Master’s thesis

Length:

* Referencing: APA 6th or 7th
* Empirical theses: Normally 30-40 pages, no longer than 50 pages, including figures and tables, excluding references, front page, table of contents, and abstract.
* Page and word formatting: A4, Times New Roman 12, paragraph 1.5, frame 2.5 cm
* Abstract: up to 500 words

Elements:

* Frontpage
* Table of contents
* Acknowledgments
  + Østfold sykehus, Andre Sevenius, Carsten Bundt, Ingmar Clausen, Ingrid Autran, Lowan Stewart
* Introduction
  + Background
  + Hypothesis & research question
* Methodology
  + Sampling
  + EEG
    - Active electrodes
    - 10/20 system
    - 32 electrodes
    - Sampling rate
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* Results
  + Spectral EEG analysis
* Discussion
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Introduction

* Background

The role of experience in psychedelic therapy remains elusive. Some argue that we should decrease side effects like dissociation and out-of-body feelings since they might contribute to people dropping out of treatment. Others claim, however, that these experiences *enhance* the effectiveness of the treatment. Some studies on psilocybin and 5-MeO-DMT support the role of experience (Wellander & Marchese, 2022). They found a moderate negative correlation between ego dissolution and symptom prevalence in depression and anxiety. However, an esketamine study by Chen et al. (2022) found no correlation between dissociation and depression improvement. It should be noted that “dissociation” does not necessarily imply ego dissolution; thus, the results are difficult to interpret.

[The role of dissociation in ketamine’s antidepressant effects | Nature Communications](https://www.nature.com/articles/s41467-020-20190-4)

Although ketamine treatment has proven to be a rapid-acting antidepressant compound (Hyde, 2015), currently, there is lacking research on the individual differences of the treatment. For instance,

among TR-D patients, around 50% achieve remission, but there are still varying reports of dropout rates following adverse events (Ekstrand et al., 2021), around 1.9-3% in Wan et al.’s (2015) study and 8% in Thomas et al.’s (2018) study. Although, this rate is lower than standard psychotherapy treatment dropout rates of 17.5% (Cooper & Conklin, 2015)

In Norway, ketamine has been approved as a therapeutic agent for TR-D patients, but it is unclear why this compound works for 70% of the patients and not the rest. There is, therefore, a need for markers that indicate which patients should receive this treatment and which should not. Some speculate that ego dissolution can improve symptom alleviation after treatment (Bahji et al., 2021; Kaluzna et al., 2022), but ego dissolution is often reported as “dissociation” in the literature. Therefore, explicit research on ego dissolution is necessary. For this project, we will investigate the degree of ego dissolution experienced by ketamine-treatment patients at Østfold Sykehus. We will also measure the patient’s brain activity during treatment using EEG to look for potential spectral frequency markers of ego dissolution.

Depression is a severe mental disorder affecting around 5% of the adult population (World Health Organization, 2021), and 20% to 25% of adults may experience an episode of major depression at some point during their lifetime (Bruce, 2020). Those diagnosed with major depression are usually treated with psychotherapy, medication, or both (SOURCE). According to Howland (2015), any first-choice antidepressant medication significantly alleviates depression symptoms in 50% to 70% of MDD patients. However, only 50% to 33% reach complete remission, which leaves 65% to 83% with untreated or residual depression symptoms (Howland, 2015).

About 30% of MDD patients do not experience any alleviation from either antidepressant therapy, talking therapy, or combinations (Zhdanava et al., 2021; Little, 2009). This patient group is then diagnosed with treatment-resistant depression (TR-D). The TR-D patient group is almost 30% more expensive than the MDD patients to the local health care services (Olchanski et al., 2013), making up a societal cost between $29-$48 billion a year in the US alone (Mrazek et al., 2014).

A typical TR-D patient would either change medication or receive an added antidepressant to their prescription (Howland, 2015).

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