, is an instrument, a tool. The potential outcome can be beneficial or harmful depending on different variables. The subjective experience and hence the therapeutic value of ayahuasca, as with other psychedelic substances, is intrinsically related to the triad of drug, set, and setting.

Variables related to the ayahuasca compound that could influence treatment outcomes include quality, composition, and adequate dosing. Variables related to the participant or "set" include absence of counter-indications, psychological readiness

to undergo deep states of consciousness and to be confronted by denied aspects of the psyche, preparation for the experience, and the individual capacity for its integration. Variables related

to the context or "setting" include the quality of the ritual, the quality of music, and the skills and sensitivity of the facilitator. A beneficial ayahuasca experience requires a context that provides a sense of containment for the experience, one that allows patients to surrender by providing a therapeutic or spiritual focus within ethical guidelines. Well-guided rituals serve this purpose.

Ayahuasca therapy should therefore be understood as a ritual-based intervention and not solely as a pharmacological one. In addition to the drug, set, and setting variables, the support provided for integration, complementary therapeutic interventions, adequate frequency and spacing of the ayahuasca-assisted interventions, as well as proper aftercare and supportive social context, were elements that stood out as influential in determining treatment outcomes.

CONCLUSIONS

The study was intended to generate empirically based hypotheses on the therapeutic mechanisms of ayahuasca in substance dependency treatment. As outlined in this paper, ayahuasca-assisted treatment can trigger various types of psycho-spiritual processes that are valued in other therapeutic approaches for substance dependency.

Further clinical investigation is still warranted to assess the

"The transformation that may occur in people who have been touched by these experiences is very real; and experience shows that it may have deep and long-lasting effects."—Researcher O

efficacy of ayahuasca for substance dependency treatment in comparison to current best treatment practices. It seems, however, based on preliminary research that ayahuasca interventions for substance abuse treatment are, in some cases, very effective and that they can be integrated into multidisciplinary multicultural addiction treatment programs. ●

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Teaching A Graduate Clinical Psychology Course on Psychedelics

DAVID LUKOFF, PhD, SOFIA UNIVERSITY



David Lukoff, PhD

THE INSPIRATION FOR CREATING A graduate clinical psychology course on psychedelics at Sofia University (formerly the Institute of Transpersonal Psychology) came during the MAPS conference in San Jose in 2010. With all of these clinical and research advances, how could a doctoral psychology program not provide training in this area? The recent research is beyond compelling that therapy, experientially supported with psychedelics, helps resolve combat trauma in veterans as well as other forms of trauma and reduces anxiety in cancer patients.

The tipping point has been reached, with millions of people who have had such experiences bringing them into therapy. Clinical facilities that are unable to relate to client needs to integrate prior drug experiences are no longer fully responsive to the changing demographics of the clinical population. This is certainly the case in the Bay Area where a significant number of people are having psychedelic-related crises that can be helped without medication or hospitalization.

During a hallway chat (one of the most rewarding parts of a well-organized conference) with Jim Fadiman, he also wondered why Sofia University had never offered such a course. Since I had two teaching units available on my teaching load, I proposed a course co-taught by Jim and myself. It was accepted into the curriculum as a clinical elective. The two-unit residen-

tial course was first offered in the fall quarter of 2010 and has been well received.

While serving formally first as the teaching assistant, and later as an instructor for the first two years, Alicia Danforth has been the lead instructor. She was especially sensitive to the necessity for our students to truly understand, not just have read, the core literature. Alicia developed the general scope and framework of the class while Jim and I contributed our specialized experiences throughout. When space was available, students

from other institutions (including MAPS) and practicing clinicians have been admitted into the course. Sofia University is currently planning the development of an online course for its global

students and plans to offer the class through other institutions.

The class covers clinical research on psychedelic drugs as adjuncts to psychotherapy for the treatment of addiction, post-traumatic stress disorder (PTSD), and existential distress at the end of life, as well as approaches to integrate positive psychedelic experiences and to resolve psychedelic crises. Understanding psychedelic experiences requires knowledge about the interdisciplinary context, traditional uses, and applications behind the contemporary research on psychedelic drugs for treating trauma and addiction.

The course begins by establishing a cultural context for

The tipping point has been reached, with millions of people who have had such experiences bringing them into therapy.

psychedelic use among indigenous peoples and throughout human history. As anthropologist and clinician Marlene Dobkin de Rios observed, “The contribution that anthropology can make to the study of the use of mind-altering plants throughout the world is to show how cultural variables such as belief systems, values, attitudes, and expectations structure one of the most subjective experiences available to humankind” (de Rios, 1996). Not understanding the significance and value of psychedelic experiences can be considered a type of cultural insensitivity in contemporary American psychology. A culturally competent clinician must know how to address the range of psychedelic experiences that clients bring into psychotherapy. The weekly topics in our one-quarter course include:

1. Definitions and History:
Indigenous (pre-synthetics)
2. Psychedelics and Spiritual/Mystical Experience
3. Research: Early (pre-1966),
Renaissance (1990–present)
4. Cannabis: Historical, medical, recreational,
legal perspectives
5. Guidelines and Best Practices for Guiding
6. Psychosis: “Bad Trips” and Interventions
7. Uses in Psychotherapy: PTSD, End of Life
8. Treatment of Addictions: Ayahuasca,
Ibogaine, MDMA, LSD
9. Future research areas: Problem-solving,
creativity, micro-doses
10. Integration and student presentations

In particular, the understanding of psychedelic experiences requires an appreciation of their relationship to religious/spiritual experiences and to cultural trends toward spirituality less tied to an organized religious institution. Tom Roberts has termed this democratization of primary religious experience, which often occurs during psychedelic drug use. Grinspoon and Bakalar (1986) pointed out over 20 years ago that, “It should not be necessary to supply more proof that psychedelic drugs produce experiences that those who undergo them regard as religious in the fullest sense.” More recently, the Johns Hopkins researchers Griffiths, Richards, McCann, and Jesse (2006) have done just that by demonstrating that even a single psilocybin experience can alter personality and perceived meaning among a significant portion of healthy volunteers and that the effects are substantial and long lasting. As spiritual competence becomes more recognized as foundational to clinical

work, this inherent connection of psychedelics to spirituality should receive increased attention.

While not all students intend to be clinicians, clinical considerations are discussed throughout the course. In-class experiential exercises involve assessing and integrating psychedelic

experiences in role-played therapeutic encounters. Charlie Grob, M.D., the principal investigator of the UCLA Harbor Medical Center psilocybin study with cancer patients, and Anne Shulgin have been guest presenters as well as Sofia doctoral student Brito Gonzalo who has worked

in ayahuasca treatment programs in South America.

In addition to this course, the increasing interest in psychedelics in higher education is being reflected in Sofia students’ dissertations, research and academic topics that pre-date and continue concurrently with our course. Students have found ways to apply both conventional and innovative methods to explore the topics related to use of psychedelics. Here are some examples:

- Alicia Danforth is completing her dissertation on the potential of MDMA for helping autistic adults increase social adaptability. She is preparing for her job at the Los Angeles Biomedical Research Institute at UCLA Harbor Medical Center where she was a research associate on their psilocybin study with cancer patients, and she is the second author on the research published in a leading peer-reviewed journal (Grob, Danforth, Chopra, Halberstadt, McKay, Greer, Hagerty, 2011). She will present her dissertation findings at the Psychedelic Science 2013 conference in Oakland.
- Recent graduate Peter H. Addy, Ph.D. (clinical psychology, 2011) is currently a postdoctoral associate in psychiatry at Yale School of Medicine, an advanced fellow in medical informatics at the Veterans Affairs Connecticut Healthcare System, and a psychology resident at the Substance Abuse Treatment Unit, Connecticut Mental Health Center. Peter’s dissertation was a study of the effects of administering *Salvia Divinorum* in a non-shamanistic setting to healthy volunteers. The quantitative data from his dissertation has been published in *Psychopharmacology* (Addy, 2012), and the qualitative data has been presented at several conferences including Psychedelic Science 2013. Peter also authored a peer-reviewed paper on dextromethorphan (DXM), a psychoactive cough medicine ingredient in street use.
- Albert Garcia-Romeu graduated in 2012 with a

Ph.D. in transpersonal psychology, and recently accepted a position as a post-doctoral research fellow at Johns Hopkins University School of Medicine. Albert is now managing a study focused on treating smoking addiction through a combination of cognitive behavioral techniques, mindfulness, and high-dose psilocybin administration.

- Graduate Michael Cougar (2005) did his dissertation on personal transformation and psychoactive plant use in syncretic Brazilian church ceremonies.
- Deborah Quevedo (2009) studied 22 participants attending neo-shamanic retreats in Brazil who were given ayahuasca. She administered the Big Five Personality Inventory before and after taking the plant preparation and found statistically significant reductions in Neuroticism and increases in Agreeableness.
- Sofia University faculty member Jim Fadiman has recently authored *The Psychedelic Explorer's Guide: Safe, Therapeutic and Sacred Journeys*, and is currently directing two national psychedelic research studies.
- Faculty member Arthur Hastings has authored research papers on hypnosis and MDMA and is also the anonymous author of the chapter on marijuana in the classic book *Altered States of Consciousness*, by faculty colleague Charles T. Tart who also wrote *On Being Stoned: A Psychological Study of Marijuana* (2000), a book surveying the early use of marijuana in the U.S. culture. Sofia U is one of the few schools that provide faculty support for a wide range of research and scholarship on psychedelics.

Tom Roberts (2013), who has offered an undergraduate course on psychedelics for over 20 years at Northern Illinois University, has stated that, "Psychedelic research may be the field with the greatest gap between the information scholars and scientists have discovered and what the general public knows" (from his course syllabus for Foundations of Psychedelic Studies). His course syllabus, along with Robert Forte's course syllabus for an online course at CIIS entitled, *A Recent History of Psychedelic Drugs, Their Effects on Individuals and Society*, were both consulted to help bridge that gap for psychologists by

surveying psychedelics' history from archaeological times to the present and by examining their implications for psychotherapy and mental health, religion, and various academic disciplines and professional interests.

Our fondest hope for this course is that it paves the way for other universities, particularly those offering graduate training for mental health professionals, to use this precedent at an accredited graduate program to advocate for including similar courses in their curriculum. To that end, we are making the syllabus available upon request [send request to author via email]. In addition, the Psychedelic Science 2013 conference in Oakland in April 2013 will include a

presentation going into more detail about the challenges and benefits of teaching future therapists to be more sensitive and competent in working with clients who have used or are using psychedelic substances. ●

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A garden pathway at Sofia University.

Love is the Answer

An Appreciation of Myron Stolaroff (August 20, 1920–January 6, 2013)

JOHN HARRISON



John Harrison

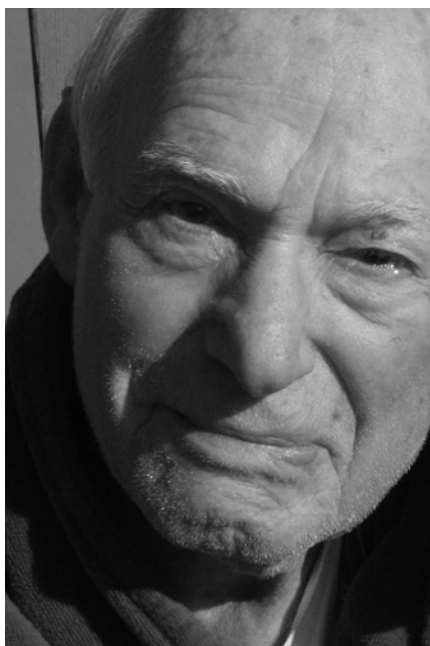
“There is a light that glows continuously in the universe. It is eternal, ever-present, and unending. This light is the source of life. It can be for each of us the source of joy, wellbeing, aliveness, in fact that which makes everything in life charged with exuberance and gratitude at the miracle of being. We can be filled with wonder and excitement at participating in the enormous adventure of life. This light is infinitely expressive, constantly seeking ways to manifest in ever-unfolding, ever-increasing varieties of expression.[...] We, humankind, have the opportunity to be the channel for the expression of this light. As the most developed creatures on the planet, we have been granted attributes which permit us to unite our inner self with this indescribably beautiful light, to be an expression of this energy, and to share in the joy and delight of the unfolding processes of Life.”

—Myron Stolaroff

THESE BEAUTIFUL WORDS OF MYRON’S are faithful in spirit to his life’s work, and genuinely reflect the heart of this remarkable human being. So many who have been touched by, or are active in, the psychedelic movement owe much to this brilliant and humble pioneer.

Born in Roswell, New Mexico, on August 20, 1920, Myron completed his education at Stanford University with a Masters Degree in Electrical Engineering. The bulk of his industrial career was spent with Ampex Corporation, a leading manufacturer of magnetic recording equipment and producer of the first successful video recorder. Here he reached the position of Assistant to the President in charge of Long Range Planning. This position provided the broad perspective of the technical world that permitted him to declare, after his first experience with LSD in 1956, that LSD was the most important discovery of mankind. He consequently made the decision to devote his primary energy to discovering and exploring the potential of psychedelic substances.

In 1960, Myron founded the International Foundation for Advanced Study (IFAS) in Menlo Park, California, where research with LSD and mescaline was conducted for three and a half years, processing some 350 subjects and resulting in six professional papers, including a landmark investigation of the application of psychedelics to creativity. After the FDA revoked all permits for research with psychedelics in 1965,



Left to right: Myron Stolaroff; Jean Stolaroff, Myron, and Sasha Shulgin, out on a walk around their property (photos by Jon Hanna, Erowid.org); and Myron in his early years (photo from the Stolaroff Collection, Erowid.org).

Myron began studying how the knowledge of psychedelics can be employed to deepen meditation practice and achieve personal realization. Myron accurately perceived psychedelics as a valuable tool on the path to self-realization and wholeness, but definitely not the only or final tool.

His inner work through meditation, as well as his many papers and books, reflect this understanding and his ongoing search for self-discovery and the divine within. Some of this inner work included hiking and climbing in his beloved High Sierra. Myron and his wife

Jean lived in the quaint township of Lone Pine, Calif., at the base of magnificent Mt. Whitney. Surrounded by the hauntingly beautiful high desert and the Sierra crest, Myron, Jean, and their delighted friends would take daily hikes and occasional extended forays into the backcountry wilderness, where they would enjoy the mountain air and wax philosophic.

The esteemed Jon Hanna of **erowid.org** writes, “On January 28, 1978, Myron took MDMA for the first time. The experience produced a ‘marvelous euphoria’ and was a ‘wonderful introduction’ to the compound, which was not illegal at the time. Myron quietly began personal investigations into the effects of these drugs, until the Controlled Substance Analogue Act of 1986 put a damper on that research as well. After this, Myron shifted more focus onto his meditation practice...and soon he joined the Board of Directors for The Albert Hofmann Foundation, which had formed in 1988.” Besides his work with the Hofmann Foundation, Myron also served as a consultant to the Heffter Research Institute and was on the Board of Advisors for the Center for Cognitive Liberty and Ethics. Subsequently,

he began writing his autobiography, *Thanatos to Eros: 35 Years of Psychedelic Exploration*, which was published in 1994.

In his autobiography, Myron describes his own difficult yet rewarding personal journey. It is a journey from the grip of Thanatos, the drive for death that effectively defeats enjoyment of life, to Eros, the drive for life that brings ultimate fulfillment. For Myron, an essential ingredient in the success of this struggle was the use of psychedelic substances. “First of all, these sacraments, as I prefer to call them, are fantastic privileges.

It is an indescribable grace, an indescribable privilege.” Utilizing these “power tools” to become aware of the vast potential available to the human being was a primary benefit, Myron felt:

This is apparent the first time anybody takes one of the stronger psychedelics, like LSD. One of the amazing things is the way barriers to perception fall away and you become aware of more and more that you’ve never perceived before—a remarkable opening. As you continue to use these substances, these openings can continue and grow, until you become convinced that the process is practically limitless.

Myron’s story elicited universal acclaim from brilliant authors and psychedelic researchers world-wide:

“I wish I could have had Myron as a Sunday school teacher to prepare me for my own psychedelic rites of passage: it would have helped me save about ten years of struggle.”—George Greer, MD, MDMA researcher and therapist, co-founder of the Heffter Research Institute

“These sacraments...are fantastic privileges...an indescribable grace, an indescribable privilege.”
—Myron Stolaroff



Left to right: Myron and Jean Stolaroff in 1984; Myron greeting Albert and Anita Hofmann (photo by Erowid); and Myron on the porch. Images courtesy of Theresa Stolaroff.

“Fascinating reading, both as a human story and as invaluable data on the long term, serious use of psychedelics for psychological and spiritual growth! We need books like these, they are too rare.”—Charles T. Tart, PhD, researcher in altered states of consciousness, transpersonal psychology, and parapsychology, author of *Altered States of Consciousness and Transpersonal Psychologies*

“Myron Stolaroff is one of the legendary pioneers of that stubborn shadow-science—the principled personal investigation into non-ordinary states of consciousness—which refuses to roll over and die despite its official excommunication by the orthodox Church of Science. This book is a dispatch from the Neuro-Consciousness Frontier and it has all the qualities of the man who wrote it; levelheaded, implacably honest, boundlessly curious.”—Jay Stevens, author of *Storming Heaven: LSD and the American Dream*

No less a light than the great Albert Hofmann (inventor of LSD) wrote to Myron in a personal correspondence dated 11 February 1995:

Dear Myron Stolaroff,

I do not remember that a book from a living author impressed me more than Thanatos to Eros...Reading your book, I enjoyed the security and deep happiness one experiences when one meets somebody with whom one is sharing their own insights into the essence of being and of our role on this planet. My accord with your concepts of life and reality can best be summarized if I tell you that already in the first two paragraphs of the introduction the core of my belief has found its most beautiful expression.

In psychedelic companionship, Albert Hofmann

In 1997, Myron published his groundbreaking book about the work of Leo Zeff, *The Secret Chief: Conversations with a Pioneer of the Underground Psychedelic Therapy Movement* (published

by MAPS). Based on interviews that Stolaroff made of a psychotherapist who used illegal psychedelics in his practice, the book also contains contributions from Stanislav Grof, Albert Hofmann, Ann Shulgin, and Sasha Shulgin. It is a seminal work exploring the early days of underground psychedelic therapy, legitimizing the sort of work that has only recently been given limited governmental approval to take place within legal, above-ground contexts. In 2004, Myron followed with an expanded version of his book, *The Secret Chief Revealed: Conversations with Leo Zeff, Pioneer in the Underground Psychedelic Therapy Movement*. Also published by MAPS, this expanded version finally presents the Secret Chief’s true identity; it also contains a new introduction and a number of tributes that extol the gifts and virtues of this courageous individual.

Myron also contributed a wonderful addition to the important book *Zig Zag Zen* entitled “Do We Still Need Psychedelics?” As always, measured and unfailingly honest Myron makes the

case, and answers, *Yes!* The book’s editor, Allan Badiner, remarked: “Many people experimented with and wrote about the positive effects of psychedelics but Myron Stolaroff not only dedicated a large part of his life to this, but he embodied it. No one in the psychedelic community comes to mind as more compassionate, kind, and wise than Myron Stolaroff.”

A modern Renaissance man, Myron Stolaroff was at once a force of nature and a true gentle-man. A lover of words, ideas, and the natural world, he was unique. Myron’s life was his laboratory, where he encouraged us, by example, to go even deeper with the myriad tools we have been given through psychedelic exploration and research. He was a fearless explorer of the inner human realms of shadow and light through psychotherapy and meditation, and his life was imbued with a profound wisdom born of his genuine love for this earth that gives us life.

The evolution of his life as electrical engineer, psychedelic explorer and researcher, medicine journey-guide, author, lec-

*His message was simply:
“Love is the answer!”*



A box formerly containing Sandoz LSD (Delysid) from Myron Stolaroff's archive Photo by Jon Hanna, Erowid.org



Myron Stolaroff's books (from left to right): *Thanatos to Eros*; *The Secret Chief*; and *The Secret Chief Revealed*.

turer, raconteur, mountaineer, Buddhist meditator, and seeker of the divine led him finally to exclaim to his son Jerry that "Love is the answer!" His realization was similar to that of another psychedelic pioneer—Aldous Huxley, whose deathbed advice (when asked to distill his life's wisdom) was, "Try to be a little kinder." After hundreds of psychedelic journeys (as both guide and participant), his long years of deep meditation practice, his countless hours reading and researching into the human psyche, and the hundreds of miles he walked in the mountains his message was simply: "Love is the answer!"

We hear you Myron, and thank you! 🍄

FURTHER READING

To learn more about Myron Stolaroff and his important and inspiring work, see:

Thanatos to Eros: 35 Years of Psychedelic Exploration by Myron Stolaroff, Stanislav Grof (Prologue), Ann Shulgin (Tribute), Albert Hofmann (Foreword) and Sasha Shulgin (Epilogue). Berlin: VWB—Verlag für Wissenschaft und Bildung, 1994.

The Secret Chief: Conversations with a Pioneer of the Underground Psychedelic Therapy Movement. North Carolina: MAPS, 1997.

The Secret Chief Revealed: Conversations with Leo Zeff, Pioneer in the Underground Psychedelic Therapy Movement by Myron Stolaroff, Stanislav Grof (Prologue), Ann Shulgin (Tribute), Albert Hofmann (Foreword) and Sasha Shulgin (Epilogue). Paperback, Revised edition, 176 pages. MAPS, 2004

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John Harrison MA, PsyD (cand.) is and has been a psychedelic researcher, addiction treatment therapist, anti-Drug War activist, Zen Buddhist practitioner, Gestalt group leader, and mountaineer. John is also a connoisseur of amazing and breath-giving sunsets. He can be reached at jakaileb@hotmail.com.

Review: *The Psychedelic Future of the Mind* *How Entheogens Are Enhancing Cognition, Boosting Intelligence,* *and Raising Values* by Thomas Roberts, PhD

NESE DEVENOT



Nese Devenot



Tom Roberts, PhD

TOM ROBERTS'S NEWEST BOOK IS a tour de force in the nascent field of psychedelic studies. More than a seminal overview of psychedelic research to date, *The Psychedelic Future of the Mind* proposes bold new research directions and methodologies that intrepidly advance what psychedelic research can become. The experimental directions suggested in these pages can easily catalyze hundreds of dissertation projects and laboratory studies. A guide for researchers and the general public alike, this book promotes paths to integrate the power of psychedelic insights into both careers and daily life.

This book is primarily about the potential future of psychedelic research, as the title suggests. Roberts explains how virtually all completed and ongoing psychedelic research has occurred in a medical psychotherapeutic context, with studies addressing posttraumatic stress disorder, cluster headaches, existential anxiety, and addictions, among other topics. Roberts lauds the advances in psychedelic psychotherapy and medicine, but he argues that non-psychotherapeutic applications—including research into the cultural benefit of psychedelics—deserve far greater attention than they have yet received.

The Psychedelic Future of the Mind is organized into three main sections. Part One considers the relationship between psychedelic and classical mystical experiences, highlighting the significance of the similarities and differences between them. Roberts suggests that, on one hand, psychedelics mediate mystical experiences by emphasizing values of social responsibility and spiritual motivation; and on the other, they reveal previously unknown or unconscious aspects of mind. Making note of studies that demonstrate “persisting, positive changes” in mental wellbeing as a result of mystical experiences achieved through psychedelic use, Roberts argues for a pragmatic valuation of psychedelic-induced mystical experience based on the shift from an “I-me-mine” ego orientation towards an ecological, collective, and even cosmic orientation.

Positioning psychedelic experience within a more general “Multistate Theory,” Part Two frames psychedelics as cognitive tools with the potential to enhance cognition and push thought beyond habituated paradigms. Roberts’ proposed theoretical framework embeds mystical consciousness alongside ordinary consciousness within a larger spectrum of mind-body states, which he defines analogously to the function of programs or apps in computers. He suggests that psychedelics reveal non-ordinary mind-body states, each of which allow for new patterns of information processing and the potential for activating abilities that do not exist in ordinary states of consciousness. Psychedelics and other psychotechnologies, like meditation or yoga, can be used as “conceptual research methods to think outside the box, to reexamine theories, models,

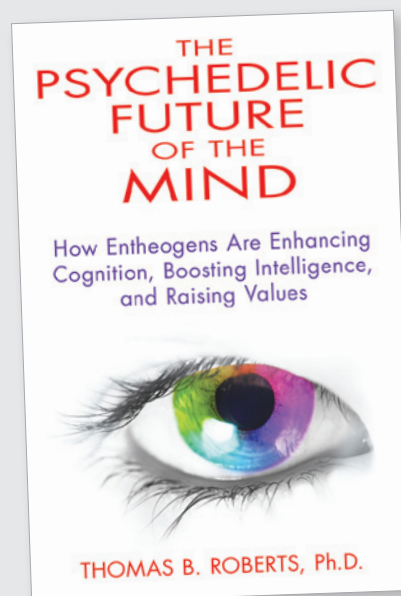
paradigms, assumptions, and even our thinking processes.”

Finally, Part Three offers multiple visions for applying psychedelic discoveries to benefit society. Roberts suggests that the most significant factors in making these benefits available are by educating the general public (influential people especially) about the possible uses of psychedelics, and by raising funds to finance the costs of research for drug testing and approval. Roberts suggests that higher education be enriched with new research questions, specialties, and course content involving psychedelics, and he sketches a blueprint for integrating mind-body awareness into a new definition of what it means to be well-educated. With the recent successes of the psychedelic renaissance, he reveals how educators can justify teaching courses in psychedelic studies to help cultivate the next generation of psychedelic researchers.

The Psychedelic Future of the Mind is one of the more timely books published this year. Now more than ever, it is important to expand the boundaries of psychedelic studies and to incorporate the wisdom of what we have learned so far into more disciplines and methodological approaches. Roberts’ book will be a signpost of inspiration to current and future researchers in developing this field. 🌀

Nese Devenot is a doctoral student in the Program in Comparative Literature and Literary Theory at the University of Pennsylvania, founder of the Psychedemia psychedelics conference, and a contributing editor for *Reality Sandwich*. Specializing in visionary art, psychedelic culture, futures studies, media studies, magic, and performance, she taught an undergraduate course titled “Poetic Vision and the Psychedelic Experience” during the Fall 2011 and Spring 2012 semesters. She can be reached at ndevenot@sas.upenn.edu.

Thomas B. Roberts, PhD is Professor Emeritus in the Honors Program at Northern Illinois University. He can be reached at troberts@niu.edu.



Available at maps.org/store.

From *The Psychedelic Future of the Mind* (page 33):

“Naturally enough, ways of triggering self-transcendence, mystical experiences, sacral, and ecstatic states attracted his attention, and the psychedelic work of Stanislav Grof provided one piece of evidence. In *Religions, Values, and Peak-Experiences*, Maslow (1970) mentioned Grof’s psycholytic work as important in providing nadir-experiences, the opposite of peak experiences (p. xiv) and later noted that, ‘these deductions from the nature of intense peak-experiences are given some support by general experience of LSD and psilocybin’ (p. 76). Because many humanistic psychologists rejected any idea of spirituality, cosmic awareness, mystical experience, and related ideas, in 1967, Maslow, Grof, and others decided to found a new post-humanistic psychology. Together they coined the term transpersonal (Grof, 2012).”

Paperback: 288 pages

Published by Park Street Press (2013)

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One out of three people
suffering from posttraumatic
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MAPS: Who We Are

Founded in 1986, the Multidisciplinary Association for Psychedelic Studies (MAPS) is a **501(c)(3) non-profit** research and educational organization that develops medical, legal, and cultural contexts for people to benefit from the careful uses of psychedelics and marijuana.

MAPS furthers its mission by:

- Developing psychedelics and marijuana into prescription medicines.
- Training therapists and working to establish a network of treatment centers.
- Supporting scientific research into spirituality, creativity, and neuroscience.
- Educating the public honestly about the risks and benefits of psychedelics and marijuana.

MAPS envisions a world where psychedelics and marijuana are safely and legally available for beneficial uses, and where research is governed by rigorous scientific evaluation of their risks and benefits.

MAPS relies on the generosity of individual donors to achieve our mission. Now that research into the beneficial potential of psychedelics is again being conducted under federal guidelines, the challenge has become one of funding. No funding is currently available for this research from governments, pharmaceutical companies, or major foundations. That means that the future of psychedelic and marijuana research is in the hands of individual donors. Please consider making a donation today.

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Valerie Mojeiko, Director of Operations,

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Virginia Wright, Director of Marketing and Development,

brings a wealth of fundraising experience to MAPS. Her firm Wright & Associates has provided strategic thinking, marketing, and fundraising services to arts organizations and cities throughout Northern California and Nevada. She received her B.A. in International Relations from San Francisco State University, and her M.B.A. from Santa Clara University.



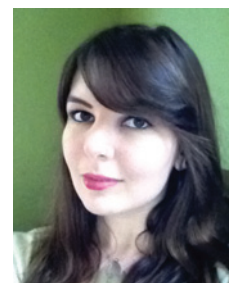
Brian Brown, Development Associate,

studied medical anthropology and visual culture at the University of California, Santa Cruz where he researched social prospects for psychedelics using a community centered approach. Brian is now developing MAPS' membership base by assisting with education and outreach efforts.



Kynthia Brunette, Operations Associate,

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Tess Goodwin, Development Assistant, has a B.A. in Psychology from the University of California, Santa Cruz, where she focused most of her time on social psychology and newspaper production. She is a mycophile, artist, and language enthusiast.



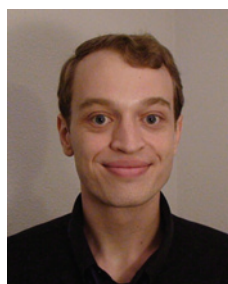
Sarah Jordan, Publications Associate,

earned her B.A. in Environmental Policy with a minor in Journalism from the University of California at Santa Cruz. Prior to joining MAPS, she was Communications and Development Assistant at Firelight Foundation in Santa Cruz, CA.



Ilisa Jerome, PhD, Research and Information Specialist,

earned a Ph.D. in psychology from the University of Maryland. She helps MAPS and other researchers design studies, gathers information on study drugs by keeping abreast of the current literature and discussion with other researchers, creates and maintains documents related to MAPS-supported studies, and helps support the MAPS psychedelic literature bibliography.



Bryce Montgomery, Multimedia Associate,

studied film production at West Valley College, joining MAPS as Social Media Intern in the summer of 2011. Bryce now serves as Multimedia Associate, bringing his background in film production and social media to public education about psychedelics.



Linnae Ponté, Executive and Clinical Research Assistant and Harm Reduction Coordinator,

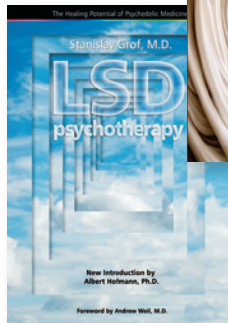
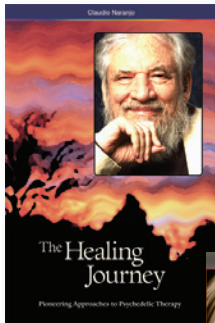
earned her BA in Biological Psychology from New College of Florida. She's assisted data collection and analysis at University of South Florida's Cardiovascular Psychophysiology Laboratory, MOTE Marine Mammal Aquarium Psychophysical Laboratory, East-West College of Natural Medicine, and the West Mamprusi Civic Union in Ghana, West Africa.



Berra Yazar-Klosinski, PhD, Lead Clinical Research Associate,

earned her Ph.D. in Molecular, Cell, and Developmental Biology from University of California Santa Cruz, where she also served as president of the Graduate Student Association. After attending Stanford University, she worked as a Research Associate with Geron Corporation and Millennium Pharmaceuticals.

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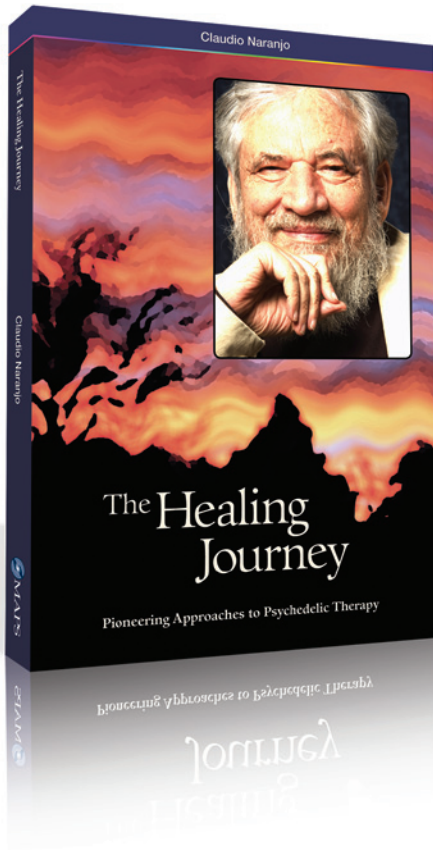
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About the Author

Claudio Naranjo is a psychiatrist and pioneer in the integration of psychotherapy, spirituality, and psychedelic experiences. He is a developer of the Enneagram of Personality, founder of the Seekers After Truth (SAT) Institute, and author of numerous books on psychotherapy, consciousness, personality, and education. Watkins' *Mind Body Spirit* magazine named Claudio Naranjo as one of the 100 Most Spiritually Influential Living People of 2012. Now in his eighties, Naranjo is an internationally sought-after public speaker and teacher.

