Two recent scientific studies reveal that hallucinogens are good for your mental health.
Hallucinogenic Drug Timeline

Timeline | A brief history of psychedelic drugs

- **1897**: Synthesis of mescaline by E. Späth
- **1919**: Synthesis of PCP
- **1926**: Discovery of psychoactive effects of LSD by A. Hofmann
- **1938**: First LSD study in people with depression by C. Savage
- **1943**: Isolation and synthesis of psilocin and psilocybin by A. Hofmann
- **1947**: LSD appears on the streets
- **1952**: Sandoz recalls samples of LSD and ceases supplying it
- **1953**: Demonstration of antagonistic action of PCP at NMDA receptors by N. Anis
- **1955**: First neuroimaging study on psilocybin and ketamine

LSD, lysergic acid diethylamide; NMDA, N-methyl-D-aspartate; PCP, phencyclidine. Discoveries relating to classical hallucinogens and to dissociative anaesthetics are shown by black and red boxes, respectively.
Hallucinogens

A psychiatric perspective
Disclaimers & Objectives

- I have no conflicts of interest to report.
- I have never taken a psychedelic or hallucinogenic drug.
- Recognize the potential treatment value of hallucinogens.
- Understand the drug class.
- Review the history of hallucinogens in America.
- Contrast tribal use of peyote with western use of LSD.
- Introduce 3 other hallucinogens: DMT, psilocybin & ibogaine.
- Consider “The Magic in Food”
Hallucinogens

Generally refers to a group of compounds that alter consciousness WITHOUT:

Delirium
Sedation
Excessive stimulation
Impairment of memory
Impairment of intellect

Textbook of Substance Abuse Treatment, 3rd edition, Galanter & Kleber from L. E. Hollister
Hallucinogens

“A general group of pharmacological agents”

Three broad categories:
- Psychedelics
- Dissociatives
- Deliriants

Produce qualitatively different experiences
- Trance
- Meditation
- Dreams
- Insanity
Categories of hallucinogens

- **LSD**
  - The prototype
  - An ergot

- **Other Indolealkyamines**
  - Psilocybin: “magic mushrooms”
  - Dimethyltryptamine
    - DMT
    - Ayahuasca (DMT+MAOI)

- **Phenylalkyamines**
  - Mescaline: peyote
  - Dimethoxymethylamphetamine: DOM, “STP”

- **Stimulant hallucinogens**
  - Methylenedioxyamphetamine: MDA
  - Methyleneoxymethamphetamine: MDMA, “Ecstasy” or “X”.

- **Other drugs**
  - Phencyclidine: PCP
  - Ketamine: “Special K”
  - Cannabis

Classification of psychedelic drugs

- **Anticholinergic**
  - scopolamine

- **Catecholamine-like**
  - Mescaline: peyote
  - DOM, MDA, DMA, MDMA, TMA, MDE

- **Serotonin-like**
  - LSD
  - DMT
  - Psilocybin, psilocin, bufotenine
  - Ololiupui (morning glory seeds)
  - Harmine

- **Psychedelic anesthetic**
  - Phencyclidine
  - Ketamine

Illusionogenic

- True LSD-induced hallucinations are rare.
- What are commonly seen are illusory phenomena
Phantasticum

Proposed by Lewin in 1924
Psychedelic

- Coined by Osmond in 1957
- “Mind-manifesting”
- Criticized as being “pro-drug”.
Psychotomimetic

- “producer of psychosis”
- In general these drugs do not produce the same behavioral patterns observed with psychotic episodes.
So what are these drugs?

- “Psychedelic” proposed by Osmond in 1957 may be best term proposed to date. It implies the ability to alter sensory perception.
- A descriptive rather than pharmacological group.
- Naturally occurring/synthetic.
- Most structurally resemble one of four neurotransmitters: acetylcholine, norepinephrine, dopamine, or serotonin.
Physiological Effects

- Autonomic activity
  - Significant but variable
  - May be due to anxiety

- Stress response
  - Elevation of 17-hydroxycorticoids

- Nausea and vomiting
  - Particularly mescaline

- High therapeutic index
  - Particularly for LSD
Psychological effects

Overall effects generally considered to be similar across drugs

Research efforts to quantify effects in recent years

Widely variable when taken orally

Amount consumed

Set and setting of both subject and observer have prominent influence
Duration of action

- LSD  8-12 hours
- DMT  1-2 hours
- Ayahuasca  4 hours
- DOM  24+ hours
- Psilocybin  4 hours
- Mescaline  12 hours
Peyote grows in a relatively small area.
Lophophora

williamsii

diffusa
The “discovery” of Mescaline

- In Europe, little interest in or access to psychedelic plants until the very late 1800s.
- German chemists isolated mescaline from this new world cactus, in the 1890s.
- Some hailed its ability to open the gates of an “artificial paradise”.
What to make of mescaline?

- Little medical or psychiatric interest
- Few papers published
- Nausea and vomiting common
- No scientific or medical context within which to understand its effects
The Pilgrimage....“to find our life.”

Leo Mercado of the Peyote Foundation 1997
PROTECT NATIVE AMERICAN SACRED PLACES
North American Peyote Religion Ceremony

Quanah Parker, one of the first important leaders of the Native American Church movement
FIG. 8. The delegation of peyotists with the medical committee who met before the Oklahoma Constitutional Convention in 1907 and decided the legality of peyote in Oklahoma. The peyotists are, left to right, front row: Tennyson Berry (Kiowa Apache); Codsy (Kiowa); Apache John (Kiowa-Apache); Otto Wells (Comanche); Quanah Parker (Comanche); Apeatone (Kiowa); Little Bird (Cheyenne); Young Calf (Cheyenne); second row: Ned Brace (Kiowa); far right: Joseph Black-bear (Cheyenne); Leonard Tyler (Cheyenne). Fort Sill Museum, #P-4668.
Hofmann at Sandoz in 1935
Bicycle Day
LSD

- The prototype hallucinogen
- An ergot, rye fungus
- Synthesized by Albert Hoffmann in 1938
- A Sandoz Laboratories product
- Profound worldwide effect
- Unusual research evolution
The average man doesn't know much about psychiatry, but he knows what he dislikes and suspects about it. One psychiatrist, paraphrasing Artemus Ward, has said of his specialty: "In no other field of medical knowledge does the average man know so many things that ain't so."

Psychiatry is not yet 60 years old; it is the youngest and most controversial branch of medicine. But psychiatry's solemn clinical lingo has been snatched up, misused and overused by the man in the street.
LSD  serotonin
The popularity of LSD soared.
Hofmann with model of LSD molecule
Negative effects exaggerated
Recording “Give Peace A Chance”
Original Movie Sound Track 1967
Leary: arrested by DEA agents 1972
Albert Hofmann in 2006 at 100 y/o
What is DMT?

- N,N-dimethyltryptamine
- It is everywhere you choose to look.
- Produced by the pineal gland.
- Short duration of action makes it convenient to use.
- Developed a reputation as frightening.
- Researched at University of New Mexico by Rick Strassman, MD in the 1990s.
Psilocybin

- “shrooms” or “magic mushrooms”
- A prodrug converted to psilocin.
- Present in hundreds of species of fungi.
- MAPS studying it for OCD and other.
- Johns Hopkins research study, 2006.
Stropharia cubensis
Ibogaine

- Tabernanthe iboga plant found in West Africa
- Used in rite of passage and other ceremonies
- Variety of effects and substantial toxicity
- Used world wide in an addiction treatment
  - Not available or under study in the USA
  - FDA approved clinical trial in 1993 not funded
  - Purportedly interrupts addiction and withdrawal
  - “A vast uncontrolled experiment”
IBOGAINE: A new Therapy for Chemical Dependence that Eliminates Physical Withdrawal Signs and Interrupts Drug Craving Behavior.

Howard S. Lotoff

Ibogaine is an alkaloid found in plants of the West African rain forest. It has been used in traditional African religion and medicine for centuries and was first purified by French chemists in the beginning of this century (Fernández 1953 and General et al. 1983). The anti-addictive effects of ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a group of young drug users experimenting with ibogaine were accidentally discovered within a 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The Magic in Food

- Ambience of Intoxication
- Language Creates the Fabric of Reality
- A Shaggy Primate Story
- Emergence into Self Reflection
- The Real Missing Link
- Acquired Tastes

A Shaggy Primate Story
Emergence into self reflection
The real missing link?
Acquired Tastes

A Guide to Manly Drinks
You’re Only As Tough As the Drink in Your Hand
by Jared Butler

Two women smoking cigars and wearing traditional clothing.
Acquired Tastes
In conclusion:

"I didn't have any choice — she was raising her consciousness."
RECOMMENDED READING

- Food of the Gods: The Search for the Original Tree of Knowledge
  - Terence McKenna

- LSD: Spirituality and the Creative Process
  - Marlene Dobkin de Rios, Ph.D.
  - Oscar Janiger, M.D.
  - Foreword by Rick Strassman, M.D.