

Psychedelics, Empathogens and Mindfulness-based Capacities: A Review of Recently Published Research Findings*

Introduction

This presentation provides an introduction and summary of recently published research findings on the shared effects and mechanisms of action of various mindfulness-based interventions (MBIs) and different psychoactive substances. The intention here is to foster an awareness in the psychedelic community of the variety of contemplative practices delivered through standardized mindfulness programs and vice versa an awareness of pharmacological pathways towards the development of mindfulness-related capacities in the community of mindfulness practitioners.

Overview

The first part of this presentation sets the stage by giving an overview of psychoactive substances in general and those that have demonstrated an increase in mindfulness-related capacities in particular as well as by summarizing the history, practice and contemporary applications of mindfulness-based interventions (MBIs). The second part then presents seven recently published studies which establish an increase of mindfulness-related capacities after administration of psychoactive substances both in mindfulness-naïve populations as well as in long-term Buddhist meditators. The conclusion then discusses underlying changes in the functional connectivity of various brain regions as a shared mechanism of action and lists prospective avenues for future research and practice.

Psychoactive
Substances

Psychoactive substances in general are defined as those chemicals which through changes in brain function result in alterations in perception, mood, consciousness, cognition and behavior. Their major classes are anxiolytics, empathogens, stimulants, depressants and hallucinogens, the latter consisting of the subclasses of psychedelics, dissociatives and deliriants. The research presented here focuses on the class of empathogens (aka serotonin releasers), such as MDMA, and the subclass of psychedelics (aka serotonergic hallucinogens or 5-HT_{2A} receptor agonists), the latter which includes Lysergamides, such as LSD, Tryptamines, such as Psilocybin, DMT and 5-MeO-DMT, as well as Phenethylamines, such as Mescaline and 2C-B. Among the six studies presented below, two deal with the effects of Psilocybin, three with Ayahuasca and two with MDMA.

Mindfulness

The following will briefly introduce the topic of mindfulness and related issues relevant to our discussion here. The English term “mindfulness” was first coined in the late 19th century as an English translation of the Buddhist term *sati* or *smṛti* (for an overview of the post-colonial history of the term up to the 1970s, see Braun 2013). The English term “mindfulness” has recently become the umbrella-term for a whole movement, thus resulting also in a lack of sufficient discrimination with resultant misunderstanding. To avoid this, three broad meanings of the term in its contemporary usage are distinguished here: 1) mindfulness as a form of awareness, i.e. mindful awareness, often defined in its most general sense as “moment-to-moment, non-judgmental awareness;” 2) mindfulness as a practice which elevates this form of awareness, i.e. mindful awareness practices; and 3)

* This presentation is based on my talk at the Global Psychedelic Forum in Prague on June 22, 2018, entitled “Beyond Mindfulness, Beyond Psychedelics.” For a recently published critical review of the role of psychedelics and empathogens in positive psychology (i.e. the wider context in which the discussion here takes place), see Jungaberle et al. 2018. For a similarly insightful comparison of psychedelics and non-substance approaches, in this latter case Holotropic Breathwork, see also the work of Puente (2014a, 2014b, 2014c). [Published online 04.09.2018]

specific applications of that awareness for particular goals, i.e. mindfulness-based applications or interventions. (Young 2013: 14)

The recent history of mindfulness in the West in all these three senses is closely entwined with the person of Jon Kabat-Zinn, who – based on his training in modernized Buddhist meditation traditions as well as his medical training – in the late 1970s developed a standardized program called Mindfulness-based Stress Reduction (MBSR) at the University of Massachusetts Medical Center. MBSR is conceptualized as an eight-week program, which is taught by certified trainers in weekly two-hour group meetings and a retreat-day and also includes home assignments in the form of daily 45-minute mindfulness practice. Participants are introduced to three formal mindfulness practices – a body scan, mindful movement and sitting meditation – to learn how to gradually cultivate a greater acceptance of their present-moment experience.

*Mindfulness-
Based
Interventions*

The following paragraph will briefly present the basic structure of mindfulness practice based on an elucidation of the experiential domains of present-moment experience and the factors with which mindfulness relates to them. Mindfulness, in most general terms, is a unified awareness of body, mind and the present moment. This “contemplative landscape” navigated with mindfulness features five phenomenological dimensions, which are taken from the *pañcaskandha* model of early Buddhism: 1) material form, i.e. the somatic and sensory dimension; 2) feeling tone, or the plain fact that everything is experienced either as pleasant, unpleasant or neutral, i.e. the hedonic dimension; 3) perception, e.g. sense perceptions, comprehension, recognition, memory ..., i.e. the perceptual and cognitive dimension; 4) mental formations, e.g. volitional forces, emotional processes ..., i.e. the affective, conative and exertive dimension; and 5) consciousness, here in the basic sense of the five forms of sense-consciousness and mental consciousness.

*Mindfulness,
the Practice*

Mindfulness intentionally relates to these dimensions of present-moment experience by observing and describing, by acting with awareness, and by not-judging and not-reacting. These five aspects of mindfulness are at the same time the relevant subscales of the Five Facet Mindfulness Questionnaire (FFMQ), a validated self-report measurement of mindfulness (cf. Baer 2006) that has also been used to determine the effects of psychoactive substances on mindfulness-related capacities.

Note here that the practice of mindfulness as described above also warrants designation as a “non-specific amplifier,” a term coined by Stanislav Grof to denote the peculiar effects of psychedelics. Mindfulness is a non-specific amplifier in that it works with any present-moment experience and amplifies it in the sense of bringing it into conscious and non-judgmental awareness.

*Mindfulness,
“a non-specific
amplifier”*

The initial success of the MBSR program as well as the recent spread of other mindfulness-based interventions continues to be fueled by a growing scientific evidence base which demonstrates its effects. In the past fifteen years, research into mindfulness has skyrocketed, with results demonstrating its therapeutic effectiveness for various mental and somatic ailments as well as its potential for increased mental health and well-being. In this sense too, the recent resurgence of psychedelic research with its promising value for healing and therapy is reminiscent of similar trends in the recent history of mindfulness. The growing evidence base of mindfulness has certainly also been a major driving force behind the increasing societal acceptance of meditation practices.

*Mindfulness,
the Movement*

Thus, in the last decade, mindfulness has spread into the domains of healthcare, education, business and even the government and the military. This proliferation of MBIs is demonstrated by an ever-increasing number of standardized programs which apply mindfulness to particular issues and populations; and the following list of twenty-two is still no more than an excerpt: Mindfulness-Based Art Therapy (MBAT), Mindfulness-Based Biofeedback-Therapy (MBBT), Mindfulness-Based Compassionate Living (MBCL), Mindfulness-Based Childbirth and Parenting (MBCP), Mindfulness-Based Chronic Pain Management (MBCPM), Mindfulness-Based Cancer Recovery (MBCR), Mindfulness-Based Cognitive Therapy (MBCT), Mindfulness-Based Cognitive Therapy for Anxious Children (MBCTAC), Mindfulness-Based Cognitive Therapy for Cancer (MBCTCa), Mindfulness-Based Eating Awareness Training (MBEAT), Mindfulness-Based Elder Care (MBEC), Mindfulness Basics for Helping Professionals (MBHP), Mindfulness-Based Program for Infertility (MBPI), Mindfulness-Based Relationship Enhancement (MBRE), Mindfulness-Based Relapse Prevention (MBRP), Mindfulness-Based Stress Reduction (MBSR), Mindfulness-Based Stress Reduction for Teens (MBSRT), Mindfulness-Based Therapy for Insomnia (MBTI), Mindfulness-Based Tinnitus Stress Reduction (MBTSR), Mindfulness-Based Feminist Therapy (MBFT), Mindful Eating and Living (MEAL), Mindfulness-Based Mind Fitness Training (MMFT). This long list of MBIs with their specific goals and populations strongly reminds of Amanda Fielding's concept of psychedelics as "non-specific medications" (Fielding 2017), which also include their enhancing properties in healthy populations (Jungaberle et al. 2018).

*Mindfulness,
"a non-specific
medicine"*

As psychedelics are faced with increasing pressure or opportunity of becoming mainstreamed, a look at the processes involved in the mainstreaming of mindfulness with its subsequent advantages and disadvantages would be appropriate, however this will not be developed further here (for an excellent overview of how mindfulness has been mediated, appropriated, commodified, medicalized, moralized and mainstreamed, see Wilson 2014). Note also that increasingly critical voices have appeared as a result of the "watering down" of the concept of mindfulness involved in its ever-widening dissemination (for two such critical reappraisals, see, e.g., Purser et al. 2016, Johnson 2017).

*Mainstreaming
and
Critical Voices*

So how do psychedelics relate to mindfulness, and mindfulness to psychedelics? The second part of this presentation will address this question directly by presenting recent research findings on the issue of mindfulness-related capacities in the administration of psychedelics and empathogens. However, since not all mindfulness-related capacities are represented by MBSR or the other MBIs listed so far, two further standardized programs within the family of MBIs will be presented first: Mindful Self-Compassion (MSC) and Positive Neuroplasticity (PNT). These two later developments have also arisen from the confluence of modernized Buddhist meditation traditions with Western Science and are certainly also based on mindfulness, but they place a different focus in the practice. While mindfulness cultivates acceptance of present-moment experience in its pleasant, unpleasant or neutral aspects, self-compassion further entails learning how to cultivate compassionate responses to unpleasant experiences and positive neuroplasticity also entails learning how to cultivate beneficial responses to pleasant experience.

*Further
Mindfulness-
Related
Capacities*

Self-compassion draws more strongly from Buddhist contemplative practices of the kind and compassionate heart (*karuṇā, metta*). These cultivate not only a mindful awareness of internal experiences in the form of bodily sensations, thoughts and emotions, but on this basis also focus further on soothing and comforting the experiencing self when faced with pain and difficulty. MSC in its standardized format was developed in 2010 by the clinical psychologists Christopher Germer and Kristin Neff, and it is taught and implemented today

*Self-
Compassion*

around the world through the Center for Mindful Self-Compassion. Self-compassion exercises generally consist of either a writing exercise, role-playing or introspective contemplation, and are designed to foster mindfulness, feelings of common humanity and self-kindness. These three qualities – next to their counterparts in self-criticism, namely overidentification, isolation and self-judgement – make up the six factors of the Self-Compassion Scale (Neff 2003), which has been used to determine the effects of psychoactive substances on mindfulness-related capacities in the form of self-compassion.

Next, the Positive Neuroplasticity Training was developed by the neuroscientist and meditation teacher Dr. Rick Hanson. It trains people how to turn everyday beneficial experiences into lasting inner strengths and is usually delivered as a three-day residential training or a six-week evening course. Thus, it teaches the necessary skills to deliberately internalize beneficial experiences in implicit memory, how to use these internalization skills to cultivate what would be beneficial in the mind, and various ways of encouraging beneficial states and traits.

Inner strengths and resources are dependent on brain structure, and mental activity always entails underlying neural activity. Since repeated mental activity also entails repeated neural activity, any repeated neural activity will build neural structure (aka “neurons that fire together, wire together”). This process of learning, i.e. the change of neural structure and function, proceeds in two stages, referred to as activation and installation, encoding and consolidation or state and trait. Inner strengths and resources grow from experiences of them, i.e. activated states, which are then installed as traits. Without installation, however, i.e. without turning passing mental states into enduring neural structure, there is no brain development and thus no learning. In this sense, activation without installation may be pleasant, but it has no lasting value. This general issue of what fraction of beneficial mental states ever become neural structure is highly relevant in the integration process of psychedelic experiences, which aims at grounding altered states into altered traits and long-term personality change. While neuroplasticity is a worthwhile concept to discuss in this context – and especially so the distinction of experience- or self-dependent neuroplasticity as opposed to pharmacologically based neuroplasticity – it will not be further developed here.

Based on this broad overview of mindfulness-based applications and the capacities they intend to develop, this second part will now address six recently published studies that demonstrate the increase of both mindfulness and self-compassion capacities following the intake of Ayahuasca, Psilocybin and MDMA. Four of these studies have investigated mindfulness-naïve populations, while the other two focus on the effects of Psilocybin on long-term Buddhist meditators.

The exploratory study of Soler et al. (2016, see also [Fig1.](#)) has investigated the therapeutic potential of Ayahuasca and was perhaps the first study to look into the effects of psychedelic substances on mindfulness-related capacities. Participants were administered the FFMQ at two time points, at baseline and 24 hours after the intake of Ayahuasca. The study found that next to the decentering capacity (i.e. a metacognitive capacity to shift experiential perspective from *within* one’s subjective experience *onto* that experience), also two facets of the FFMQ, the non-judging and non-reacting subscales, significantly increased, with scores in the range of those observed after extensive mindfulness practice. The study concludes that the beneficial effects reported by Ayahuasca users may be due to this increase in mindfulness capacities.

Positive
Neuroplasticity

Altered States
vs.
Altered Traits

Study I
-
Ayahuasca
and
Mindfulness

Study II
-
Ayahuasca
and
Mindfulness

Another study led by the same researcher (Soler et al. 2018, see [Fig. 2](#)) later compared the impact of two interventions on participants' mindfulness-related capacities, namely four Ayahuasca sessions without the specific purpose of increasing mindfulness-related capacities and the standard eight-week MBSR course. It found that MBSR training led to a greater increase in overall mindfulness scores, however the four Ayahuasca session alone led to a comparable increase in the non-judging subscale. The study concludes that "present findings suggest that a small number of ayahuasca sessions can be as effective at improving acceptance as more lengthy and costly interventions" and that "future studies should address the benefits of combining Ayahuasca administration with mindfulness-based interventions." (Soler et al. 2018: 7)

Study III
-
Ayahuasca,
Mindfulness
and Self-
Compassion

A final Ayahuasca study (Sampedro et al. 2017, see [Fig. 3](#)) looked at metabolic and connectivity changes in the brain 24 hours after Ayahuasca intake, with the aim of providing a biological explanation for the post-acute or "after-glow" stage of its psychedelic effects. The resultant changes were found to be associated with enhanced mindfulness and self-compassion capacities, thereby further contributing to an elucidation of the therapeutic mechanisms of this compound. Note in [Fig. 3](#) that while study participants had significantly increased self-compassion measures 24 hours after intake, two months later they are back to their usual levels of self-criticism. We are left wondering what would have happened to these participants, if they would have had access to the various formal and informal self-compassion practices.

Next to the Psychedelic brew Ayahuasca, the entactogen MDMA also demonstrated a pharmacological pathway to increase self-compassion. The following two studies have investigated the effects of the administration of MDMA on self-compassion. While the prosocial subjective effects of MDMA have been well-established, its effect as an enhancer also of *intrapersonal* attitudes, i.e. prosocial attitudes towards one's self, has received less attention. However, this makes it especially noteworthy in the context of self-compassion, and in fact, both of the following studies have also included such behavioral techniques found in the MSC program for reducing self-criticism and increasing self-compassion, and have found that the behavioral and the pharmacological pathways are complementary and cumulative.

Study IV-V
-
MDMA and
Self-
Compassion

The study of Kamboj et al. (2015, see [Fig. 4](#)) investigated the therapeutic mechanisms of action involved in MDMA, i.e. how it produces its prosocial effects. The hypothesis was that MDMA would also enhance *intrapersonal* attitudes. Self-compassion measures were taken from recreational users of MDMA (or ecstasy) at baseline, following a compassionate imagery task and under or not under the influence of MDMA. The study found that both MDMA and the compassionate imagery had sociotropic effects, thus decreasing self-criticism and increasing self-compassion.

Another study led by the same researcher (Kamboj et al. 2017, see [Fig. 5](#)) also examined participants in a naturalistic setting who performed a self-focused compassionate imagery exercise under the influence of MDMA (or ecstasy) and six days apart. The study found that the effects of compassionate imagery were significantly enhanced under the influence of MDMA. Compassionate imagery and MDMA appeared to separately increase emotional empathy and self-compassion, with the effects of compassionate imagery and MDMA on self-compassion being cumulative. It would be interesting to see if these MDMA and self-compassion studies could be safely replicated with populations who struggle with more severe mental health issues.

Next, we will turn to two ongoing studies on the effects of psychedelic experience induced by Psilocybin in long-term Buddhist meditators. Since these findings have yet been published, the following is based on preliminary findings recently presented at the 2017 Psychedelic Science conference. In the first study, Johns Hopkins University (2017a, see also [Fig. 6](#)) looked at long-term meditators with an average of about 6.600 hours of practice and without previous experience with psychedelics. Participants either under the influence of placebo or a medium-to-high dose of Psilocybin engaged in three formal practices: focused awareness, metta or loving kindness and open monitoring or non-dual awareness. Preliminary findings suggest that under the influence of Psilocybin, the stability of practice increased in loving kindness and open monitoring, vividness increased in all practices, equanimity increased in loving kindness and open monitoring, and mental effort decreased in all practices. Anecdotal evidence further strengths these preliminary findings. One participant with 12.000 hours of practice over 20 years, who had received the Psilocybin, noted: "I replayed all of the peak experiences I had ever had while meditating."

Study VI
-
*Psilocybin and
Meditation*

The study also found that two months after the sessions, 90% of participants in the Psilocybin reported positive effects and greater flexibility in their sitting meditation practice (as opposed to 70% and 30% in the controls) as well as positive effects on their informal practice in daily life (as opposed to 40% in the controls). A worthwhile avenue of future psychedelic research may be to replicate these studies with other psychedelic or empathogenic substances.

The final study which will be presented here was conducted at the University Hospital of Psychiatry in Zurich (University Hospital of Psychiatry Zurich 2017) and examined the effects of Psilocybin on mindfulness-related capacities in a meditation retreat setting. A group of long-term Buddhist meditators with an average of 5.600 hours of practice engaged in a five-day retreat and received either placebo or a medium-to-high dose of Psilocybin on day four. The Psilocybin group exhibited significantly increased mindfulness measures on the Freiburg Mindfulness Inventory as well as an increase of self-acceptance and concern for others based on the Life Changes Questionnaire, which would also suggest a related increase in self-compassion. Notably, one study participant, who had received the Psilocybin, reported being able to modulate the drug effect: "When I focused on the breath, I was able to practically neutralize the effect. However, when I allowed myself to be taken over by it, the Tatami mat would start moving" (Palmer 2015, 20:45). How is this to be explained?

Study VII
-
*Psilocybin and
Meditation*

In fact, the shared mechanisms of action of such experiences catalyzed by both meditation and psychedelics are already well-established in the scientific literature. Winkelman (2017) has recently suggested one hypothesis based on evolutionary psychology for contextualizing this curious connection, stating that "[t]he similarities of psychedelic and non-psychedelic contemplative experience suggests that the explanation of psychedelic experience is not through mechanisms unique to psychedelics but rather through shared mechanisms affected by non-drug procedures [such as meditation/mindfulness]." (Winkelman 2017: 2; see also his helpful hypothesis on the underlying "innate modules, operators and intelligences.")

*Mechanisms
of
Action*

Underlying this shared mechanism of action is the Default Mode Network (DMN), a network of brain regions which function as hubs for the structural and functional connections that underlie a range of meta-cognitive processes. The DMN "superimposes itself" on all other networks of the brain, and Winkelman (2017: 7) proposes that "[p]sychedelics induce a temporary disruption of neural hierarchies [i.e. the DMN] by reducing top-down control and

*The Default
Mode Network*

increasing bottom-up information transfer in the human brain [... leading to] more primary forms of consciousness based in a somatic awareness and subjective feeling states.”

*Self-
Referential
Processing*

I would further hypothesize here that through the intentional placement of attention in mindfulness practices on the domains of present-moment experience, described here as “primary forms of consciousness,” “somatic awareness” and “subjective feeling states,” such a bottom-up information transfer would likewise be initiated and eventually stabilized (cf. also the above description of the practice of mindfulness and the contemplative landscape of present-moment experience). The resulting decrease of activity and connectivity in the DMN directly affects self-referential processing. This includes processes such as mentalizing, internal dialoguing, self-related judgements as well as mental time travel, mind-wandering, fusing with one’s experience as well as ego-integrity. While some readers may have experienced the alteration of these basic forms of self-consciousness under the effects of psychedelics, others may be familiar with them by receiving the pith instructions for practice from a contemplative guide which directly address these processes on a phenomenological level by pointing out their antidotes.

*Implications for
Mental
Healthcare*

Thus, mindfulness-based interventions and psychedelics as well as entactogens share related effects and mechanisms of action which primarily relate to the dissolution of ego-boundaries and the attenuation of self-referential processing. This also has wide-ranging implication for the field of mental health, since psychopathological symptoms arise primarily at just these boundaries of the self and the world, and the liberating dissolution of these boundaries bears important ramifications for a transformative healthcare in general as well as for novel future treatments for psychopathological conditions in particular. Note here that the latter often arise in personality structures which feature a highly narrowminded focus and maladaptive forms of self-referential processing (cf. University Hospital of Psychiatry Zurich 2017).

Further support for this promising perspective comes from related research of Barrett and Griffiths (2017), who have looked at changes in the DMN as a way to explain experiences of introvertive unity as well as timelessness and spacelessness as essential features of introvertive mystical experiences occasioned by meditation as well as classic hallucinogens. They conclude their study by stating likewise that further research in this area “may have important implications [...] for developing novel therapeutic interventions for producing persisting positive behavioral and psychological changes.”

*Summary
And
Outlook*

The implications of the above findings for the field of mindfulness-based interventions and for the future of psychedelic practice and integration – but also for the wider context in which both of these practices may be implied, i.e. novel forms of treatment for mental health issues and the general promotion of health and well-being – are manifold and will continue to emerge as this discussion and related research continues. My hope is that this review will have contributed to an acceleration of this process. This case of mindfulness and psychedelics, in which otherwise culturally and historically distinct practices are reconceptualized and integrated on a higher-order level, also bears important implications for our understanding of consciousness in general and its potential for healing in particular. However, these will remain underappreciated in the absence of a transcultural, transdisciplinary and transmaterial study of consciousness.

While there seems to be little overlap between the contemporary mindfulness and psychedelic communities today, the time is nevertheless ripe to start talking about psychedelic ways to mindfulness and mindful ways to psychedelics. Due to the unfortunate

legal restrictions that apply to the above-mentioned psychoactive substances in most countries around the world, a natural first practical step in this direction would be to raise the awareness of mindfulness-based practices in the psychedelic community as well as to encourage psychedelic researchers and practitioners to include these in their studies and applications. However, once these legal restrictions are eventually loosened or lifted, psychedelics and entactogens may also provide novel pharmacological pathways towards mindfulness-related capacities.

A final note is in place here on where all this leaves the Buddhist tradition, both as the source of modern-day mindfulness as well as a tradition of transpersonal study and practice in which to conceptualize the psychedelic experience. While it is unlikely that the more traditional and normative Buddhist traditions in Asia and their offshoots in the West will consider novel approaches based on the ingestion of psychoactive substances, the developments of more independent Western Buddhist traditions in response to the needs of modernity are already considering entheogenic Buddhist training. Certain contemporary Buddhist meditation teachers, based on their own fruitful explorations into psychedelic states, have already picked up this conversation, and the various Buddhist positions on the use of psychedelics have recently been described in terms of the anti-psychedelic Puritans, the tolerant Buddhists, the psychedelic Buddhists, the psychedelic Evangelists and the psychedelic Agnostics (see Horn 2017; on Buddhism and Psychedelics, see also his Buddhist Geeks Podcast). These tendencies have already been noted in recent research (Osto 2016), which concludes that the times are ripe for “psychologized types of Buddhism chemically augmented by psychedelics” and “new Buddhistically informed chemical spiritualities” (ibid., 215), yet the liberating or ‘samsaric’ nature of psychedelic states and their relationship to Buddhist forms of awakening remains disputed (for an eloquent traditional Buddhist critique of psychedelics, see Capriles 2013, Vol. 1, 95ff and Vol. 4, 125ff; for a general review of modern and traditional Buddhist views on entheogens, see Johnson 2016). In any case, a continued, diversified and critical discussion of these issues holds great potential for a more nuanced understanding of the higher reaches of human potential and consciousness.

Figures

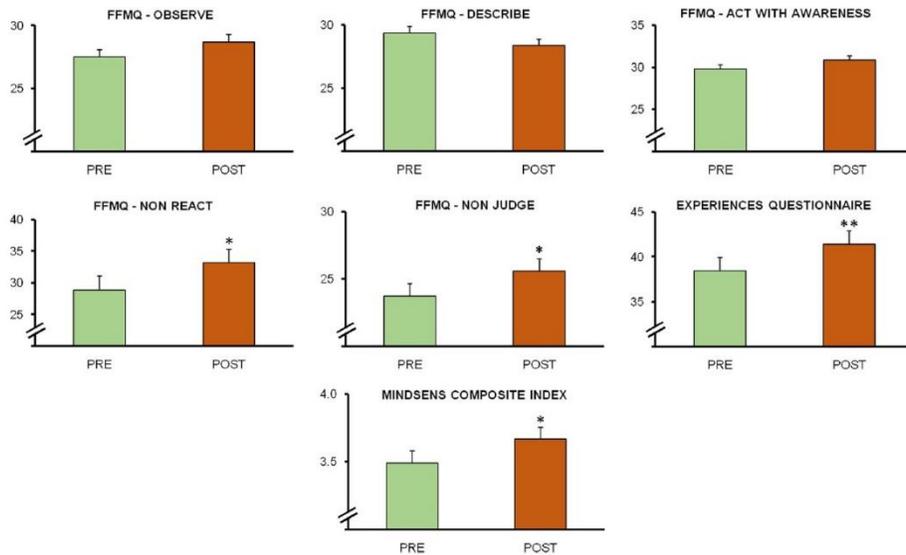


Fig. 1: Ayahuasca-induced changes in the FFMQ subscales, the decentering score and the MINDSENSE composite score. (Soler et al. 2016)

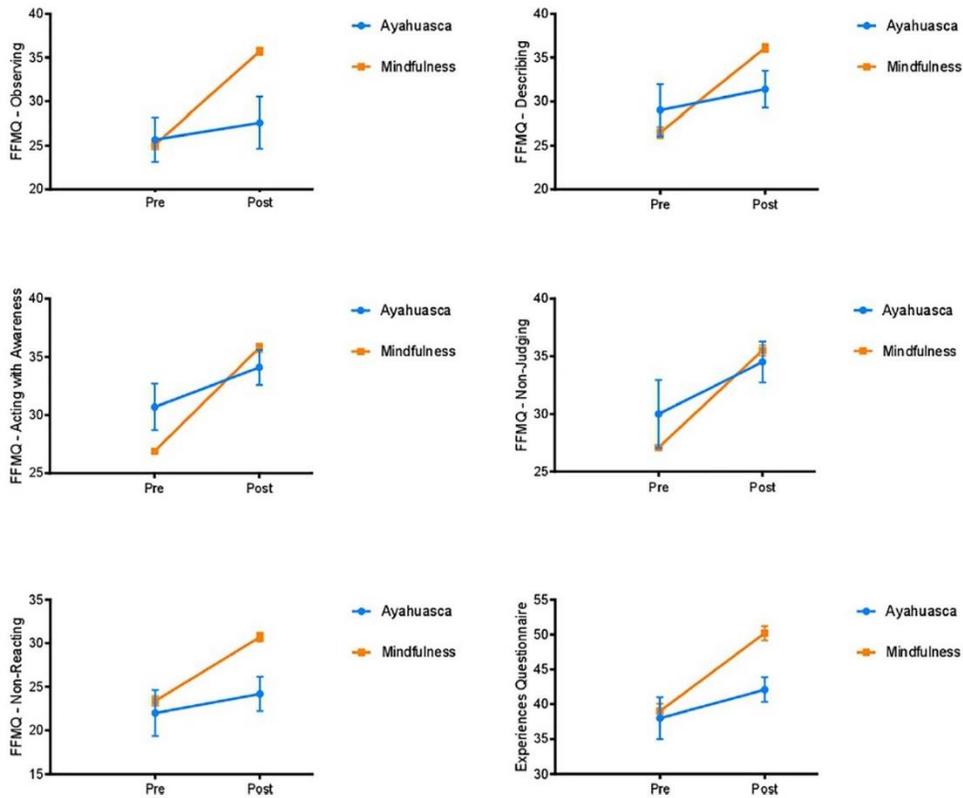


Fig. 2: Pre-post changes in FFMQ facets and decentering scores after Ayahuasca intake or mindfulness training. (Soler et al. 2018)

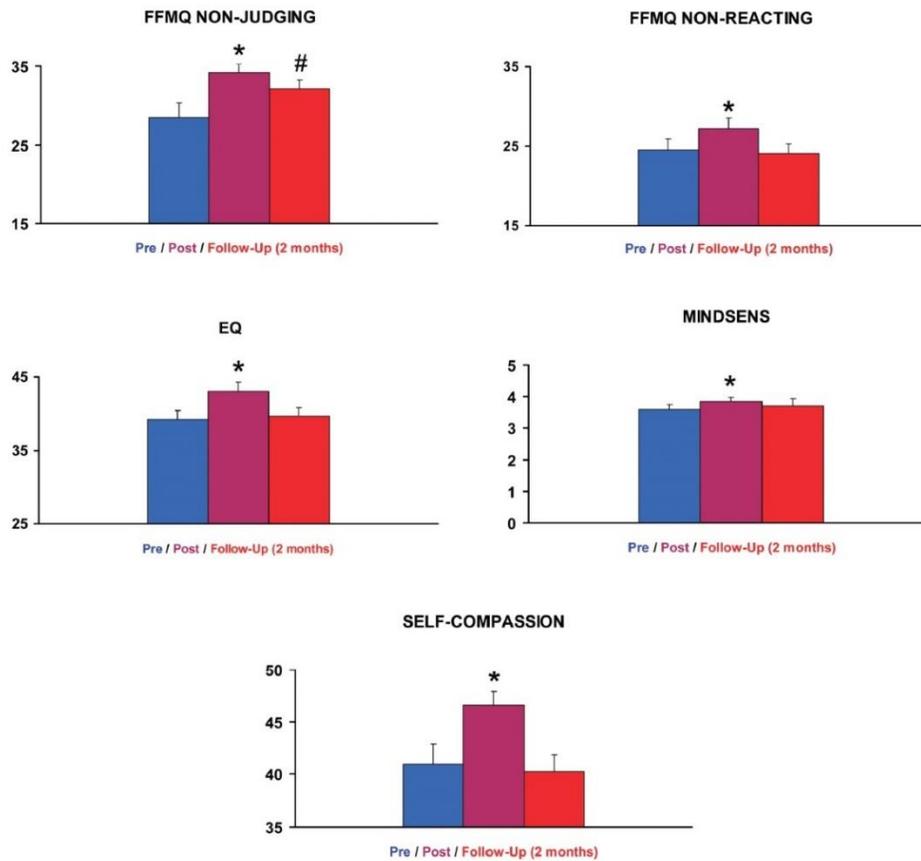


Fig. 3: Pre-post and follow-up changes in the FFMQ, decentering scores, MINDSENSE and self-compassion. (Sampredro et al. 2017)

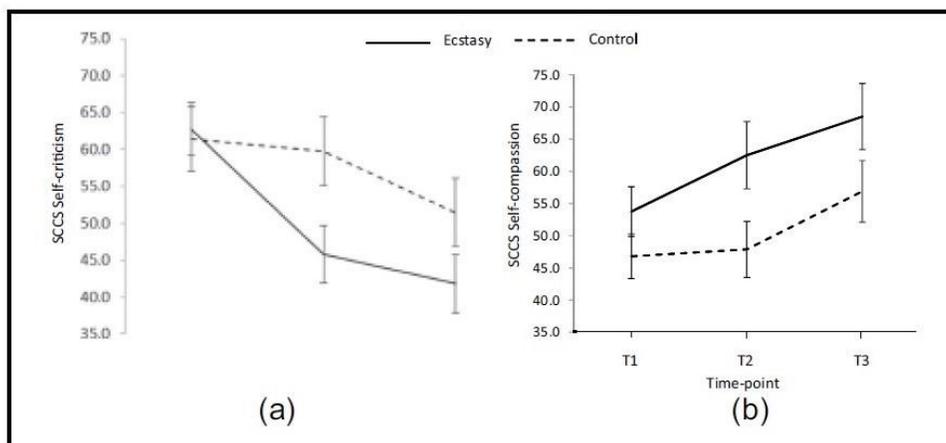


Fig. 4: (a) Mean scores on the Self-Compassion and Criticism Scale (SCCS) at baseline, post-ecstasy and post-compassionate imagery (CI), in the CI+ecstasy group and the control group with CI only but not ecstasy; (b) Mean SCCS for the same two groups. (Kamboj et al. 2015)

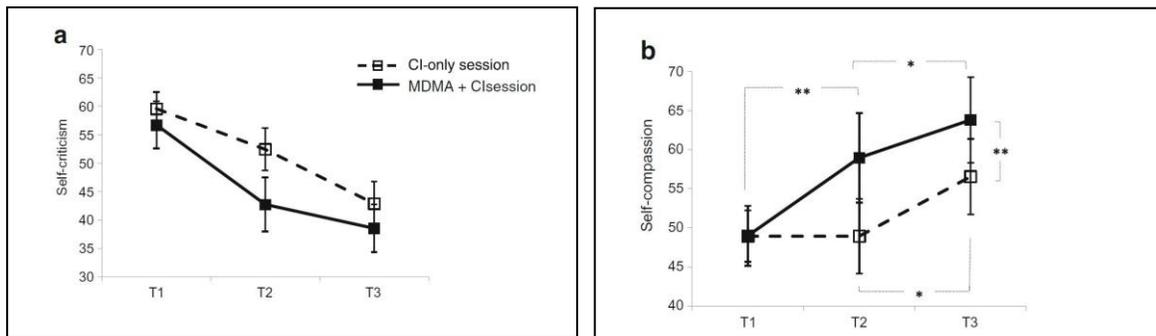


Fig. 5: Mean Self-Criticism and Self-Compassion scores at baseline, extended baseline/post-MDMA and after compassionate imagery (CI). (Kamboj et al. 2017)

[Fig. 6 could not be reproduced here for reasons of copyright]

Fig. 6a: Reports of long-term meditators under placebo or medium-to-high dose psilocybin on effects on stability (left) and vividness (right). The meditation practices included focused awareness (red), loving kindness (green) and open monitoring (blue). (Johns Hopkins 2017a)

[Fig. 6 could not be reproduced here for reasons of copyright]

Fig. 6b: Reports of long-term meditators under placebo or medium-to-high dose psilocybin on effects on equanimity (left) and mental effort (right). The meditation practices included focused awareness (red), loving kindness (green) and open monitoring (blue). (Johns Hopkins 2017a)

Bibliography

Baer, Ruth A., Smith, Gregory T., Hopkins, Jaclyn, Krietemeyer, Jennifer, and Toney, Leslie. "Using Self-Report Assessment Methods to Explore Facets of Mindfulness." *Assessment* 13, no. 1 (2006): 27-45.

Braun, Erik. 2016. *Birth of insight: meditation, modern Buddhism, and the Burmese monk Ledi Sayadaw*. Chicago: University of Chicago Press.

Capriles, Elías. 2013. *The Beyond Mind Papers: Transpersonal and Metatranspersonal Theory; a Critique of the Systems of Wilber, Washburn and Grof and an Outline of the Dzogchen Path to Definitive True Sanity*. Nevada City, CA: Blue Dolphin Publishing.

Feilding, Amanda. 2017. *Introductory Talk: From Taboo to Treatment*. *Psychedelic Science*, 21. April 2017.

Horn, Vincent. 2017. *Meditating on Psychedelics: What Camp Are You In?* In: Medium, August 3, 2017. Link: <https://medium.com/@buddhistgeeks/meditating-on-psychedelics-fd7c51715855>.

Johns Hopkins 2017a. Frederick Barrett. *Neural Correlates of Responses to Psilocybin During Meditation and Music Listening*. Psychedelic Science 2017. (Study title “Effects of Psilocybin on Behavior, Psychology and Brain Function in Long-term Meditators.”) Link: <https://www.youtube.com/watch?v=27OSejF7MJU&t=648s> (accessed June 27, 2018).

Johns Hopkins 2017b. Roland Griffiths. *Johns Hopkins Psilocybin Research Project: Studies in Mystical Experience, Adverse Effects, Meditation in Healthy Volunteers, and Palliative Effects in Cancer Patients - Implications for Spirituality and Therapeutics*. Psychedelic Science 2017. (Study title: “Effects of Psilocybin on Behavior, Psychology and Brain Function in Long-term Meditators.”) Link: <https://www.youtube.com/watch?v=6bu3q3GMHfE&t=1362s> (accessed June 27, 2018).

Johnson, Dennis. 2017. *Critical Reflections on Mindfulness-based Interventions*. Panel Presentation, “Inner Ecology: Collective and Transcultural Perspectives to Transpersonal Psychology,” International Transpersonal Conference, Prague 2017. Link: <https://contemplativemetadata.files.wordpress.com/2015/03/dj-critical-reflections-on-mindfulness-based-interventions-itc-prague-2017.pdf> (accessed June 27, 2018).

Johnson, Dennis. 2016. *Buddhismus und Entheogene: Moderne und Traditionelle Sichtweisen*. Entheo-Science Conference. Berlin, September 3, 2016. Link: <https://contemplativemetadata.files.wordpress.com/2018/08/buddhismus-und-entheogene-talk-and-slides-dj.pdf> (accessed June 27, 2018)

Jungaberle, H., Thal, S., Zeuch, A., Rougemont-Bücking, A., von Heyden, M., Aicher, H., Scheidegger, M. “Positive Psychology in the Investigation of Psychedelics and Entactogens: A Critical Review,” *Neuropharmacology* (manuscript accepted June 25, 2018), doi: 10.1016/j.neuropharm.2018.06.034.

Kamboj, Sunjeev K, Emma J Kilford, Stephanie Minchin, Abigail Moss, Will Lawn, Ravi K Das, Caroline J Falconer, Paul Gilbert, H Valerie Curran, and Tom P Freeman. “Recreational 3,4-Methylenedioxy-N-Methylamphetamine (MDMA) or ‘Ecstasy’ and Self-Focused Compassion: Preliminary Steps in the Development of a Therapeutic Psychopharmacology of Contemplative Practices.” *Journal of Psychopharmacology* 29.9 (September 2015): 961-70.

Kamboj, Sunjeev K., Ylva S. E. Walldén, Caroline J. Falconer, Majdah Raji Alotaibi, Ian S. Blagbrough, Stephen M. Husbands, and Tom P. Freeman. “Additive Effects of 3,4-Methylenedioxymethamphetamine (MDMA) and Compassionate Imagery on Self-Compassion in Recreational Users of Ecstasy.” *Mindfulness*, November 4, 2017.

Neff, Kristin. 2003. “Development and validation of a scale to measure self-compassion.” *Self and Identity*, 2, 223-250.

Osto, Douglas. 2016. *Altered states: Buddhism and Psychedelic Spirituality in America*. New York: Columbia University Press.

Palmers, Vanja. 2015. *Erfahrene Meditierende nehmen Psilocybin: Ein aktuelles Forschungsprojekt*. Schweizerische Ärztgesellschaft für Psycholytische Therapie. Symposium zum 30. Jahrestag. Münchenstein bei Basel, 10. September 2015; Link: <https://www.youtube.com/watch?v=4HZE6ynFujs&t=2398s> (accessed June 27, 2018)

Puente, Iker. 2014a. "Effects of Holotropic Breathwork in Personal Orientation, Levels of Distress, Meaning of Life and Death Anxiety in the Context of a Weeklong Workshop: A Pilot Study." *Journal of Transpersonal Research* 6 (2014): 49- 63.

Puente, Iker. 2014b. *Complejidad y Psicología Transpersonal: caos, autoorganización y experiencias cumbre en psicoterapia*. PhD Thesis. Universitat Autònoma de Barcelona.

Puente, Iker. 2014c. "Holotropic Breathwork Can Occasion Mystical Experiences in the Context of a Daylong Workshop." *Journal of Transpersonal Research* 6 (2014): 40-50.

Purser, Ronald E. et al. (eds.). 2016. *Handbook of Mindfulness: Culture, Context, and Social Engagement*. New York: Springer.

Sampedro, Frederic, Mario de la Fuente Revenga, Marta Valle, Natalia Roberto, Elisabet Domínguez-Clavé, Matilde Elices, Luís Eduardo Luna, et al. "Assessing the Psychedelic 'After-Glow' in Ayahuasca Users: Post-Acute Neurometabolic and Functional Connectivity Changes Are Associated with Enhanced Mindfulness Capacities." *International Journal of Neuropsychopharmacology* 20.9 (September 2017): 698-711.

Soler, Joaquim, Matilde Elices, Alba Franquesa, Steven Barker, Pablo Friedlander, Amanda Feilding, Juan C. Pascual, and Jordi Riba. "Exploring the Therapeutic Potential of Ayahuasca: Acute Intake Increases Mindfulness-Related Capacities." *Psychopharmacology* 233.5 (March 2016): 823-29.

Soler, Joaquim, Matilde Elices, Elisabeth Dominguez-Clavé, Juan C. Pascual, Amanda Feilding, Mayte Navarro-Gil, Javier García-Campayo, and Jordi Riba. "Four Weekly Ayahuasca Sessions Lead to Increases in 'Acceptance' Capacities: A Comparison Study With a Standard 8-Week Mindfulness Training Program." *Frontiers in Pharmacology* 9 (March 20, 2018).

Wilson, Jeff. 2014. *Mindful America: the mutual transformation of Buddhist meditation and American culture*. New York: Oxford University Press.

Young, Shinzen. 2013. *What is mindfulness?* (https://www.shinzen.org/wp-content/uploads/2016/08/WhatIsMindfulness_SY_Public_ver1.5.pdf) (accessed June 27, 2018).

University Hospital of Psychiatry Zurich. 2017. Milan Scheidegger. Psilocybin and Mindfulness in a Meditation Retreat Setting. *Psychedelic Science* 2017. (Study title: "Psilocybin enhances Mindfulness-Related Capacities in a Meditation Retreat Setting: A Double-Blind Placebo-Controlled fMRI Study"). Link: <https://www.youtube.com/watch?v=LZ9Vp4Hz5IU> (accessed June 27, 2018).