

Psychedelic Experience and Metaphysical Belief Change: Preliminary Findings from Ayahuasca Ceremonies in Peru

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Abstract: *Empirical and philosophical interest in psychedelic substances has expanded substantially in recent years, extending beyond clinical applications to questions concerning altered states of consciousness and their possible effects on beliefs about reality. This paper reviews recent empirical research on psychedelic-associated changes in metaphysical belief, focusing on the prospective survey study of Timmermann et al. and the Core Metaphysical Beliefs (CMB) research of Jylkkä, Krabbe, and Jern. It then reports preliminary findings from an ongoing doctoral study conducted in Peru, in which the Core Metaphysical Beliefs Questionnaire (CMBQ) and the Mystical Experience Questionnaire (MEQ30) were administered before and immediately after Ayahuasca ceremonies. Twenty-eight participants took part across two cohorts, and 26 provided matched pre- and post-ceremony CMBQ data. Descriptively, materialism and scientism scores declined for most participants, whereas idealism, panpsychism, and monism scores increased; dualism showed a more heterogeneous pattern. Mean MEQ30 scores were high across the sample, particularly on the Positive Mood dimension. These findings are consistent with previous research associating psychedelic experience with changes in metaphysical beliefs, but the present small, descriptive dataset does not establish causality, durability, or a relationship between belief change and psychological well-being. The study therefore provides preliminary evidence that merits further longitudinal and methodologically controlled investigation.*

Keywords: Psychedelics; Metaphysical beliefs; Ayahuasca; Idealism; Panpsychism; Mystical experience

1. Introduction

Interest in psychedelic substances has undergone a marked resurgence over the past two decades, both within scientific research and in public discourse. Contemporary clinical research has investigated compounds such as psilocybin, LSD, and DMT in relation to depression, anxiety, substance-use disorders, and other conditions, although the evidentiary basis and clinical status vary across substances and indications [6,7].

Beyond clinical applications, psychedelics provide a distinctive empirical route into the study of altered states of consciousness and, through them, into longstanding philosophical questions concerning the nature of reality, the self, and the limits of ordinary experience. Such questions are relevant not only to metaphysics but also to the study of how people interpret experiences that they regard as unusually significant. Research has repeatedly documented mystical-type, spiritual, existential, transformative, and other personally meaningful experiences following psychedelic use [3–10].

Stanislav Grof famously compared psychedelics to instruments for studying the mind, likening their potential to that of the microscope in biology and the telescope in astronomy [1]. The present paper considers that broader methodological intuition in relation to metaphysical belief. It asks whether psychedelic experiences are accompanied by changes in individuals' explicit commitments concerning the fundamental nature of reality and, if so, what patterns those changes may exhibit. Previous research suggests that psychedelic experiences can be followed by changes in beliefs about materialism, consciousness, transcendence, panpsychism, dualism, and related questions [12,13].

The paper combines a focused review of this literature with preliminary data from the author's doctoral research. The empirical component examines pre- and post-ceremony responses to the Core Metaphysical Beliefs Questionnaire among participants in Ayahuasca ceremonies conducted in Peru. The purpose is not to adjudicate the truth of any metaphysical position, but to examine whether participation in the ceremonial experience is accompanied by measurable changes in reported metaphysical commitments.

The significance of this question lies in the possibility of bringing empirical data into conversation with philosophical analysis of consciousness, epistemic transformation, and worldview revision. At the same time, the observational design requires a clear distinction between documented changes in reported belief and stronger claims concerning psychological benefit or the epistemic status of psychedelic experiences.

2. Literature Survey

Metaphysics concerns questions about the fundamental nature of reality, including questions about what exists and how such entities or properties are related [2]. In everyday life, people may endorse metaphysical assumptions without explicitly identifying them as philosophical positions. The CMB framework used in the present study includes several such positions and related themes: materialism, dualism, idealism, panpsychism, monism, process or relational ontology, scientism, teleology, simulationism, free will, moral realism, ultimate nature, positive ultimate nature, and multiperspectivism [13]. These categories should not be treated as mutually exclusive philosophical systems; indeed, the developers of the CMB explicitly note that lay respondents may conflate philosophically distinct positions such as idealism and panpsychism [13].

A substantial body of research indicates that psychedelic experiences can be intense, profound, and personally meaningful, and has described them using terms such as 'mystical-type' [3], 'spiritual' [4], 'religious' [5], 'existential' [6], 'transformative' [7], 'pivotal' [8], and 'peak' [9] experiences. These labels capture partially overlapping aspects of psychedelic phenomenology rather than a single, interchangeable construct.

Griffiths and colleagues reported that psilocybin-occasioned mystical-type experiences could acquire substantial and sustained personal meaning and spiritual significance [10]. Letheby and Gerrans, from a philosophical perspective, examined the relationship between psychedelic ego dissolution and changes in self-related and metaphysical interpretation [11]. Until relatively recently, however, systematic investigation of changes in metaphysical belief using dedicated measures remained limited.

Timmermann and colleagues addressed this gap in a large prospective online study examining changes in beliefs concerning the nature of reality, consciousness, and free will following psychedelic use [12]. The study used a self-constructed Metaphysical Beliefs Questionnaire together with items from the Free Will and Fatalistic Determinism subscales of the FAD-Plus. Participants were assessed approximately one week before a planned psychedelic ceremony and again at four weeks and six months. The prospective sample included 866 respondents at baseline, with attrition across follow-up assessments [12].

Timmermann et al. reported shifts away from materialist or physicalist beliefs and toward several non-physicalist positions, including panpsychist, dualist, and related beliefs, with some changes persisting at six months [12]. The study also reported associations between belief changes and indicators of mental well-being in observational data, while its controlled clinical component examined changes in depression-related outcomes [12]. These findings support an association between psychedelic experience and changes in metaphysical belief, but they do not by themselves establish that a change in metaphysical belief causes improved well-being.

A related line of research by Jylkkä, Krabbe, and Jern [13] examined metaphysical beliefs and psychological well-being in an online sample of people with prior experience of classical psychedelics. The study initially included 701 respondents; after prespecified exclusions, the final analytic sample was 629. The authors introduced the 42-item Core Metaphysical Beliefs (CMB) questionnaire, designed to assess a broad range of metaphysical ideas, and examined its factor structure and associations with prior psychedelic use and psychological well-being [13].

Exploratory factor analysis of the CMB yielded two principal factors used in the subsequent analyses: Idealism and Materialism. The Idealism factor included items concerning idealism, panpsychism, and a positively valenced conception of ultimate reality; the Materialism factor included ontological physicalist claims and scientific claims. Idealism was associated with psychological insight attributed to a past

psychedelic experience and with measures of well-being, and mediation analyses indicated an indirect association between past psychedelic use and well-being through Idealism [13]. Importantly, the authors explicitly characterised the CMB as a novel questionnaire and noted that the causal interpretation of these associations requires further research [13].

3. Problem Definition

The studies reviewed above provide evidence that psychedelic use can be associated with changes in metaphysical beliefs and, in some samples, with indicators of psychological well-being [12,13]. They do not, however, directly address the immediate pre- and post-experience change in metaphysical beliefs within a single ceremonial setting. In particular, the CMB study was cross-sectional, whereas the Timmermann study used prospective follow-up but assessed participants outside the immediate ceremonial interval [12,13].

The present study therefore reports preliminary, prospective, within-subject data collected in the context of Ayahuasca ceremonies in Peru. It asks whether the broad pattern described in previous research- reduced endorsement of materialist or scientific positions and increased endorsement of selected non-materialist positions- is observable immediately after the ceremonial experience. It also examines the intensity and qualitative profile of the experience using the MEQ30. The study is exploratory and descriptive; it does not test causality, durability, or mediation.

4. Methodology / Approach

The present study forms part of the author's ongoing doctoral research, entitled "Philosophical Aspects of Mental States Induced by Psychedelic Substances: New Emerging Themes in Philosophy of Mind." Data collection took place in Peru in two cohorts of fourteen participants each, in October 2024 and April–May 2025. Participants took part in Ayahuasca ceremonies in a setting described by the researcher as culturally and ceremonially oriented. The Ayahuasca brew contains DMT, and the ceremonies were guided by shamans and included icaros (ceremonial chants). The present manuscript retains these contextual details as reported by the researcher; it does not attempt to make broader claims about the representativeness of the ceremonial practices.

Two questionnaires were administered: the Core Metaphysical Beliefs Questionnaire (CMBQ), based on the CMB instrument introduced by Jylkkä and colleagues [13], and the Mystical Experience Questionnaire. The present paper reports descriptive results from the CMBQ and the overall and dimensional MEQ30 scores; a comprehensive analysis of the MEQ30 data falls outside the scope of this manuscript. The MEQ30 is a validated 30-item measure with four dimensions: Mystical, Positive Mood, Transcendence of Time and Space, and Ineffability [14].

The CMBQ comprises 42 statements rated on a 1–7 Likert scale, from strongly disagree to strongly agree, and organised into fourteen intended metaphysical dimensions of three items each, as reproduced in Table 1 [13]. For the analyses reported here, participants completed the CMBQ at two timepoints: immediately before and immediately after the ceremony. A third administration at six months is planned but had not been

completed at the time of writing. Of the 28 participants across both cohorts, 26 completed matched pre- and post-ceremony CMBQ measures and were included in the present analysis. Because the original CMB was developed as a broad exploratory measure and its 14 intended constructs were not

all retained as psychometrically distinct factors in Jylkkä et al. [13], the present study treats the individual dimensions as descriptive item clusters rather than as independently validated scales.

Table 1: Core Metaphysical Beliefs Questionnaire (CMBQ): dimensions and items (adapted from Jylkkä, Krabbe & Jern [13]). Items marked * are reverse-scored.

Dimension / Item	Statement
1. Ultimate Nature	
Ultimate1	There is a fundamental nature of reality beyond what can be perceived
Ultimate2	The perceivable world is merely a reflection of a deeper reality
Ultimate3	There is nothing besides what can be observed*
2. Positive Ultimate Nature	
Pos Ultimate1	The fundamental nature of reality is something sacred
Pos Ultimate2	Ultimately, everything is some kind of energy or light
Pos Ultimate3	Love is the fundamental nature of reality
3. Materialism	
Materialism1	There is nothing but the physical
Materialism2	Consciousness is just neurons firing
Materialism3	Ultimately, everything consists of the entities or processes that physics describes
4. Dualism	
Dualism1	Mental phenomena are not physical
Dualism2	The mind can exist independently of the physical
Dualism3	Mind and matter are distinct aspects of reality
5. Scientism	
Scientism1	Science is the only way to know reality
Scientism2	Nothing exists unless it can be scientifically proven
Scientism3	Science can reveal all there is to know about reality
6. Moral Realism	
Moral realism1	Nothing is absolutely good or bad*
Moral realism2	Some things are valuable independently of people's conceptions
Moral realism3	Some actions are objectively good or bad
7. Monism	
Monism1	All is One
Monism2	Everything is interconnected
Monism3	All that exists are forms of one single kind of stuff
8. Idealism	
Idealism1	The mental is more fundamental than the physical
Idealism2	Nothing exists outside mind
Idealism3	All there exists is forms of consciousness
9. Panpsychism	
Panpsychism1	All entities are to some extent sentient or conscious
Panpsychism2	Consciousness is a fundamental aspect of the universe
Panpsychism3	All matter also has a mental aspect
10. Process / Relational Ontology	
Process1	Relationships are more fundamental than things
Process2	Reality is fundamentally a constant flux
Process3	Ultimately there are no things, only processes
11. Simulationism	
Simulationism1	The world we perceive with the senses is illusory
Simulationism2	The observable reality is like a hallucination
Simulationism3	We create reality in our minds
12. Free Will vs Determinism	
Free will1	We can freely decide how to act
Free will2	All our actions are completely determined by physical causes*
Free will3	We can actively choose how to act in a given situation
13. Teleology	
Teleology1	Everything happens for a purpose
Teleology2	Life has an ultimate meaning
Teleology3	The Universe unfolds towards a goal
14. Multi / Single Perspectivism	
Multi persp1	There is a single true worldview and others are false*
Multi persp2	There are many valid views of the same world
Multi persp3	Multiple conflicting worldviews can be true at the same time

5. Results & Discussion

Consistent with the general direction reported in previous research [12,13], the preliminary results show changes in several reported metaphysical beliefs following the Ayahuasca ceremony. The analysis is descriptive and focuses on six of the fourteen CMBQ dimensions- Materialism, Dualism, Scientism, Monism, Idealism, and Panpsychism (Figures 1–6)- among the 26 participants with matched pre- and post-ceremony measures. No inferential statistical testing is reported here, and the results should therefore be interpreted as preliminary rather than confirmatory.

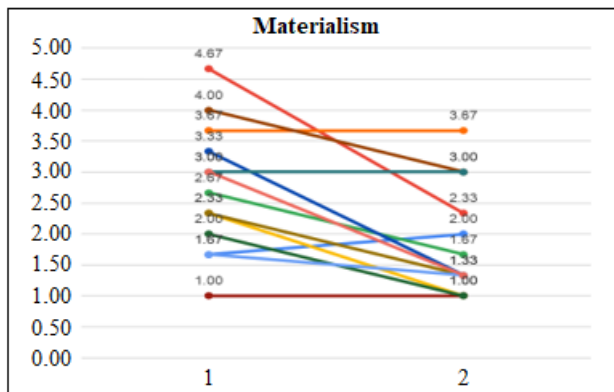


Figure 1: Materialism scores before (1) and after (2) the Ayahuasca ceremony, by participant.

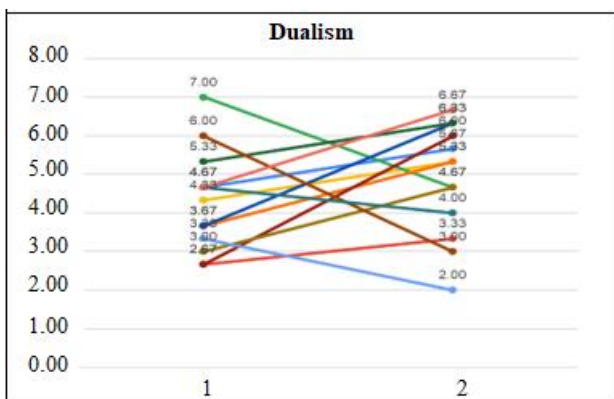


Figure 2: Dualism scores before (1) and after (2) the Ayahuasca ceremony, by participant.

Materialism scores (Figure 1) ranged from 1.00 to 4.67 before the ceremony. Following the ceremony, most participants showed a decline in materialism scores, with many post-ceremony scores clustering between 1.00 and 2.00. This descriptive pattern is consistent with the direction of change reported in prior prospective research, although the present sample is too small to establish whether the observed pattern generalises beyond these participants.

Dualism scores (Figure 2) showed a more heterogeneous pattern than materialism, with pre-ceremony scores ranging from 2.67 to 7.00 and post-ceremony scores ranging from 2.00 to 6.67. Some participants' scores increased whereas others decreased, with no single dominant direction of change. This heterogeneity is compatible with the more differentiated pattern of non-materialist belief change reported in the broader literature [12,13].

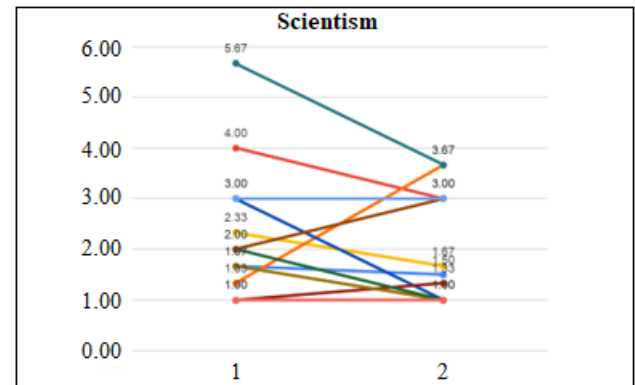


Figure 3: Scientism scores before (1) and after (2) the Ayahuasca ceremony, by participant

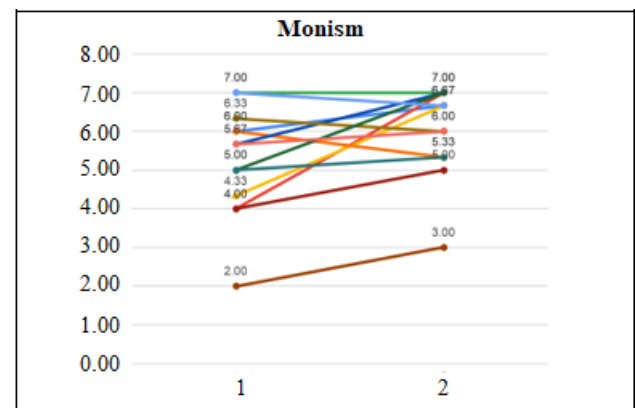


Figure 4: Monism scores before (1) and after (2) the Ayahuasca ceremony, by participant

Scientism scores (Figure 3) declined for most participants, from a pre-ceremony range of 1.00–5.67 to a post-ceremony range of 1.00–3.67. This pattern is descriptively consistent with the association between scientific and materialist items identified in the CMB factor structure reported by Jylkkä et al. [13], although the present data do not permit a factor-level replication.

Monism scores (Figure 4) increased for most participants, from a pre-ceremony range of 2.00–7.00 to a post-ceremony range of 3.00–7.00. Several participants reached or remained at the upper limit of the scale (7.00; “All is One”). Because monism was not retained as one of the two principal factors in Jylkkä et al. [13], this result should be regarded as a descriptive observation rather than evidence for a validated monism scale.

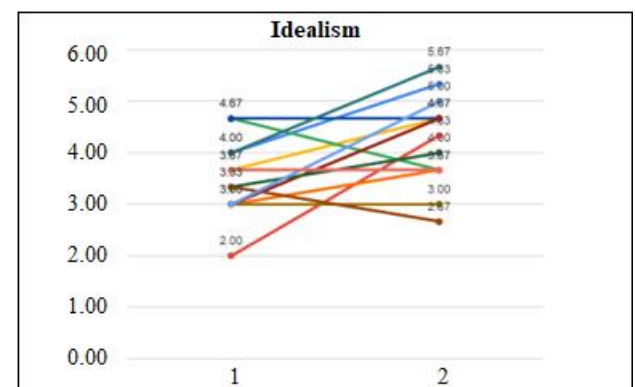


Figure 5: Idealism scores before (1) and after (2) the Ayahuasca ceremony, by participant

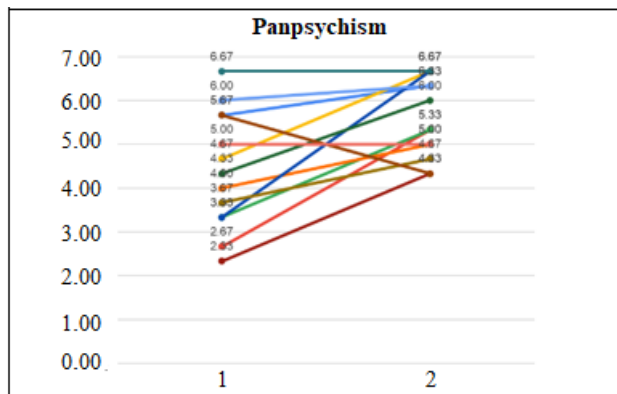


Figure 6: Panpsychism scores before (1) and after (2) the Ayahuasca ceremony, by participant.

Idealism scores (Figure 5) increased for the majority of participants, from a pre-ceremony range of 2.00–4.67 to a post-ceremony range of 2.67–5.67. This direction is compatible with the emphasis placed on idealism in the 2024 CMB study, where Idealism was associated with psychological insight and well-being [13]. The present study, however, does not include an independent measure of well-being and therefore cannot test the relationship reported by Jylkkä et al.

Panpsychism scores (Figure 6) were comparatively high before the ceremony, ranging from 2.33 to 6.67, and increased further for most participants. Post-ceremony scores ranged from 4.33 to 6.67. The descriptive direction is consistent with previous prospective research reporting increased endorsement of panpsychist beliefs following psychedelic experience [12].

MEQ30 scores were high across the sample (Table 2). The highest mean score was observed on the Positive Mood dimension (84.2%), followed by Ineffability (81.0%), Mystical Qualities (80.6%), and Transcendence of Time and Space (75.8%); the overall MEQ30 score was 80.4%. Participant 7 recorded the highest total MEQ30 score (95%), whereas Participant 4 recorded the lowest (62%), with comparatively lower ratings on Transcendence of Time and Space. These scores indicate a high degree of self-reported mystical-type phenomenology in the sample; they should not be interpreted as direct measures of general psychological well-being.

Table 2: Mean Mystical Experience Questionnaire (MEQ) scores by dimension

Dimension	Mean Score (%)
Mystical Qualities	80.6
Positive Mood	84.2
Transcendence of Time and Space	75.8
Ineffability	81
Overall MEQ Score	80.4

In semi-structured interviews conducted after the ceremonies, several participants described their experiences as profoundly ineffable, using phrases such as “an overwhelming connection to the universe” and “a sense of infinite love and understanding.” A number of participants attributed particular significance to the icaros; one participant stated that “the chants seemed to guide my journey and unlock hidden emotions.” These qualitative observations are included as

contextual material and are not presented here as a systematic qualitative analysis.

Taken together, these preliminary findings are consistent with a broader literature in which psychedelic experience has been associated with changes in metaphysical belief, including reduced endorsement of materialist positions and increased endorsement of some non-materialist positions [12,13]. In the present sample, these changes were observed alongside high MEQ30 scores, particularly on Positive Mood. The co-occurrence is noteworthy but does not establish a relationship between belief change and well-being, because the present study did not administer an independent measure of well-being and did not perform mediation or correlational analyses.

The findings also bear on a central philosophical question: whether altered states of consciousness can have epistemic significance or should be interpreted solely as unusual forms of perception and cognition. The present study cannot adjudicate that question. It does show that participants' reported metaphysical judgements, elicited through the same questionnaire before and immediately after the ceremony, changed in identifiable ways. Whether such changes reflect improved epistemic access to reality, psychological updating, contextual influence, expectancy, or some combination of these factors remains an open question requiring designs capable of distinguishing among competing explanations.

6. Conclusion

The literature reviewed here and the preliminary data from the ongoing doctoral study converge on the observation that psychedelic experiences can be accompanied by changes in reported metaphysical belief. In the present Ayahuasca sample, materialism and scientism generally declined, while idealism, panpsychism, and monism generally increased; dualism showed a heterogeneous pattern. These observations are broadly compatible with prior research [12,13], but the present study is small, descriptive, and limited to immediate pre/post measurement. It therefore does not establish causality, persistence, or psychological benefit. Its principal contribution is more modest: it provides prospective, within-subject observations from a ceremonial Ayahuasca context that can inform subsequent longitudinal and comparative work. More broadly, the findings illustrate the potential value of bringing empirical research on altered states into sustained dialogue with philosophy of mind and metaphysics, while maintaining a clear distinction between phenomenological report, psychological change, and claims about the nature of reality.

7. Future Scope

Several extensions of this work are planned or warranted. First, the six-month follow-up administration of the CMBQ will permit assessment of the durability of the observed belief changes and will allow more direct comparison with the longitudinal findings of Timmermann et al. [12]. Second, the present sample ($n = 26$, drawn from two cohorts) is small relative to the samples in the relevant survey literature (866 baseline respondents in Timmermann et al. [12] and 629 in the final analytic sample of Jylkkä et al. [13]); replication with larger and more diverse samples and formal inferential

statistics is therefore required. Third, future analyses should examine whether changes in specific CMBQ dimensions are associated with MEQ30 scores, while recognising that such analyses would remain exploratory unless supported by an adequately powered design. Fourth, the study should explicitly document the ethical review, informed-consent procedures, participant-safety procedures, and legal/regulatory framework under which the data were collected. These details are not supplied in the present draft and therefore cannot be inferred here. Finally, cross-cultural replication in other ceremonial and non-ceremonial psychedelic contexts would help determine whether the observed pattern reflects a broader feature of psychedelic experience or is contingent on the particular ceremonial setting examined.

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