



THE PARADOXICAL PSYCHOLOGICAL EFFECTS OF LSD

CARHART-HARRIS RL, KAELEN M, FEILDING A, NUTT DJ ET AL.
PUBLISHED IN *PSYCHOLOGICAL MEDICINE*, 46(7); 379-90

Imperial College
London

BECKLEY / IMPERIAL RESEARCH PROGRAMME

Why did we do this study?

- Psychedelics have always presented an apparent paradox: The immediate experience can be unpleasant (accompanied by altered perception, fear, and paranoia), but the experience can also lead to profound and beneficial changes in well-being.

*“When LSD was first distributed by Sandoz pharmaceuticals in 1948, product guidelines stipulated two main applications: (1) analytical **psychotherapy** and (2) experimental studies on **psychoses**. The rationale for the former was that LSD could elicit [the] **release of repressed material** and provide mental relaxation for anxiety and obsessional neuroses, and, for the latter, that it could **model aspects of psychosis**.” -Albert Hofmann (1980)*

- **We wanted to know:** How the same compound could be both a model of, and yet a treatment for, psychopathology.

What did we do?

- We gave 20 volunteers either **LSD (75ug)** or **placebo (saline)** on 2 separate days.
- At the end of each dosing session, subjects completed two **questionnaires** asking about **changes in consciousness** and **psychosis-like symptoms**.
- Two weeks after each session, subjects completed three more **questionnaires** to measure **personality traits** (including **optimism**) and **delusional thinking**.

About the research team

Amanda Feilding is the founder and director of the Beckley Foundation. She and David Nutt are Co-Directors of the Beckley/Imperial Research Programme. Robin Carhart-Harris is the Programme’s lead investigator.

What did we find?

1. CHANGES IN CONSCIOUSNESS AFTER LSD

- The strongest changes were in visual perception (hallucinations).
- Ratings of ‘Anxiety’ increased the *least*; the increase in ‘Blissful state’ was far greater than the increase in anxiety.
- Together, this means subject had an overall pleasant experience.

2. PSYCHOSIS-LIKE SYMPTOMS AFTER LSD

- Ratings of psychosis-like symptoms increased after LSD, especially ‘cognitive disorganisation.’
- Overall, scores on the questionnaire were higher than after sleep deprivation, dreaming, cannabis/THC, or ketamine.
 - This suggests that LSD causes strong psychosis-like effects.
- **NOTE:** Although the questionnaire suggests that subjects’ experiences were unpleasant and psychosis-like, the ratings on the consciousness questionnaire show that **positive mood** and a **‘blissful state’** were more common and pronounced.

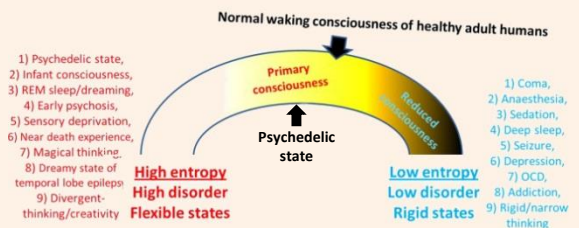
3. PERSONALITY CHANGES AT 2-WEEK FOLLOW-UP

- Personality traits ‘Optimism’ and ‘Openness’ were increased 2 weeks after LSD.
- But delusional thinking was not increased (and even showed a slight trend towards a decrease).
- This suggests that the positive effects linger, but the psychosis-like effects do not.

THE PARADOX CAN BE EXPLAINED BY THE ‘ENTROPIC BRAIN’ THEORY

- Psychedelics are thought to fundamentally change the quality of consciousness towards a more unconstrained, chaotic, ‘entropic’ state. This is hypothesised to be responsible for psychosis-like symptoms and altered perception in the short term.
- However, the same ‘loosening’ of brain networks results in more flexible patterns of thinking, which may improve well-being in the longer term.
- ‘Entropic’ cognition may be a more fundamental characteristic of the psychedelic state than either positive or negative mood.

The entropic brain hypothesis



Why is this important?

The study shows that:

1. The immediate effects of psychedelics can be quite different from their longer-term effects, and
2. The long-term effects are what is clinically relevant.

This adds to the evidence base for the therapeutic potential of LSD in the treatment of mood disorders such as depression.