OPTIMISING LSD MICRODOSING: A BRAIN IMAGING STUDY

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Why do we want to do this study?

In the last few years, the world has been waking up to the power of psychedelic microdosing, with a particular focus on LSD. Extensive anecdotal reports suggest that micro-dosing can improve **mood**, enhance **cognition**, increase **productivity**, and boost **creativity**. But so far, no scientific research has been done to confirm these effects.

What will this study be about?

This will be the world's first scientific study on the efficacy of microdosing. We will use the latest brain imaging technology, a range of validated tests and questionnaires, and will incorporate a new challenge: playing the ancient game of Go.

What is a microdose?

A microdose of LSD is normally around 1/10th of a standard recreational dose: about 10µg. We will use doses of 10, 20, and 50µg in our study, as well as a placebo, to establish both the effects and optimal size of a micro-dose.

Study design

We will recruit 20 participants, and use a double-blind randomised crossover design. On each of four study days, participants will receive one of the four possible doses (0, 10, 20, or 50µg) before undergoing a series of tasks, questionnaires, and brain scans.

Tasks and questionnaires

We will assess a broad range of cognitive faculties and feelings with a series of tests, including:

1. The Becks Depression Inventory measures **mood**
2. The State / Trait Anxiety Inventory measures **anxiety**
3. The Social Interaction Anxiety Scale measures **social anxiety**
4. The Alternate Use Task measures **divergent thinking**, or inventive creativity
5. The Remote Associations Task measures **convergent thinking**, or associative creativity
6. The Wisconsin Card Sorting Task measures **learning** and **cognitive flexibility**
7. The Tower of London test measures **executive functioning** or efficient goal-directed behaviour

Go: a novel measurement

In addition to well-established measures of cognitive function and mood, we are using a new method to capture the unique type of cognitive enhancement that microdosing is reported to produce: **insight.** We will measure this faculty using the ancient Chinese game of Go, as performance in this game relies largely on **intuitive pattern recognition.** Our participants will compete against AI Go players, which will assess their performance using the standardised Go ranking system.

Brain imaging

Our previous fMRI research shows that psychedelics cause less communication *within*—and more communication *between*—brain networks, which leads to a more fluid style of cognition and increased novelty of thought. In this study, participants will undergo brain imaging so we can see whether similar neural patterns are observed with small doses as we have observed with larger ones. Participants will also perform tasks, including Go, within the fMRI scanner, so we can examine neural changes underlying cognitive functioning and seek to identify the "Aha!" moment of insight.

Hypotheses

We predict that a microdose of LSD will:

1. Improve **mental health, mood** and **well-being**
2. Improve **cognitive function**
3. Improve **intuitive pattern recognition**
4. Enhance **creativity**
5. Alter **cerebral circulation, connectivity**, and **neural functioning**