

Relation between Psychedelic and Transcendental Experiences

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Abstract

Psychedelic use is generally considered safe, and their effects are being equated with those of meditation practices. To assess these conclusions, this paper compares psychedelic and meditation experiences in terms of 1) EEG patterns, 2) brain blood-flow patterns, 3) content of experience, 4) mechanism of action, and 5) therapeutic application. On these five factors, psychedelic and transcendental experiences during meditation practice are completely different: gamma vs alpha EEG; decreased brain blood-flow vs higher frontal blood-flow; intense mental and emotional content vs content-free self-awareness; influenced by the set and setting vs transcending the set and setting.

Since brain patterns and inner experiences differ, it is not accurate to equate psychedelic and transcendental experiences or to use effects or mechanism of one to justify the other. Yes, carefully designed research into both psychedelic and transcendental experiences should continue. But the results of these studies should not be superficially combined.

Keywords: psychedelic, meditation, transcendental experiences, therapy

1. Introduction

Psychedelic use predates written history, being used by early cultures in many sociocultural and ritual contexts (Nichols, 2016). Currently, legalization of psychedelic research has led to systematic investigation of effects of psychedelic use on brain functioning and application of psychedelics to treat mental illness. Well-designed studies and meta-analyses of psychedelic use are reviewed below.

In addition, psychedelic experiences are being compared to meditation experiences in terms of the subjective experiences and effects (Gandy, 2022). Equating effects of psychedelic and meditation experiences needs careful attention. Does psychedelic use aid or shadow meditation experiences? Can the research on one be applied to the other? To answer these questions, this paper compares 1) EEG patterns, 2) brain blood-flow patterns, 3) content of experience, 4) mechanism of action, and 5) therapeutic application of psychedelic use and transcendental experiences during meditation practice.

2. Subjective Experiences—First Person Perspective

2.1 Subject/Object Relationships of Different Experiences

Experiences can be compared by the presence or absence of the subject or experiencer, and the presence or absence of content—thoughts, feelings, body awareness or sensory objects. The figure below, adapted from (Travis, 2014, p. 2), presents a two-by-two grid that compares waking, sleeping, dreaming and deep meditation experiences.

We see in this figure that the observer–observed relationship of sleeping, dreaming, waking, and deep meditation experiences defined as pure consciousness or transcendental consciousness are mutually exclusive. In sleep, there is no sense of observer, and nothing is observed. In dreaming, vivid dream images (observed) dominate experience and sense of self is fragile if existing at all. In waking, there is a sense of observer and there is continuous changing content (observed). Transcendental consciousness in the fourth cell is qualitatively different from the other three. It is a state in which the observer is awake to itself—a state of being rather than thinking. The observer is not qualified by changing experiences, as in the waking state.

		Observer	
		Present	Absent
Observed (Content)	Present	Waking	Dreaming
	Absent	Transcendental Consciousness	Sleeping

Figure 1. Two by Two Grid of Subject/Object Relations in Different States of Consciousness

Note: Each state of consciousness—waking, sleeping, dreaming and Transcendental Consciousness—are characterized by a unique relation of subject (observer) and object (observed)

2.2 Psychedelic Experiences

Psychedelic experiences are defined by enhanced sensory content, strong waves of emotion and felt-sense of deep meaning: "...psychedelics intensify mental phenomena and cause them and their significance to appear bigger, vaster, and more dramatic than otherwise" (Hartogsohn, 2018, p. 2). The objects of psychedelic experiences are intensified and so give a new perspective on customary experiences. This has been useful in carefully controlled therapeutic sessions. However, structurally these experiences fit into the category of waking experiences. While there is intensified mental phenomena during psychedelic experiences, these experiences are within the structure of waking experiences—a subject having the experience and an object of experience.

2.3 Meditation Practices that Promote Transcending

Meditations have been divided into three categories: focused attention, open monitoring, and automatic self-transcending (Travis & Shear, 2010). Each category has distinguishing procedures, EEG patterns and purposes. Meditations in the automatic self-transcending category, such as Transcendental Meditation, are designed for transcending, a process of letting the attention move from active thinking to more quiet levels of mind in which thoughts are secondary and ultimately disappear and self-awareness is primary. This state of silence is unaccompanied by feelings, thoughts, or perceptions (Maharishi Mahesh Yogi, 1969; Travis & Pearson, 2000). The experience of transcendental consciousness is not a state of thinking, but a state of Being, where the "experiencer is left awake by itself in full awareness of itself without any experience of an object" (Maharishi Mahesh Yogi, 1963, p. 4).

Descriptions of meditation experiences were content analyzed from 52 college students, who had practiced the Transcendental Meditation technique for a few months to over eight years. These subjects were used since they were familiar with the experience of inner silence during their meditation sessions and so could give articulate descriptions of this state. A content analysis of these descriptions yielded three themes—absence of time, absence of space, and absence of body sense (Travis & Pearson, 2000). Note that the experience of inner silence was not described in terms of distorted content—strong emotions, or vivid visual, auditory, and tactile sensations. Rather, it was described by the absence of time, space, and body-sense, the customary framework that defines waking experiences.

The experience of transcendental consciousness is defined in a fundamentally different way than experiences in general and psychedelic experiences in particular. While transcendental consciousnesses is a state of awareness without content, psychedelic experiences are defined as intense content.

3. Brain Patterns-Third Person Perspective

3.1 During Psychedelic Experiences

Psychedelic experiences described as "intense mental phenomena" fit the brain patterns seen during psychedelic use. All psychedelics—LSD (lysergic acid diethylamide or acid), psilocybin (magic mushroom), and DMT (N-dimethyltryptamine in Ayahuasca)—are associated with gamma (20-50 Hz) EEG activity (Kaur & Singh, 2015). Gamma EEG is the brain signature of focused attention, of being completely absorbed in an experience (Landau et al., 2007).

In addition, all psychedelics are associated with decreased blood flow to the brain. Psilocybin use decreased blood flow in prefrontal areas and connections within the default mode network, a network associated with inner reflection that is more active during rest than during goal-directed tasks (Carhart-Harris et al., 2012). Ayahuasca also lead to reduced blood flow in the default mode network (Palhano-Fontes et al., 2015). LSD use likewise led to decreased blood flow to major brain networks including the default mode network, the saliency network that switches attention to the most important part of an experience, and frontal parietal attentional areas. LSD also led to breakdown between normally distinct brain networks, which compromises perception of the boundaries

between the self and the environment (Tagliazucchi et al., 2016). Psychedelics break down the modular structure of the brain "...enabling a state of unconstrained cognition." (Carhart-Harris et al., 2012, p. 8)

3.2 During Transcendental Consciousness

While functioning of localized circuits and gamma EEG characterize psychedelic experiences, global circuits and alpha EEG characterize Transcendental Consciousness—a state of wakefulness without content (Travis, 2012). The state of transcendental consciousness could reflect dampening of reverberations in the thalamic *core* nuclei, which encode individual experiences, while maintaining reverberations in *matrix* nuclei, which encode wakefulness (Jones, 2001; Travis, 2012). Thalamocortical loops involving thalamic *matrix* nuclei are predicted to generate alpha EEG (Steriade & Llinas, 1988). In a longitudinal random assignment study of 57 college students, Transcendental Consciousness was characterized by higher alpha1 frontal log-power, lower beta1 and gamma frontal log-power. It was also characterized by higher frontal alpha1 coherence (Travis et al., 2010).

The pattern of blood flow during transcendental experiences are distinctly different than those during psychedelics use. During transcendental experiences, blood flow is higher in frontal areas and reduced in brain stem areas (Mahone et al., 2018). This blood flow pattern fits the description of a state of "restful alertness" or self-awareness without ongoing mental content.

4. Application of these Experiences to Therapeutic Situations

4.1 Psychedelic Experiences

4.1.1 Micro Dosing

Psychedelics activate the serotonin system (Nichols, 2016). The serotonin system modulates hunger, mood, perception, and alertness. Optimal levels promote confidence, relaxation, and feelings of personal security. Deficiencies lead to sleep disturbance, anxiety, and depression.

The psychoactive substance in psilocybin and ayahuasca resemble the chemical structure of serotonin. Ingestion of sub-hallucinogenic amounts of these substances—a practice called micro dosing—increases the amounts of these substances in the synapses between neurons. They activate serotonin receptors the same way that serotonin does. This is used to combat depression and anxiety.

This is practiced in the name of "plant medicine." In theory this seems to be OK.

However, psychedelics short-circuits a natural response. Psilocybin, ayahuasca and LSD activate serotonin receptors. The natural behaviors that would naturally result in elevated serotonin are not there to maintain stable levels. This is analogous to building the walls of a house without building a foundation. The house can be enjoyed for a short time but quickly falls down. Anderson and colleagues interviewed 235 individuals involved in micro dosing: half reported positive results, half reported negative results (Anderson et al., 2019).

Serotonin can be naturally increased through:

- Aerobic exercise
- A diet high in tryptophan
- Exposure to bright light daily
- Transcendental Meditation practice

It would seem preferable to increase serotonin levels through natural behaviors to establish optimal levels of serotonin and resulting sense of well-being. Transcendental experiences lead to sustained levels of serotonin to allow the associated experiences to become a stable reality (Travis, 2014).

4.1.2 Therapeutic Effects of Full Dosage of Psychedelics

A meta-analysis of nine randomized, placebo-controlled clinical trials with 211 patients reported that psychedelic-assisted therapy using psilocybin, LSD, or ayahuasca led to significant decreases in post-traumatic stress disorder, anxiety/depression, and social anxiety compared to placebo controls (Luoma et al., 2020). Online survey research with 443 respondents who experienced psychedelic-assisted therapy reported that 96% of subjects met the criteria for cannabis, stimulant or opioid abuse before the psychedelic experience while only 27% met the criteria afterwards (Garcia-Romeu et al., 2019a). A second study reported reduction of alcohol use in 343 individuals from 72% meeting the criteria for addictive behavior before psychedelic experiences to only 14% afterwards (Garcia-Romeu et al., 2019b).

Another meta-analysis reported that psychedelic-assisted therapy using ayahuasca, psilocybin or LSD led to significant improvements in treatment-resistant depression, anxiety and depression, and tobacco and alcohol

dependence (Dos Santos et al., 2016). When combined with cognitive behavioral therapy, psilocybin use significantly decreased symptoms of depression and anxiety in the context of cancer-related psychiatric distress for at least 6 months following a single acute administration (Johnson & Griffiths, 2017), and led to substantially higher 6-month smoking abstinence rates than are typically observed with other medications or cognitive behavioral therapy alone (Johnson et al., 2017).

4.1.3 Importance of Set and Setting in Psychedelic-Assisted Therapy

Psychedelic use should not be regarded as a psychiatric treatment in and of itself, but rather as an integral element of psychotherapy, so called “psychedelic drug assisted psychotherapy” (Carhart-Harris et al., 2018, p. 399). Psychedelics has been compared to a “psychological microscope” amplifying the energy associated with deep unconscious experiences making them available for conscious processing (Grof, 2009, p. 14). This might explain therapeutic effects of psychedelic use. The person gains a new perspective on habitual patterns of thinking and acting.

The therapeutic effects of psychedelics are dependent on the therapeutic situation (Hartogsohn, 2016; Schleim, 2022) since psychedelics are known to enhance suggestibility (Lemerrier & Terhune, 2018). Indigenous groups, who used psychedelics, included them in structured ceremonial settings following extensive preparation (Beyer, 2010; Winkelman, 2014). Similarly, in a modern therapeutic session, the setting is comfortable and secure, with interpersonal support throughout the session. The flip side of this effect is that if the environment is not well controlled, it can lead to high fear and anxiety (Johnstad, 2020).

Even in carefully controlled research settings, in which subjects were accompanied by two guides and were encouraged to close their eyes and direct their attention inward, the psilocybin condition produced a range of acute perceptual changes and varied subjective experiences—ranging from extreme anxiety/fear (39%) to mystical-type experiences (72%) rated as substantially meaningful and spiritual experiences (Griffiths et al., 2006). While having profound effects on these normal subjects, one out of three people suffered extreme anxiety/fear during psychedelic use.

The American Psychiatric Association (2020) after reviewing all the research, concluded:

There is currently inadequate scientific evidence for endorsing the use of psychedelics to treat any psychiatric disorder except within the context of approved investigational studies. (Alpert et al., 2020, p. 1)

4.2 Transcendental Experiences

In a meta-analysis of 34 studies, Transcendental Meditation practice reduced sympathetic activation compared to resting controls (Dillbeck & Orme-Johnson, 1987). Reducing sympathetic activation could explain effects of Transcendental Meditation practice in reducing PTSD symptoms in veterans (Brooks & Scarano, 1985; Nidich et al., 2018) and in civilians caught in a civil war (Rees et al., 2013), leading to greater reductions in trait and state anxiety than other meditation practices (Orme-Johnson & Barnes, 2013), and reducing perceived stress and increasing brain connectivity in college students (Avvenuti et al., 2020).

The experience of Transcendental Consciousness transforms one’s sense-of-self from being identified with thoughts, feelings, and outer behavior to being identified with inner Being (Travis et al., 2004). A ten-year longitudinal study of effects of Transcendental Meditation practice on scores on the Loewinger’s Sentence Completion test, the gold standard of ego development, reported a full stage growth of ego development over that decade in the meditating subjects compared to students from three matched colleges (Chandler et al., 2005). The literature does not report adverse reactions from Transcendental Meditation practice in normal or clinical populations.

5. Conclusions

5.1 Success of Psychedelic-Assisted Therapy Does Not Mean that All Psychedelic Experiences Are Safe and Useful

Psychedelic experiences are dependent on the set and setting. A therapeutic setting can be comfortable, secure, and non-threatening with interpersonal support throughout the session. A skilled therapist in a supportive setting can direct the strong waves of emotion and felt sense of deep meaning that occur during psychedelic experiences to help the client change habitual patterns of thinking and behaving. This is a key point: Psychedelic experiences have not been clinically beneficial in and of themselves, but rather as an integral element of therapy.

Casual use of psychedelics in uncontrolled settings could lead to extreme fear, anxiety, and mental instability. Even micro-dosing is reported to result in positive experiences half the time and negative experiences the other

half. In addition, psychedelic-assisted therapy involves a single psychedelic experience rather than multiple psychedelic sessions over months or years.

5.2 Psychedelic Experiences Should Not Be Equated with Transcendental Experiences

The table below compares psychedelic and transcendental experiences in terms of subjective content, objective measures, and application.

Table 1. Comparison of psychedelic and transcendental experiences

	Psychedelic Experiences	Transcendental Experiences
Content of experiences	Intense emotional and cognitive content.	Silence, inner stability, and wholeness.
Blood Flow	Decreased in all brain areas, breaking down the module structure of the brain	Increased blood flow to frontal association areas and decreased to brain stem
EEG Patterns	Gamma EEG—the signature of focused, intense experiences	Alpha EEG—the signature of restful alertness
Mechanism of Action	Short circuit the serotonin system to create a short-term experience	A behavior (transcending) that naturally affects the whole mind and body, leading to stable elevated levels of serotonin
Therapeutic application	Research needs to carefully probe effects of psychedelic use in clinical settings. Some report positive effects, some negative	Transcendental Meditation practice has been successfully applied to reduce Post Traumatic Stress, high anxiety, and cardiovascular disease with rare reports of negative consequences.

Note: Psychedelic and transcendental experiences differ in all elements: content of experience, blood flow and EEG patterns, and mechanism of effects. They are not the same.

Since brain patterns and details of inner experiences differ, it is not valid or useful to equate psychedelic and transcendental experiences or to use effects or mechanism of meditation practice to justify use or application of psychedelics. Yes, carefully designed research into both psychedelic and transcendental experiences should continue. But the results of these studies should not be superficially combined.

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