

Nature Of The Mind: Perspectives From Psychedelics



Parfit & Nagel



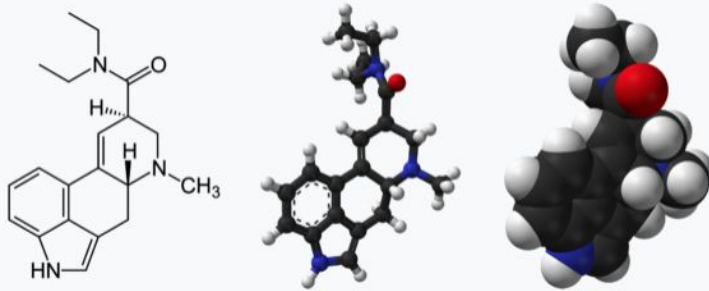
Psychedelic Science

Albert Hoffman

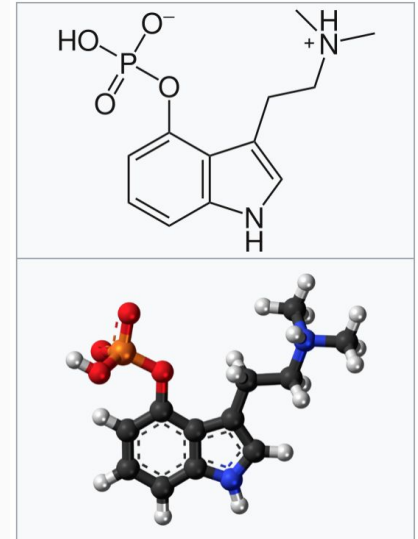
- Synthesized LSD in 1938-> re-examined and accidentally took it in 1943
- Worked at Sandoz labs: program to purify and synthesize active constituents for use as pharmaceuticals
- First un-anticipated trip of LSD
- Continuously took LSD throughout his entire life
- "I see the true importance of LSD in the possibility of providing material aid to meditation aimed at the mystical experience of a deeper, comprehensive reality."
- Separately located the active ingredient in "magic" mushrooms as well

Psilocybin & LSD

- Psilocybin is the active ingredient in “magic” mushrooms
- Converts to psilocin in the body -> psychedelic effects
- LSD: Lysergic acid diethylamide



2D structural formula and 3D models of LSD

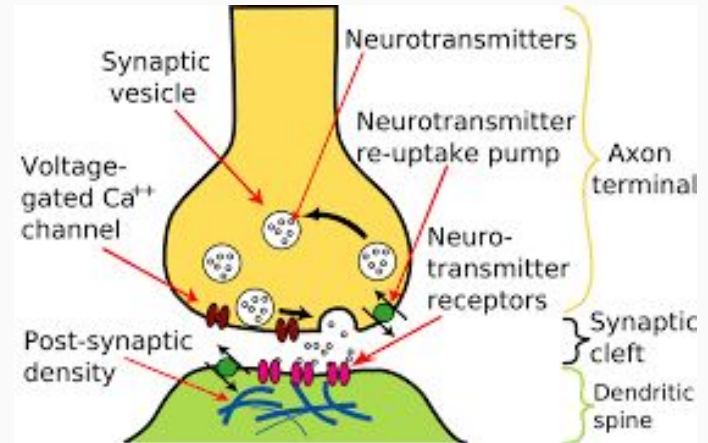


The Neuro-Mechanism

Serotonin 2A receptor subtype specifically

Increases the amount received by

Neurons in post-synapse



What “is it like” to be on
psychedelics?

Drug-Induced Ego-Dissolution

“The subjective effects of psychedelics are complex and multifaceted, including visual and auditory distortions and complex closed-eye “visions,” profound changes in emotions and mood, heightened sensitivity to internal and external context, and at higher doses, dramatic alterations of self-consciousness known as drug-induced ego dissolution” (Strassman et al., 1994; Vollenweider et al., 1998; Studerus et al., 2011; Carhart-Harris et al., 2012, 2016b; Schmid et al., 2015; Fox et al., 2016; Millière, 2017).

Drug-induced Ego Dissolution (DIED). A family of acute effects produced by high doses of psychedelic drugs, typically reported as a loss of one's sense of self and self-world boundary.

Recent Studies

Speth et al. 2016: 20 healthy volunteers and intravenously injected half of them with 75 micrograms of LSD (100ug considered “standard” dose)

The stronger the subjective experience, the less ability they had to think about the past; “results revealed a selective reduction in the number of linguistic references to mental time travel to the past under LSD” (Speth et al. 2016).

Hypothesize that accessing and rehearsing autobiographical information is important for the continuation of a sense of self, and if there is no input of autobiographical memory into consciousness (through an inability to think about the past), then the self can disintegrate (Speth et al. 2016).

Neural Correlates

Recent fMRI of psilocybin and ayahuasca found significant reductions in activity across many brain areas, including frontal and temporal cortical regions, as well as hubs of the DMN (Carhart-Harris et al., 2012; Palhano-Fontes et al., 2015)

What is DMN?

Default Mode Network

The DMN consists of areas in dorsal and ventral medial prefrontal cortices, medial and lateral parietal cortex, and selections of the medial and lateral temporal cortices (Sheline et al. 2009).

Cortex being the outermost areas of the brain

Highly evolved areas of the brain involved; would animals or “lesser” species be capable of the same sort of self-reflection?

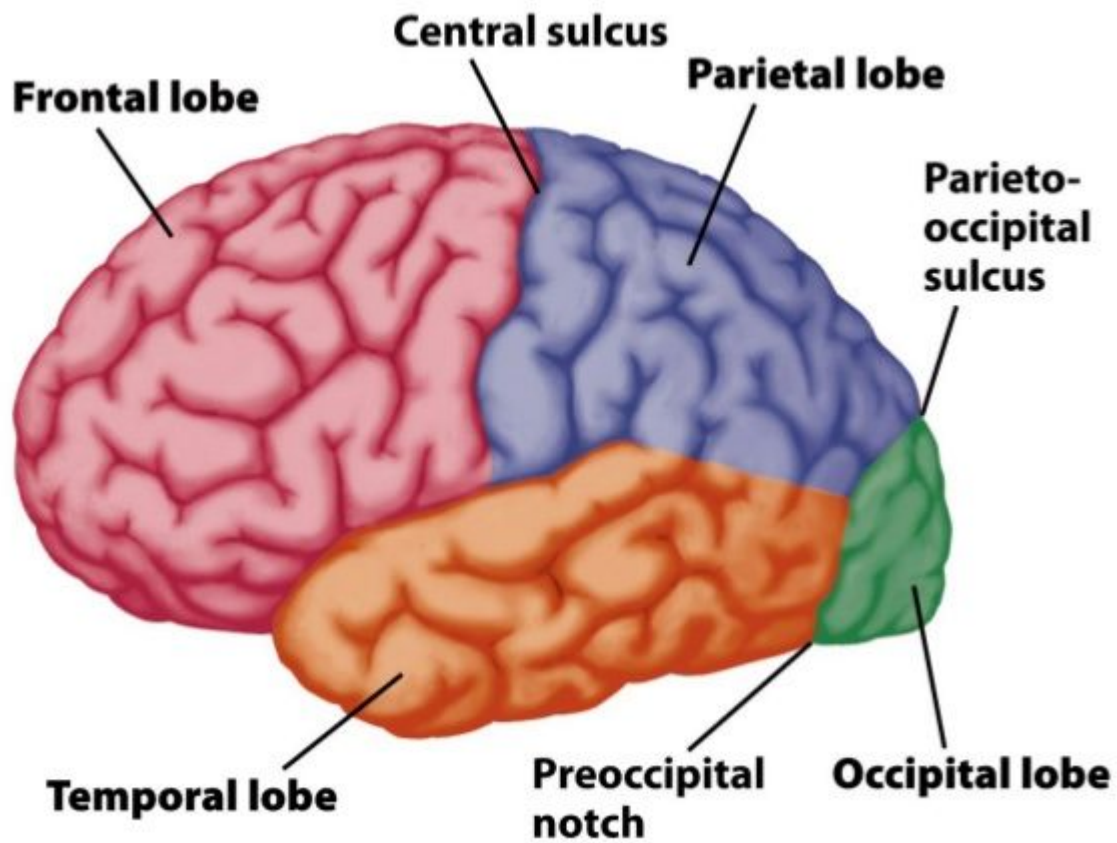
Neuroanatomy

Anterior / Posterior : front and back

Superior / Inferior : above and below

Medial / Lateral: close to and away from the midline respectively

Dorsal / Ventral : differs based on midbrain-diencephalic junction. Superior to the junction dorsal is synonymous with superior and ventral is synonymous with inferior. However, inferior to the midbrain-diencephalic junction the term dorsal is synonymous with posterior and ventral is synonymous with anterior



More on the Default Mode Network

Christoff, Gordon, Smallwood, Smith, & Schooler, (2009): found that “spontaneous mental time travel, as it occurs during mind-wandering, [is linked] to a particular brain network, known as the default-mode network”

“Default” mode is because it is the most active when a person is not doing anything.

Gusnard, Akbudak, Shulman, & Raichle (2001): the DMN, was highly activated when one was at rest, and highly deactivated when a person was engaging in goal-directed activities. DMN is involved in the evaluation of potentially survival-salient information from the body and the world: perspective taking of the desires, beliefs, and intentions of others and in remembering the past as well as planning the future” (Sheline et al. 2009). All of these are functions that are crucial to creating a sense of **self**.

DMN & Creating a Narrative of Self

DMN has been shown to be much more active when a person was asked to engage in **self-reflective** practices

conducted an fMRI study where participants were asked to make two judgements about a series of pictures; one was self-referential, the other was not. The self-referential judgement was stating whether or not they found the picture to be pleasant/unpleasant, and the non-self-referential judgement was only whether the picture was outside or inside

“medial prefrontal regions are concerned with explicit representations of states of the self...[and that] activity within dorsal MPFC is increased when attention is directed specifically toward self-referential or introspectively oriented mental activity” (Gusnard et al. 2009)

To what extent does this advance the idea of the **self as a construction**?

Does the self lead to unhappiness?

Researchers studied 20 individuals with major depression and 21 control subjects who were demographically similar; participants sat in an fMRI scanner and were shown pictures that were neutral or negative (Sheline et al. 2009). They were either asked to passively look at the pictures, actively try to make negative pictures look positive, or actively try to make negative pictures look more negative (Sheline et al. 2009). The idea behind this was that in the process of making photos look more positive participants would have to exercise a level of depersonalization, and detach themselves from the photo, leading to a decrease in activity in the DMN

Experiential vs Narrative Focus

Farb et al. (2007) argue that there are two types of awareness, Narrative Focus (NF) and Experiential Focus (EF). Narrative Focus has to do with self-referential thinking that links a concept of self through time and connects previous experiences and memories. Experiential Focus on the other hand is present focused, and is concerned with only what is happening now.

Narrative Focus is the “the construction of narratives that weave together the threads of temporally disparate experiences into a cohesive fabric” (Farb et al. 2007)

Loss of a “self narrative”

“*De se*” thoughts (traditional philosophy of mind term): thoughts that involve the first person pronoun

Life trajectory, one’s own experiences, their personality

General mind-wandering; where will I be, what should I do tomorrow, etc

A way of seeing the world?

Meditators are taught to engage in a meta-awareness and can undergo long periods without self-referential thoughts (Hasenkamp, 2018)

Body ownership

Rubber Hand Illusion: not only do healthy participants report experiencing an illusory ownership over the fake hand, but they also report a loss of ownership over their real hand (Valenzuela Moguillansky et al., 2013)

Loss of body

Researchers hypothesize that there is a loss of “top-down” sensory processing when on psychedelics

“Top-down” meaning coming from our higher order functions (I believe this to be my hand) vs. bottom up, something coming

“there is a sense of something happening, it is very hard to tell if there is a sense of body, it is more in the background... a sense of body-ness, but it's so spread... I am not dead; there is a kind of very light sense of body in this experience” (Ataria et al., 2015)

DMT

“It felt as if ‘I’ did no longer exist. There was purely my sensory perception of my environment, but sensory input was not translated into needs, feelings, or acting by “me”. Also, I felt disconnected from my physical being, my body” (Millière, 2017)

Perhaps a stronger sense of self-detachment than some of the other psychedelics we have talked about

LSD ~ 12 hours

Mushrooms ~ 6 hours

DMT ~ 30 minutes (much more accelerated)

The Researcher's Take

“Even when the [sense of boundaries] disappears, a minimal level of dynamic **proprioception*** continues to exist: there remains a sense that there is a body without any experience of [a sense of boundaries]” (Dor-Ziderman et al., 2016)

*a sense of where the body is located in its position

Paradoxical?

Some notes on the body

Cortical Homunculus (Ann Dooley)

“The point being that when the mask of outside appearance is removed and the underlying internal engine of operations is uncovered, it poses a challenge to one's view and image of oneself”

All “studies” are in a specified environment (blindfolded, lying down etc) so there are some peculiar aspects to those experiences as well

Thoughts on Reality:

Just have to call this wonderful sentence from Sam Harris:

"As a general matter, I believe we should be very slow to draw conclusions about the nature of the cosmos on the basis of inner experiences—no matter how profound they may seem." - Joyce

None of the first person accounts gave me reason to believe that the psychedelic experience provides access to a "reality." Undoubtedly, by turning off some of the processing mechanisms or filters, it provides information about how the brain processes sensory input, or what the brain does in the absence of streaming input. -Elinore

Reality: Donald Hoffman

The way in which we perceive physical things may be completely “made up”

Hoffman: our consciousness is like a user-interface. An abstraction from reality to help us understand it. In his view, **space-time itself**, and with it all of the physical laws, are simply the product of evolution in how we experience reality

Important to note Hoffman seems to be drawing some inspiration from buddhist philosophy (something to delve deeper into next week!)

Causality is illusory (I see people gathering for the train, and then train comes, people are not actually causing the train to arrive)

Reality: Anil Seth

Explain the functions/properties of consciousness and then we should have it all.

World: brain gives **best guess** as to what is happening in the external world

“As much as from the outside and the inside”

Visual Illusion of chess board & auditory brain updates

Visual illusions helping Hoffman’s point?

Ray Kurzweil: it is patterns of neurons firing that we can explain. Simpler to explain the patterns than the individual neuron

Seth & the Self

Arrives at the same conclusion of self as an “illusion”

We experience only what is necessary for US to stay alive (the conscious experience of say a bee would be much different)

Connection with Parfit as well as “illusionist” philosophers

Griffiths Paper

First “real” paper in recent times to rigorously study the effects of psychedelics on “healthy” individuals Landmark paper (over 1k cited on google scholar)

67% of the volunteers rated the experience with psilocybin to be either the single most meaningful experience of his or her life or among the top five most meaningful experiences of his or her life

Positive changes in mood, life outlook, reported by themselves, but also by people around them for months and years after the doses

Mystical Experience

They used a questionnaire to gauge this:

domains of mystical experiences: internal unity (pure

awareness; a merging with ultimate reality); external unity

(unity of all things; all things are alive; all is one); transcendence of time and space; ineffability and paradoxicality

(claim of difficulty in describing the experience in words);

sense of sacredness (awe); noetic quality (claim of intuitive

knowledge of ultimate reality); and deeply felt positive mood

(joy, peace, and love)

Sam Harris

I have two daughters who will one day take drugs. Of course, I will do everything in my power to see that they choose their drugs wisely, but a life lived entirely without drugs is neither foreseeable nor, I think, desirable. I hope they someday enjoy a morning cup of tea or coffee as much as I do. If they drink alcohol as adults, as they probably will, I will encourage them to do it safely. If they choose to smoke marijuana, I will urge moderation.^[2] Tobacco should be shunned, and I will do everything within the bounds of decent parenting to steer them away from it. Needless to say, if I knew that either of my daughters would eventually develop a fondness for methamphetamine or crack cocaine, I might never sleep again. But if they don't try a psychedelic like psilocybin or LSD at least once in their adult lives, I will wonder whether they had missed one of the most important rites of passage a human being can experience.

Sam Harris (cont.)

I have visited both extremes on the psychedelic continuum. The positive experiences were more sublime than I could ever have imagined or than I can now faithfully recall. These chemicals disclose layers of beauty that art is powerless to capture and for which the beauty of nature itself is a mere simulacrum. It is one thing to be awestruck by the sight of a giant redwood and amazed at the details of its history and underlying biology. It is quite another to spend an apparent eternity in egoless communion with it. Positive psychedelic experiences often reveal how wondrously at ease in the universe a human being can be—and for most of us, normal waking consciousness does not offer so much as a glimmer of those deeper possibilities.

Jill Bolte & Language

How is the left hemisphere of our brain similar to that of the hallucination/fabrication of reality we have discussed?

Given the left-hemisphere's role in governing language, what is the connection between language and reality?

“Witnessing myself having this experience”

I felt my spirit lift, I lost all boundary of self

Nirvana, euphoria - > sounds familiar!

Points of Inquiry

What exactly is a “self-less” state? There is still an “experiencer”. Imagining one’s own non-existence requires for there to be someone witnessing said non-existence. Is this possible? I.e. awareness, awareness **of** self

What of reality? Do psychedelics hint at a “deeper” nature of reality or merely a different type? What does it reveal about the inherent existence of a self?

Personal experiences? (next slide)

Anecdotal experience/doc on
netflix?

Resources to learn more

MAPS

JHU lab for psychedelic study