

With a little help from my ‘friends’

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Scientific and societal dissemination

To spread the findings of the experimental studies presented in this dissertation to the international research community, recreational substance users, or people who self-medicate with these substances, we strive to publish these results in journals with open access. Four out of five studies presented in this dissertation are published in several international journals, and **chapter 6** is currently submitted. Two papers in particular caught attention as shown by their Altmetric score of 194 (**chapter 5**) and 133 (**chapter 4**). **Chapter 4** is since a year now, in the top 3 most downloaded articles of the *European Neuropsychopharmacology journal*. In addition, the results of all chapters were presented at national and international conferences that hosted many international researchers.

Next to publishing our results in international journals, we were invited to present our experimental findings at Trimbos-institute (national Dutch expertise centre for mental health care, addiction care and social care) and HIT Hot Topics in Liverpool (an organisation delivering interventions on drugs, community safety and other public health concerns).

In addition, we were asked to contribute to radio interviews (Radio 1, L1 radio), documentaries on national and international television (WDR doku, EenVandaag), articles in newspapers and magazines (WIRED, Dagblad de Limburger, vakblad analisten), and several other blogs and internet posts discussing our findings of **chapters 3, 4, and 5**. This media attention led to patients with mental health problems reaching out to us asking whether it is possible to contribute to our research as they were searching for alternative treatment options for their mental health problems, even though our studies were only conducted in healthy participants. An important note: we as researchers need to be clear that we are dealing with psychoactive substances, and that we are not advocating that at this stage these substances can be taken outside a research context, without supervision, and to make sure that the media carries this message as well. Nevertheless, the almost unavoidable media attention will help to further increase the societal, but also scientific interest in the effects of microdosing with psychedelics as a potential alternative treatment option for several disorders.

Drug development

My ultimate goal is to provide evidence or find alternative treatment options for patients who do not respond to treatments currently available. A way to accomplish this goal is to ask people who self-medicate with the substances mentioned in this dissertation about the motives and experienced effects, similar to our previous studies, where we examined the motives to microdosing with psychedelics and self-rated effectiveness of these substances for several disorders.^{1,2} In addition, by collaborating with the research and community platforms that provide information on microdosing with psychedelics, for instance Microdosing Institute and Vista+. Alternatively, collect data from internet fora where substance users discuss their experiences with microdosing with psychedelics, cocaine use or CBD use like Erowid or Reddit. While we are not able to advise patients based on the current studies, we can inform therapists and health professionals about the therapeutic potential of these substances. Therapists and health professionals need to know more about these substances when for instance a patient mentions he/she is currently self-medicating or plans to self-medicate. Less than one in five patients discussed the use of microdosing with psychedelics with their therapists, maybe due to the legal status and stigma of these substances.³

A number of drug development companies are currently key players in trying to medicalise cannabis and microdosing with LSD. These companies pick up and build upon some of our findings discussed in this dissertation. For instance, three experimental trials are developed to examine the therapeutic potential of repeated microdoses of LSD, partially based upon our findings presented in **chapters 4 and 5**. Mind Medicine (MindMed) Inc., a leading biotech company developing psychedelic-inspired therapies, will finance a randomized placebo-controlled study evaluating the effects of daytime and evening administration of repeated low doses of LSD, to examine whether the time of intake (morning or evening) influences the impact of the substance on sleep, mood and cognition.⁸⁴ Another trial financed by MindMed, a phase 2 proof-of-concept study examining the effects of repeated microdoses of LSD (20 mcg) in adult patients with ADHD.⁵ Silo Pharma Inc., a developmental biopharmaceutical company focusing on the use of psilocybin as a therapeutic application, will finance a trial examining the effects of repeated low doses of psilocybin and ketamine on cognitive and emotional

dysfunctions in Parkinson's disease and to understand its mechanism of action.⁶ Considering the timeline of clinical trials regarding the efficacy of MDMA-assisted psychotherapy to treat PTSD, starting with phase 2 clinical trials in 2004 and the indication that MDMA will be approved by the FDA in 2023,^{7,9} we think that the use of low doses a psychedelic substance for treating ADHD and Parkinson's disease (if efficacy is proven) will also take around 10 years before the FDA will approve this as a treatment.

Our finding that cannabis with a THC/CBD ratio of 1 to 1 causes less anxiety than a THC-only cannabis (**chapter 6**) may be of value to GW pharmaceuticals, a company that develops and commercializes pharmaceutical cannabis products. GW pharmaceuticals currently have several clinical trials underway investigating the efficacy of various cannabis-based medications in relation to epilepsy, autism spectrum disorder, glioma, neonatal hypoxic-ischemic encephalopathy, and schizophrenia.¹⁰ They can implement our findings from **chapter 6** into their research protocol, for example, the finding that CBD can completely reduce the unwanted THC-induced anxiety if the person has a low state of anxiety prior to cannabis consumption. They may then choose to implement some relaxation exercises prior to cannabis consumption. This may be especially desirable when conducting research in vulnerable populations, such as children.

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