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# Might Microdosing Psychedelics Be Safe and Beneficial? An Initial Exploration

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**ABSTRACT**

Albert Hoffman suggested that low doses of LSD might be an appropriate alternative to Ritalin. Following this possibility, a systematic exploration of the effects of "microdoses," comprising hundreds of lengthy descriptive reports, was undertaken. Based on these reports, using a psychedelic in the microdose range (10 micrograms) every three days was determined to be safe across a wide variety of individuals and conditions. Over 18 months, more than a thousand individuals from 59 countries did a daily evaluation of negative and positive emotional state using the PANAS checklist plus written reports for between one week and four months. Participant reports suggested that spaced but repeated microdoses were followed by improvements in negative moods, especially depression, and increases in positive moods. Increased energy, improved work effectiveness, and improved health habits were observed in clinical and non-clinical populations. Smaller samples described alleviation of symptoms in migraine headaches, pre-menstrual syndromes, traumatic brain injury, shingles, and other conditions not previously associated with psychedelic use.

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## Introduction

In our initial exploration of microdosing and its effects, in which we simply corresponded with people about microdosing, we defined microdosing as being a "sub-perceptual dose." This created some misunderstandings as, almost always, one can tell that one has taken a microdose. The intention was to say that microdosing did not cause visual or perceptual changes usually associated with psychedelics. A microdose of a psychedelic is between 1/10 and 1/20 of a "recreational dose." For LSD, that is between 7–13 micrograms; for dried psilocybin mushrooms, 0.1–0.4 grams. (For other substances, see microdosingpsychedelics.com). A correct microdose produces no classic psychedelic effects (e.g., visual distortions, internal visions). We have no reason to think that microdosing affects different receptors in the brain and gut as higher doses (Madsen 2018). A behavioral definition of a microdose comes from one participant and captures the gist of many reports: "Feeling productive, able to focus on what I choose, enjoying relationships, good energy, and not recalling that I took anything."

In this article, we focus on findings for which we have sufficient reports to allow generalization. We review and consider what has been learned from the initial open exploratory reports, the structured explorations, and the planned follow-up studies. A partial list of reported changes can be found in an earlier article (Fadiman 2016), with more reported since then. As we write this, participants are still entering our study daily, so results reported here should be viewed as "in progress."

Given the wide range of reported effects from individuals all over the world and the continued rise in interest, it seems remarkable that this dose level of psychedelics had not been studied until recently. Even though it is likely that Indigenous people have used microdoses historically and currently, such evidence rarely appears in the anthropological literature (Knowles 2018).

Early research with LSD concluded that there were no discernible effects at doses lower than 25 μg for most participants (Passie 2018). As the researchers were looking for physiological and perceptual changes similar to those reported at higher doses, their findings were accurate. Furthermore, when Sandoz made LSD readily available to the world research community, the smallest amount available in tablet or ampules for human use was 25 μg (Hofmann 2005). Albert Hofmann remarked that he had been disappointed that Sandoz, despite his suggestions, had not looked more closely at the effects of very low doses. The first phase of microdose exploration parallels how Sandoz Pharmaceuticals determined the effects (dangers and

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benefits) of doses of LSD 25 μg or more. To encourage experimentation, individuals or institutions that expressed an interest in this substance were sent samples to evaluate. What was unusual was that the package instructions told investigators that "the psychiatrist who was interested in using Dslysid (LSD) should first test it on himself" (Grob and Hoffman 2002, 17). Sandoz reviewed their initial distribution policy later, in 1965. "It was therefore decided to make LSD available free of charge to qualified experimental and clinical investigators all over the world. This broad research approach was assisted by the provision of any necessary technical aid and in many cases also by financial support" (Cerletti, in Hofmann 2005).

Sandoz was looking for a marketable use for their new substance. The method they chose was to have others map the effects-space to determine if LSD could be used safely, had positive value, and, if so, for which conditions and/or populations. Sandoz's initial conclusion was that the effects of LSD mimicked psychosis and could be used as a training tool so that mental health workers could experience their clients' disturbed inner worlds. Only some years later, after there was an awareness of the importance of set and setting, was LSD's potential for healing and for inducing transcendent experiences seriously explored.

## Initial microdose exploration

The initial phase of microdose exploration emulated the same pattern, asking people interested in microdosing (suggesting dose levels for different substances and a time between doses), then requesting reports, including from individuals whose actual use differed widely from the suggestions.

The first author asked community members who had tried microdosing what they had found and, as the stories came in, he reported unanticipated results. A number of people reported results that seemed similar in outcome: better relationships with family and friends, less procrastination, and more creativity at work. There were very few negative outcomes at this early stage. Some people reported that microdosing didn't work for them, or that they could not sleep if they took it too late in the day. Some of the results were unanticipated. Several women reported that it helped their peri-menopausal symptoms, and a number of people with migraine or other headache conditions reported an almost total remission of symptoms.

In the following year, an artist in the Midwest made up a page of 20 microgram tabs, illustrated with icons from the 1960s. He sent them to 100 people with a pen and a bound journal, asking for journal entries, drawings, and commentaries.

As people spoke to one another, social media began to discuss the distinct possibility that the effects of microdosing were real, discernible, positive, and health-enhancing. Microdosing with LSD also seemed safer than taking higher doses, since LSD is known to sometimes cause difficult emotional experiences (Gasser et al. 2015).

It may be that the so-called "placebo effect" could explain the results (Passie 2018). In our study, the people microdosing were not in a blind trial. For example, recovery from depression could definitionally be part of the placebo response; since

" feeling better" was both the placebo effect and recovery from depression. Our exploration does not take a position on this issue, leaving that to later formal research studies. We consider the placebo to be a natural healing response of the body. As one participant wrote, "I don't care if it's a placebo or not, all I know is I haven't felt this good in decades."

As reports accumulated, ranging from a few words a day in a daily journal to several thousands words a day for the requested duration of one month, the limitations of personal idiosyncratic reports became more evident. Under direction of the second author, the next phase of exploration was more formalized.

## The first worldwide open enrollment exploratory study

There was growing interest in microdosing from the media, already reporting on every new psychedelic and MDMA research project. "Microdosing" became the new story and interviews, podcasts, conference presentations, journal reports, and articles proliferated.

These media reports led to more requests for accurate information, more desperate people asking if it might help their situation, and more discussions on the web (e.g., Blue Light, the Something Awful forums, Shroomery, Reddit). Because of the availability of synthetic and naturally occurring psychedelics worldwide, more people who wanted to follow the protocol[1] were able to enter the study. One of the preliminary questions was which substance a participant intended to use. Groupings of common requests emerged: hope for alleviating depression, increased focus for work (not limited to technical or scientific work), better focus in classes, many medical conditions, changes in long-term and chromic conditions, relief from trauma, and general unspecified life improvement (Fadiman and Korb, 2019).

## Methods

We offered a protocol to people who wanted to do their own microdose self-study. The protocol was: microdose on day 1, no dose on days 2 and 3. Repeat this cycle for a month. This evolved from early reports that suggested that a microdose had a two-day effect. For research purposes, the third day was to have people return to their base state so, when they dosed again, they could better observe the effects. At the end of the month, participants were to decide for themselves, based on their own observations, when and if they might microdose in the future. Most people who continued to microdose after their research month chose to do so less frequently—most commonly once a week or once a month.

As the research had become more formal, participants filled out a form including their demographics, positive and negative mental and physical conditions within the prior month, reasons or intentions for microdosing, and a request to daily check off the duration of different positive and negative emotional indicators.

## Results

The current database holds hundreds of long-form journal entries from people who undertook a self-microdosing project. We also have thousands of data points about daily mood during individual microdosing from hundreds of people, using the PANAS 2.0 scale. These "daily check-ins" also included room for short-form journal entries, and some participants used those to track pain, blood glucose, and other personal variables. These two data sources result in the opportunity to triangulate some of the qualitative experiences with the quantitative. More than validating the qualitative with quantitative results, combining the data sources allows a richness of description not possible from simply reading about mood change or any single variable.

The participants came from a myriad of ages (18 to 80), life circumstances, and diagnoses. Despite these differences of circumstance, several common experiences emerged.

## Typical stories in microdosing self-reports

Positive and neutral stories make up 80% of the sample, and the negative and neutral stories make up the rest. A typical positive story contains these features. Someone starts to microdose for any variety of reason. They may or may not have a strong immediate reaction to microdosing, but, by the end of the second week, they report an increase in positive emotions and a decrease in negative ones. They find social interactions easier, and they are more patient with people they have otherwise found frustrating. They have fewer headaches. They have an easier time getting their work done on time and leaving the office in a timely way. They feel more creative, almost inspired. After their initial month of microdosing self-study, they decide they want to microdose once a week or once a month thereafter.

A typical neutral story is that a person isn't sure if microdosing helped them or not. They may have felt some nervous energy on the days they microdosed. Negative reports included people who had uncomfortable physical symptoms (usually with mushrooms) and, most commonly, increased anxiety.

## Common themes in microdosing self-reports

Mood change. People often report that they had an elevation in mood. When they filled out their enrollment form, most people said they had suffered from depressed mood in the last month. Both people who reported that they were diagnosed with major depressive disorder, bipolar disorder, and other mood disorders, and those who did not report this diagnosis reported negative affect scores that improved with microdosing for longer than 14 days.

We have been careful not to attach clinical significance to statistically significant results. While statistical significance can give us information about a low-level change over a large population—for example, improving one point on the Beck Depression Inventory—this may mean little to people suffering from depression. However, many participants informed us that they found microdosing to be an effective antidepressant, or replacement for their antidepressants. For example, a 70-year-old man writes: "For the first time in 31 years, I am off antidepressants" and includes descriptions of moments when his emotional range has clearly been expanded. Other participants were able to taper themselves off of anti-depressant medications more easily while microdosing. Many participants reported a change in their treatment resistant depression, a finding that warrants further study as the mechanism of action behind this change is unclear.

Participants diagnosed with bipolar disorder present one special group for inquiry. People with bipolar disorder, diagnosed with both type I and II, reported that microdosing was helpful for their depressive periods but not for their manic or hypomanic ones. In contrast to some common stereotypes that people with bipolar disorders enjoy their manic or hypomanic periods, people in our study got in touch with us about their fears about

becoming manic or hypomanic, and asked about reducing their microdose dose or frequency. The participants changed their microdosing routine, and none of them reported mania or hypomania as part of the study.

Change in work. Many participants reported that they wanted to microdose for their diagnosed ADHD, or for their self-diagnosed attention issues, or simply to be more productive or creative. Most reported that microdosing was helpful for their productivity, as they procrastinated less and were able to see the parts of a project through to completion. Though LSD or psilocybin may affect different neuroreceptors than other stimulant therapies for ADHD, they are still stimulants, and perhaps the change in attention was due to stimulation, no matter what receptor. A substantial number of participants reported substituting microdosing for their regularly prescribed stimulants, and that microdosing didn't cause the same crash that their regular medications did. A number of people reported that microdosing helped them be more creative, and sent us art, both visual art and music from their microdosing self-experiments.

Change in home life. Participants report that they are more patient, more giving, and more open with their family members, and their family members report the same.

Medical conditions in microdosing self-reports

Some people found that microdosing affected (or did not affect) their medical conditions. Most people who microdosed did not do so initially because of medical reasons, but discovered the effect over the course of their microdosing.

Chronic pain. There was no observeable difference in microdosing and daily pain reported for the majority of people who microdosed with chronic pain. People did, however, report that microdosing helped them with the depression that sometimes accompanies chronic pain conditions. Some people did report it changing their chronic pain, in particular people with neuropathic pain. In fact, a number of people reported that microdosing helped them with intractable herpes zoster (shingles) pain or other neuropathic pain.

## Discussion

The field of microdose use and research is rapidly changing. Crowd-sourcing participants are giving way to university-sponsored surveys with multiple measurement goals and specific clinical and non-clinical target populations. Studies are starting in which participants are to be given measured doses of LSD, psilocybin, or a placebo in a structured setting, measuring physical parameters, and answering questions related to self-observations of mental and physical changes during and after microdosing. Because of the extent of our data, members of the research team have acted as advisors for several of the studies in development or under way.

While the website microdosingpsychedelics.com remains open and the number of participants self-reporting continues to rise, we considered what we could do that the upcoming projects could not. We asked what did we want to know, and what could help focus the next level of research.

We have instituted a large-scale, multi-site (59+ countries), multi-diagnostic (many physical and mental conditions, as well as participants microdosing for enhanced wellness) follow-up survey of longer-term results from microdosing a variety of substances, doses, and frequencies. It is possible that there are enough participants in our sample to come to some meaningful conclusions, even for some of the less frequent reasons people give for initial microdosing, including PMS, migraines, cluster headaches, learning disorders, and allergies.

While many of the participants filled in the short daily report for the month as requested, many more stopped short of that. We were inundated with reports, and received feedback that our communication with participants was inadequate, which has led us to design more robust strategies. Therefore, by requesting current information from the full sample, information can be obtained about short-term vs. long-term effects (both positive and negative) about a spectrum of conditions.

While we did not see a change in pain perception overall, some individuals did report a change in their chronic or acute pain, as in this pair of reports: "Microdosing actually helps make the pain more tolerable without the extreme buzz of high doses of THC concentrates which is the only other pain relief I use. I was on opioid pain meds for seventeen and half years after an accident damaged my neck and back. I stopped using opioid[s] two years ago." From a 65-year-old male with chronic pain from spinal injuries: "The experience I get when I use the .5g (dried mushrooms) is that the areas producing pain seem to have lost the pain signal.… With psilocybin bright tingling feeling, without psilocybin crippling pain." These reports, coupled with reports of people cutting back heroin and methadone while microdosing, and numerous participants who were in pain before microdosing from illness, accidents, post-operative complications, and other causes, become potentially important.

Many promised results from pharmaceutical research have not come to fruition once the drugs were introduced to the market. One possibility is that the measurement tools and tests given as part of pharmaceutical testing do not adequately encompass the real-world experience of

patients. Over the years, we rely more and more on RWE (real world evidence) to present results that may or may not be testable in the usual laboratory settings. This is part of a growing trend in clinical research towards greater reliance on RWE, rather than on controlled studies, because only by seeing actual use can a drug ultimately be shown to be efficacious (Sherman et al. 2016).

We also feel a moral obligation to move the next wave of research forward quickly, since there are thousands of people around the world taking microdoses of various psychedelic substances, partly because of media coverage of our preliminary findings. It is time for longer-term studies to uncover and verify long-term negative effects and evaluate long-term benefits.

It is not known if (and to what extent) the effects reported in surveys are substance-, dose-, or period-dependent. For example, we know from high-dose depression studies with psilocybin that treatment-resistant depression lifts for almost all participants, and that the effects last from several weeks to several months. We will know more from the results of clinical trials research in the next several years.

We have several follow up studies ongoing, flowing from what we learned in the initial exploration discussed in this article. Since we learned from feedback about our initial exploration that we did not give enough feedback to participants, we are implementing a more automated feedback tool, as well as devoting more time to managing expectations. We are asking people who stopped reporting their microdosing what happened as a result of their experiment, as well as asking more specifically about people in these patient groups. Our pre-registered hypotheses, de-identified data, analysis, and results are being uploaded into our site at the Open Science Framework for review and further analyses by other researchers and the public.

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We have no doubt that more and better research is coming. There is a MAPS-supported listserv of graduate students whose career paths intend to include part- or full-time psychedelic research or clinical applications. That list has hundreds of educated, motivated, and ambitious people from many countries determined that there should be no limitation on the science necessary to understand and use these substances safely, wisely, and well. It is with considerable relief that we know that our initial exploration can now step aside and welcome the clinical research beginning in 2019 in at least 12 countries. We appreciate and gratefully contribute to the intergroup cooperation established between these teams, sharing methods, data, and results.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

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