

LSD Fact Sheet

January 2017



What is LSD?

Lysergic acid diethylamide, commonly referred to as LSD, or “acid,” is considered the best known and most researched psychedelic drug.ⁱ LSD is active at exceptionally small doses (around 20 micrograms) and is taken orally, sometimes as droplets or more commonly on blotter paper and absorbed on the tongue and then swallowed.

LSD was discovered in 1938 by Albert Hofmann, a Swiss chemist working at Sandoz Laboratories, who later became the first person to experience the drug’s psychoactive effects after he accidentally ingested a small amount in 1943. The effects Hofmann reported included, “restlessness, dizziness, a dreamlike state and an extremely stimulated imagination.”ⁱⁱ

Sandoz sent samples of LSD to psychiatrists, scientists, and mental health professionals around the world for more research. For the next two decades, thousands of experiments with LSD led to a better understanding of how LSD affected consciousness by interacting with the brain’s serotonin neurotransmitter system.ⁱⁱⁱ

Scientists considered psychedelics to be promising treatments as an aid to therapy for a broad range of psychiatric diagnoses, including alcoholism, schizophrenia, autism spectrum disorders, and depression.^{iv} Thousands of people were also introduced to psychedelics as part of various religious or spiritual practices, for mental and emotional exploration, or to enhance wellness and creativity.

Recent results from epidemiological studies have shown lower rates of mental health disorders and suicide among people who have used psychedelics like LSD.^{v,vi,vii}

LSD is currently in Schedule I of the Controlled Substances Act, the most heavily criminalized category for drugs. Schedule I drugs are considered to have a “high potential for abuse” and no currently accepted medical use – though when it comes to LSD there is significant evidence to the contrary on both counts.

What is the cultural history of LSD?

In the 1960s, non-medical use of LSD was popularized by poets and musicians, like Allen Ginsberg and The Beatles, and outspoken advocates like Harvard professors Tim Leary and Ram Dass (then Richard Alpert).^{viii} The epicenter of the culture around LSD use, San Francisco, was the home of what became known as the “Summer of Love” in 1967. In the popular press and among politicians, LSD became associated with this youth-led social movement steeped in antiwar demonstrations, sexual experimentation, and cultural upheaval, which largely ignored some of the potential downfalls of widespread use in uncontrolled settings.^{ix}

LSD’s widespread popularity at the time meant that it was often used in chaotic settings and sometimes by people who did not know what they were taking or who were otherwise unprepared for the experience.^x Media began reporting on strange behavior and negative outcomes associated with LSD use. In 1968 President Nixon declared drugs to be “public enemy number one” and in 1970 signed the Controlled Substances Act, placing LSD in Schedule I. Nixon’s domestic policy chief admitted decades later that their declaration of a war on drugs was a tool to vilify the anti-war left, Black people, and other minorities: “Did we know we were lying about the drugs? Of course we did.”^{xi}

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What are the short term effects of LSD?

The effects of psychedelic drugs like LSD are difficult to categorize – they affect different people, at different places, and at different times, with incredible variability.^{xii xiii}

However, LSD and other psychedelics are known for their profound changes in consciousness and perception. LSD's effects last around 8-10 hours, with peak effects occurring 4-6 hours after ingestion. These effects include sensory enhancement, sense of time changing (minutes can feel like hours), real or imagined objects appear to be moving (flowing patterns and shapes) both with eyes open or closed, unusual thoughts and speech, personal insight and reflection, and excited mood.ⁱ

Individual reactions to these perceptual changes are very much based on set and setting.^{xii} Set (or "mindset") refers to the psychological state and the beliefs of the person taking the drug. Setting is the external circumstances they're in – the people around them and their environmental surroundings.

Because set and setting vary so widely from person to person, and even from experience to experience, each LSD experience can produce vastly different outcomes – from frightening to deeply meaningful and positive life-changing experiences (though some parts may still be overwhelming or psychologically jarring).

Can LSD and other psychedelics be used as medicine or therapy?

Yes. Fully legal research programs in the mid-20th century that involved tens of thousands of patients found that carefully monitored and controlled use of LSD may be beneficial for many psychiatric disorders, personal and spiritual development, and creative enhancement for healthy people.^{xiv} However, after LSD was banned in 1970, clinical research to evaluate its medical safety and efficacy was effectively halted until the late 90s and early 2000s.^{xv}

Today, there are more than a dozen studies taking place to evaluate the medical safety and efficacy of psychedelics, including LSD.^{xvi} Although much of the early LSD research did not stand up to today's standards, as they often lacked a placebo control group or double-blinding procedures (in which neither the subject of the research nor the investigators knew whether the subject received LSD or placebo). Nevertheless, their promising findings have been revisited and spurred a resurgence of new, more rigorous research on the potential benefits of psychedelics as a treatment for cluster headache,^{xvii} anxiety,^{xviii,xix,xx} addiction to alcohol and other drugs,^{xxi} and depression,^{xxii,xxiii} as well as neuroimaging experiments furthering the understanding of its effects on the brain.^{xxiv}

In a small pilot study in humans, LSD has once again been shown to be a promising medicine for cancer-related anxiety. The lead psychiatrist on that study in Switzerland has tightly regulated approval from the national ministry of health to treat patients in his private practice with LSD, for use in any indication, with his discretion and monitoring.^{xxv}

Because of the expensive and labyrinthian approval process for research with Schedule I drugs, as well as the political influence of the war on drugs, research evaluating LSD's beneficial uses does not receive funding from academic or government institutions, and instead relies on nonprofit organizations like the [Multidisciplinary Association for Psychedelic Studies](#), the [Beckley Foundation](#), and the [Heffter Research Institute](#).^{xv}

Can taking LSD in low doses or "microdosing" be used to enhance creativity?

Anecdotal evidence points toward yes.^{xxvi,xxvii} A series of experiments between 1954 and 1962 involved nearly 1,000 participants in monitored settings to gauge any effects from LSD, including artists, academics, and many others.^{xxviii} Some of the results from those experiments, along with a pilot study in 1966 that tested whether low dose LSD (around 50 micrograms) could aid problem solving, showed trends of possible enhanced functioning in subjects.^{xxix}

More recently, a team of neuroscientists in London have been studying LSD's effects on the brain using cutting edge imaging technology. Their preliminary findings are showing support for LSD's use in enhancing creativity and problem solving abilities,^{xxiv,xxx} as well as making progress toward understanding the biological mechanisms behind these effects.^{xxxi,xxxii}

Microdosing is a practice that has gained much interest recently that involves regularly taking doses of LSD too small to cause noticeable changes in consciousness (around 5-10 micrograms) to enhance creativity and problem solving.

Much of the recent attention to LSD microdosing is owed to James Fadiman, a psychologist who was part of the LSD problem-solving experiment in the 1960s.^{xxxiii} In 2015, *Rolling Stone* magazine published an article featuring Fadiman and an enthusiastic advocate from San Francisco's tech industry on the regular use of LSD to increase productivity.^{xxxiv} The story became part of a widely covered series of reports in local TV news networks around Silicon Valley, as well as business and technology magazines like *Forbes* and *Wired*,^{xxxv,xxxvi} and most recently even fashion magazines *Marie Claire* and *Esquire*.^{xxxvii,xxxviii} Fadiman is conducting an informal study largely based on anecdotal reports to make the case for a controlled clinical trial.

How many people use LSD?

LSD is considered one of the most well-known psychedelics among people who use drugs non-medically, but according to the Substance Abuse and Mental Health Services Administration (SAMHSA), which conducts the largest annual national survey on drug use, its use is not at all common. The percentage of psychedelic use is so low that several drugs are grouped under the category of “hallucinogens,” which includes LSD, PCP, peyote, mescaline, psilocybin mushrooms, and “Ecstasy” or “Molly” (MDMA).^{xxxix} In each year between 2002 and 2014, an annual average of 0.1% of people across all ages were considered to be current psychedelic users (meaning they reported use within 30 days of completing the survey). In 2014, 0.3% of the 16,875 adolescent respondents (12 to 17 year-olds) in the US were considered to be current users of LSD, 0.3% of the 11,643 young adult respondents (18 to 25), and 0.1% of 33,750 adult respondents aged 26 or older.^{xi}

However, when considering data from people reporting lifetime use of psychedelics, rates were similar across most age ranges, meaning just as many young adults in the 21st century have used psychedelics as older adults who lived through the 1960’s and 70’s.^{xii}

What are the long term health impacts of LSD?

The risks associated with psychedelic drugs are mostly psychological, not physical. Physically, LSD is considered to be one of the least toxic drugs.^{xliii} Although lethal doses have been determined from experiments in several animal models,^{xliiii} there has never been a recorded case of death exclusively attributed to LSD in humans.ⁱ

Physical effects are minor but can be varied from person to person. The most consistent reactions, such as dilated pupils, elevated blood pressure, and increased heart rate, are usually mild, and considered side effects of emotional intensification. However, these, along with other reported symptoms like nausea, increased perspiration, numbing and tremors, can sometimes make psychological symptoms like anxiety, panic attacks, paranoia, and mood swings seem worse. Long-term physical effects directly attributed to the pharmacology of LSD are rare, and research suggests they may also be due to latent psychological disorders.^{xliiv}

Comprehensive reviews of the thousands of sessions using LSD and other psychedelics in legal clinical research settings during the 1950s and 60s have consistently found extremely low incidences of acute and chronic problems among individuals lacking pre-existing severe psychopathology.^{xliv} A recent review of the clinical literature also suggested that chronic problematic effects, when they do occur, are most often linked to psychological instability present prior to use.ⁱ

Hallucinogen Persisting Perception Disorder (HPPD), sometimes mistakenly referred to as “flashbacks,” is a condition unique to psychedelics, involving perceptual changes lasting weeks or months following the use of a drug like LSD. Though exact prevalence is unknown, HPPD is considered relatively rare, with no physical changes or neurological damage associated as the cause.^{xlvi}

How risky is LSD compared to other drugs?

LSD is considered to be one of the least toxic drugs used non-medically.^{xliv} Recent results from epidemiological studies have shown lower rates of mental health disorders and suicide among people who have used psychedelics like LSD.^{v,vi,vii}

However, there have been cases of adverse psychological reactions to LSD leading to both successful and unsuccessful suicide attempts.^{xlvii} Beginning in the 1960’s and continuing today, sensationalized media coverage of LSD-related deaths inaccurately portray adverse reactions as increasing suicidal behavior or accidental death due to loss of control.^{xlviii} Many of the stories reported misattributed the role of LSD in the situation, or in some cases didn’t involve LSD at all.

The risks from LSD are dependent on set and setting and differ from other types of drugs, including alcohol, benzodiazepines, and opiates, which produce relatively predictable physical and psychological effects.^{xii} The consequences of negative or challenging experiences can be minimized by education and awareness of LSD’s effects, with particular attention paid to issues around set and setting prior to the experience.

Is LSD addictive?

LSD is not considered to be addictive nor does it cause compulsive use.^{xlix} One reason is that the intense, long-lasting experience, which can be physically and mentally challenging, may cause people using LSD non-medically to limit their frequency of use.ⁱ Another reason is that the human body quickly builds tolerance to LSD, such that users require much higher doses after only a few days of repeated use, making it extremely difficult to have any effect after more than four days of repeated usage. And because of the similar brain receptors involved in their effects, cross-tolerance occurs with psilocybin and LSD, which means that if someone takes psilocybin mushrooms one day, the effects of taking LSD the next day will be diminished.^{xlv}

What's a harm reduction approach to the use of LSD or "acid?"

The importance of educating people on the effects of LSD cannot be overstated, especially information on dosing and resources for handling difficult experiences.

LSD is active at very low doses (around 20 micrograms) and can have very different effects at what are only small differences in amounts and from person to person. Appropriate dosing is important. Individual ¼" squares of LSD on blotter paper (called "tabs") usually contain roughly between 30-100 micrograms, and a common dosage range is between 50-150 micrograms.¹

LSD's effects often do not become noticeable for as long as an hour after taking it, with a gradual intensification over the first 1-2 hours. To avoid what may be an overly intense experience from a high dose, the "start low, go slow" method is best for anyone using LSD – especially for people inexperienced with LSD or other psychedelics.

LSD, like other psychedelics, often evokes conscious awareness of subconscious thoughts and feelings, such as repressed memories, feelings about life circumstances, fantasies, or deep fears. Thus, if someone makes the decision to use LSD, it is important for that person to be prepared to deal with unusual – and perhaps even challenging – thoughts, images, and feelings in an open and thoughtful manner. It is also best to use LSD with someone who is not under the influence of the substance (a "guide") who can prevent them from engaging in dangerous activities.

Predicting what kind of experience a person will have after taking LSD can't be guaranteed, so experts recommend that people with a personal or family history of mental illness should be aware of their vulnerability to potential latent psychological issues emerging or being triggered.ⁱⁱ The Multidisciplinary Association for Psychedelic Studies produced a short educational short video, [How to Work With Difficult Psychedelic Experiences](#), and sponsors the [Zendo Project](#), which provides support at several live music events and festivals for attendees experiencing psychological distress potentially related to drug use, as well as trainings promoting education around psychedelic harm reduction.

Risk of fatal overdose is nonexistent with LSD, but risky behaviors sometimes occur. Due to the lack of quality control regulations under prohibition, doses are often misrepresented and instead contain other drugs that do come with more physical risks, including fatal overdose. First and foremost, people who choose to use drugs should know what they're taking. Expanding access to drug checking will allow for that, which is

one of the goals of DPA's [#SaferPartying campaign](#). In the U.S., organizations like [DanceSafe](#) and [Bunk Police](#) sell drug checking kits online and at music festivals and concerts when permitted, which allow people to test for possible adulterants.

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To reduce accidental deaths related to drug use, improve public health outcomes, care for vulnerable populations, and protect young people, it is important to prioritize education about potential risks, precautionary measures, and reducing harm instead of zero-tolerance policies and criminalization.

ⁱ Passie, Torsten, John H. Halpern, Dirk O. Stichtenoth, Hinderk M. Emrich, and Annelie Hintzen. "The Pharmacology of Lysergic Acid Diethylamide: A Review." *CNS Neuroscience & Therapeutics* 14, no. 4 (2008): 295-314. doi:10.1111/j.1755-5949.2008.00059.x.

ⁱⁱ Hofmann, Albert. *LSD -- My Problem Child*. New York: McGraw-Hill, 1980.

ⁱⁱⁱ Woolley, D. W., and E. Shaw. "A Biochemical And Pharmacological Suggestion About Certain Mental Disorders." *Proceedings of the National Academy of Sciences* 40, no. 4 (1954): 228-31. doi:10.1073/pnas.40.4.228.

^{iv} Grinspoon, Lester, and James B. Bakalar. *Psychedelic Drugs Reconsidered*. New York: Basic Books, 1979.

^v Cormier, Zoe. "No Link Found between Psychedelics and Psychosis." *Nature*, March 04, 2015. doi:10.1038/nature.2015.16968.

^{vi} Krebs, Teri S., and Pål-Ørjan Johansen. "Psychedelics and Mental Health: A Population Study." *PLoS ONE*, no. 8 (2013). doi:10.1371/journal.pone.0063972.

^{vii} Hendricks, P. S., C. B. Thorne, C. B. Clark, D. W. Coombs, and M. W. Johnson. "Classic psychedelic use is associated with reduced psychological distress and suicidality in the United States adult population." *Journal of Psychopharmacology* 29, no. 3 (January 13, 2015): 280-88. doi:10.1177/0269881114565653.

^{viii} Lattin, Don. *The Harvard Psychedelic Club: how Timothy Leary, Ram Dass, Huston Smith, and Andrew Weil killed the fifties and ushered in a new age for America*. New York: HarperOne, 2010.

^{ix} Stevens, Jay. *Storming heaven: LSD and the American dream*. New York: Atlantic Monthly Press, 1987.

^x Smart, Reginald G., and Karen Bateman. "Unfavourable Reactions to LSD: A Review and Analysis of the Available Case Reports." *Canadian Medical Association Journal* 97 (November 11, 1967): 1214-221.

^{xi} Drug Policy Alliance. Media. "Top Adviser to Richard Nixon Admitted That 'War on Drugs' Was Policy Tool to Go After Anti-War Protesters and 'Black People'" News release, March 23, 2016. <http://www.drugpolicy.org/news/2016/03/top-adviser-richard-nixon-admitted-war-drugs-was-policy-tool-go-after-anti-war-proteste>.

^{xii} Barr, Harriet Linton., and Robert Langs. *LSD; Personality and Experience*. New York: Wiley-Interscience, 1972.

^{xiii} Eisner, Betty. "Set, Setting, and Matrix." *Journal of Psychoactive Drugs* 29, no. 2 (1997): 213-16. doi:10.1080/02791072.1997.10400190.

^{xiv} Nichols, David E. "Hallucinogens." *Pharmacology & Therapeutics* 101, no. 2 (February 2004): 131-81. doi: 10.1016/j.pharmthera.2003.11.002.

^{xv} Ellens, J. Harold, and Thomas B. Roberts. *The psychedelic policy quagmire: health, law, freedom, and society*. Santa Barbara, CA: Praeger an Imprint of ABC-CLIO, LLC, 2015.

- ^{xvi} Tupper, K. W., E. Wood, R. Yensen, and M. W. Johnson. "Psychedelic Medicine: A Re-emerging Therapeutic Paradigm." *Canadian Medical Association Journal* 187, no. 14 (2015): 1054-059. doi:10.1503/cmaj.141124.
- ^{xvii} Sewell, R. A., J. H. Halpern, and H. G. Pope. "Response of Cluster Headache to Psilocybin and LSD." *Neurology* 66, no. 12 (2006): 1920-922. doi:10.1212/01.wnl.0000219761.05466.43.
- ^{xviii} Gasser, Peter, Dominique Holstein, Yvonne Michel, Rick Doblin, Berra Yazarc-Klosinski, Torsten Passie, and Rudolf Brenneisen. "Safety and Efficacy of Lysergic Acid Diethylamide-Assisted Psychotherapy for Anxiety Associated With Life-threatening Diseases." *The Journal of Nervous and Mental Disease* 202, no. 7 (2014): 513-20. doi:10.1097/nmd.0000000000000113.
- ^{xix} Ross, S., A. Bossis, J. Guss, G. Agin-Liebess, T. Malone, B. Cohen, S. E. Mennenga, A. Belsler, K. Kalliontzis, J. Babb, Z. Su, P. Corby, and B. L. Schmidt. "Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: a randomized controlled trial." *Journal of Psychopharmacology* 30, no. 12 (2016): 1165-180. doi:10.1177/0269881116675512.
- ^{xx} Griffiths, R. R., M. W. Johnson, M. A. Carducci, A. Umbricht, W. A. Richards, B. D. Richards, M. P. Cosimano, and M. A. Klindinst. "Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: A randomized double-blind trial." *Journal of Psychopharmacology* 30, no. 12 (2016): 1181-197. doi:10.1177/0269881116675513.
- ^{xxi} Bogenschutz, Michael P., and Matthew W. Johnson. "Classic hallucinogens in the treatment of addictions." *Progress in Neuro-Psychopharmacology and Biological Psychiatry* 64 (2016): 250-58. doi:10.1016/j.pnpbp.2015.03.002.
- ^{xxii} Carhart-Harris, Robin L., Mark Bolstridge, James Rucker, Camilla M J Day, David Erritzoe, Mendel Kaelen, Michael Bloomfield, James A. Rickard, Ben Forbes, Amanda Feilding, David Taylor, Steve Pilling, Valerie H. Curran, and David J. Nutt. "Psilocybin with Psychological Support for Treatment-resistant Depression: An Open-label Feasibility Study." *The Lancet Psychiatry* 3, no. 7 (2016): 619-27. doi:10.1016/s2215-0366(16)30065-7.
- ^{xxiii} Rucker, J. J., L. A. Jelen, S. Flynn, K. D. Frowde, and A. H. Young. "Psychedelics in the treatment of unipolar mood disorders: a systematic review." *Journal of Psychopharmacology* 30, no. 12 (2016): 1220-229. doi:10.1177/0269881116679368.
- ^{xxiv} Carhart-Harris, Robin L., et al. "Neural Correlates of the LSD Experience Revealed by Multimodal Neuroimaging." *Proceedings of the National Academy of Sciences Proc Natl Acad Sci USA* 113, no. 17 (2016): 4853-858. doi:10.1073/pnas.1518377113.
- ^{xxv} Franciotti, Kevin J. "Meet the Only Doctor in the World Legally Allowed to Use LSD to Treat Patients | VICE | United States." VICE. November 15, 2015. Accessed November 11, 2016. <http://www.vice.com/read/meet-the-only-doctor-legally-allowed-to-use-lsd-on-his-patients-111>.
- ^{xxvi} Krippner, Stanley. "Psychedelic Drugs and Creativity." *Journal of Psychoactive Drugs* 17, no. 4 (1985): 235-46. doi:10.1080/02791072.1985.10524328.
- ^{xxvii} Janiger, Oscar, and Marlene Dobkin De Rios. "LSD and Creativity." *Journal of Psychoactive Drugs* 21, no. 1 (1989): 129-34. doi:10.1080/02791072.1989.10472150.
- ^{xxviii} Doblin, Rick, Jerome E. Beck, Kate Chapman, and Maureen Alioto. "Dr. Oscar Janiger's Pioneering LSD Research: A Forty Year Follow-up." *Bulletin of the Multidisciplinary Association for Psychedelic Studies* 9, no. 1 (1999): 7-21.
- ^{xxix} Harman, Willis W., Robert H. Mckim, Robert E. Mogar, James Fadiman, and Myron J. Stolaroff. "Psychedelic Agents in Creative Problem-solving: A Pilot Study." *Psychological Reports* 19, no. 1 (1966): 211-27. doi:10.2466/pr0.1966.19.1.211.
- ^{xxx} Carhart-Harris, R. L., M. Kaelen, M. G. Whalley, M. Bolstridge, A. Feilding, and D. J. Nutt. "LSD Enhances Suggestibility in Healthy Volunteers." *Psychopharmacology* 232, no. 4 (2014): 785-94. doi:10.1007/s00213-014-3714-z.
- ^{xxxi} Cormier, Zoe. "Brain Scans Reveal How LSD Affects Consciousness." *Nature*, April 11, 2016. doi:10.1038/nature.2016.19727.
- ^{xxxii} Carhart-Harris, Robin L., Robert Leech, Peter J. Hellyer, Murray Shanahan, Amanda Feilding, Enzo Tagliazucchi, Dante R. Chialvo, and David Nutt. "The Entropic Brain: A Theory of Conscious States Informed by Neuroimaging Research with Psychedelic Drugs." *Frontiers in Human Neuroscience* 8 (February 3, 2014). doi:10.3389/fnhum.2014.00020.
- ^{xxxiii} Fadiman, James. "Part 3 (Chapters 9-14)." In *The psychedelic explorer's guide: Safe, therapeutic, and sacred journeys*. Rochester, VT: Park Street Press, 2011.
- ^{xxxiv} Leonard, Andrew. "How LSD Microdosing Became the Hot New Business Trip." *Rolling Stone*. November 20, 2015. <http://www.rollingstone.com/culture/features/how-lsd-microdosing-became-the-hot-new-business-trip-20151120>.
- ^{xxxv} Glatter, Robert. "LSD Microdosing: The New Job Enhancer In Silicon Valley And Beyond?" *Forbes*. November 27, 2015. <http://www.forbes.com/sites/robertglatter/2015/11/27/lsd-microdosing-the-new-job-enhancer-in-silicon-valley-and-beyond/#e8093d4114d7>.
- ^{xxxvi} Solon, Olivia. "Would You Take LSD to Give You a Boost at Work? WIRED Takes a Trip inside the World of Microdosing." *WIRED UK*. August 24, 2016. <http://www.wired.co.uk/article/lsd-microdosing-drugs-silicon-valley>.
- ^{xxxvii} Malone, Noreen. "Why Power Women Are Micro-Dosing LSD at Work." *Marie Claire*. November 17, 2016. <http://www.marieclaire.com/culture/news/a23669/power-women-microdosing-lsd/>.
- ^{xxxviii} Rense, Sarah. "Should You Take Acid (a Very Small Amount) Before Work?" *Esquire*. November 18, 2016. <http://www.esquire.com/lifestyle/health/news/a50825/micro-dosing-lsd-effects/>.
- ^{xxxix} Center for Behavioral Health Statistics and Quality. (2015). *2014 National Survey on Drug Use and Health: Methodological summary and definitions*. Retrieved from <http://www.samhsa.gov/data/>.
- ^{xl} Center for Behavioral Health Statistics and Quality. (2015). *Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health* (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from <http://www.samhsa.gov/data/>.
- ^{xli} Krebs, Teri S., and Pål-Ørjan Johansen. "Over 30 Million Psychedelic Users in the United States." *F1000Research*, 2013. doi:10.12688/f1000research.2-98.v1.
- ^{xlii} Nichols, David E. "Hallucinogens." *Pharmacology & Therapeutics* 101, no. 2 (February 2004): 131-81. doi: 10.1016/j.pharmthera.2003.11.002
- ^{xliii} Usdin, Earl, and Daniel H. Efron. *Psychotropic Drugs and Related Compounds*. Rockville, MD: National Institute of Mental Health, 1972.
- ^{xliv} Halpern, John H., and Harrison G. Pope. "Do Hallucinogens Cause Residual Neuropsychological Toxicity?" *Drug and Alcohol Dependence* 53, no. 3 (1999): 247-56. doi:10.1016/s0376-8716(98)00129-x.
- ^{xlv} McWilliams, Spencer A., and Renee J. Tuttle. "Long-term Psychological Effects of LSD." *Psychological Bulletin* 79, no. 6 (1973): 341-51. doi:10.1037/h0034411.
- ^{xlvi} Halpern, John H., Arturo G. Lerner, and Torsten Passie. "A Review of Hallucinogen Persisting Perception Disorder (HPPD) and an Exploratory Study of Subjects Claiming Symptoms of HPPD." *Current Topics in Behavioral Neurosciences*, 2016. doi:10.1007/7854_2016_457.
- ^{xlvii} Cohen, Sidney. "Lysergic Acid Diethylamide." *The Journal of Nervous and Mental Disease* 130, no. 1 (1960): 30-40. doi:10.1097/00005053-196001000-00005.
- ^{xlviii} "Erowid LSD (Acid) Vault : Fatalities / Deaths." Erowid LSD (Acid) Vault : Fatalities / Deaths. February 10, 2015. https://erowid.org/chemicals/lsd/lsd_death.shtml.
- ^{xlix} NIDA (1969). Hallucinogens. <https://www.drugabuse.gov/publications/drugfacts/hallucinogens>.
- ^l "Erowid LSD (Acid) Vault : Dosage." Erowid LSD (Acid) Vault : Dosage. https://erowid.org/chemicals/lsd/lsd_dose.shtml.