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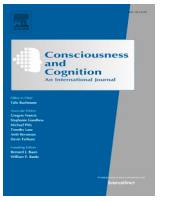

Registered Report Stage II

Meditation and psychedelics facilitate similar types of mystical, psychological, and philosophical-existential insights predictive of wellbeing: a qualitative-quantitative approach

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ABSTRACT

Both psychedelic substances and meditation have been proposed to facilitate personally meaningful and transformative experiences, with insights playing a central role. However, previous research has mainly relied on questionnaires, limiting the range of insights that can be identified. In this study, we recruited participants who provided narrative reports of insights in personally meaningful psychedelic (n = 147) or meditation (n = 66) experiences. Psychedelic experiences were facilitated both by classic (e.g., LSD, psilocybin, DMT) as well as non-classic (e.g., MDMA, ketamine, cannabis) psychedelics. Qualitative analysis revealed three main insight themes: Mystical-type (subclasses Unity, Metaphysical, and Other), Psychological (subclasses Metacognitive, Value, and Compassion), and Philosophical-existential (subclasses Purpose, Value, and Other). Mystical-type insights were more frequent in reports of meditation experiences, while value insights were more common in psychedelic reports. Otherwise, the reported insights were highly similar across the two types of reports, and only minor differences were observed between classic and non-classic psychedelics. Regression analyses indicated that metacognitive and value insights were positively associated with perceived improvements in positive affect, while mystical-type insights predicted increased meaning in life. These findings suggest that both psychedelic substances and meditation can facilitate a broad range of insights that are not fully captured by existing questionnaires. The results highlight similarities between psychedelic and meditation experiences supporting the notion that transformative experiences are not exclusive to classic psychedelics but can be facilitated through various means.

1. Introduction

Psychedelic drugs (e.g., psilocybin and LSD) and meditation can facilitate personally highly meaningful experiences, including

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peak, self-transcendent, or transformative experiences, which could underlie their positive effects on wellbeing (Chirico et al., 2022; Maslow, 1970; Yaden et al., 2017). Insights are a central component of both psychedelic and meditation experiences (Tulver et al., 2023). Insight can be defined as an experience where "a new understanding of a situation or the solution to a problem suddenly springs into consciousness, seems correct, and is accompanied by a phenomenological component of surprise and pleasantness, frequently referred to as the 'aha' experience" (Tulver et al., 2023, p. 1). Insight has been extensively studied in the context of problem-solving, where it is mainly intellectual. However, in the context of transformative experiences, insight goes deeper: it involves subjective feelings of profound understanding, accompanied by a radical change in perception and worldview, or a "shift in consciousness", and it is often imbued with emotional significance (Albahari, 2014; Yates et al., 2017). As such, insights arising from psychedelic or meditation experiences can produce sustained belief changes, such as shifts in worldview (Jylkkä et al., 2024; Timmermann et al., 2021).

Previous research indicates that insight is a central mechanism through which psychedelics and meditation may increase wellbeing (Tulver et al., 2023). In the context of psychedelics, the major focus has been on mystical-type experiences, assessed with questionnaires such as the Mystical Experience Questionnaire (MEQ; Barrett et al., 2015). Although not directly focused on insights, the MEQ includes items such as "Experience of the insight that 'all is One'", "Gain of insightful knowledge experienced at an intuitive level", and "Certainty of encounter with ultimate reality (in the sense of being able to 'know' and 'see' what is really real at some point during your experience)". The depth of mystical-type experiences, as indicated by higher MEQ scores, is a key predictor of treatment outcomes in psychedelic-assisted therapy (Kangaslampi, 2023; Ko et al., 2022). Mystical-type experiences have also been associated with improved wellbeing in non-clinical psychedelic use (Nayak et al., 2023). Mystical-type insights prominently involve "noetic quality" and are perceived as veridical: they are felt to impart knowledge in a direct fashion that is often deeply authoritative, intuitive, and ineffable (Barrett et al., 2015; Stace, 1961).

Psychological insight is another category of insight studied in the context of psychedelics, which can be measured with scales such as the Psychological Insight Questionnaire (PIQ; Davis et al., 2021). Psychological insight can be defined as novel awareness of one's own psychological processes, such as adaptive or maladaptive behaviors or emotions. Other features considered insightful in psychedelic experiences include a sense of connectedness (i.e., insight of the connectedness between the self and the world; Watts et al., 2022), emotional breakthrough (e.g., confronting difficult feelings that are typically ignored; Roseman et al., 2019), or autobiographical insight (Healy, 2021; Kangaslampi & Lietz, 2025). Psychological insight during psychedelic experiences has been associated with decreased addictive behaviors (Garcia-Romeu et al., 2019, 2020; Noorani et al., 2018) and increased wellbeing (Davis et al., 2020; Jylkkä et al., 2024; Krabbe et al., 2024). A systematic review of qualitative studies on patient-reported experiences in clinical trials of psychedelic-assisted therapy found that insights related to the self and the problem being treated were prominent (Breeksema et al., 2020). Additionally, the review highlighted other themes that could be considered insightful, such as altered self-perception, increased connectedness, transcendental or mystical-type experiences, and an expanded emotional spectrum (Breeksema et al., 2020).

It has been proposed that, like psychedelics, meditation can also facilitate a wide range of insights, including psychological insights (Brown et al., 2007). Theoretically, this could be due to increased metacognitive awareness of one's internal processes, such as thoughts, behaviors, and emotions (Dahl et al., 2015), facilitated by increased present-moment awareness and reduced top-down control of bottom-up stimuli (Laukkonen & Slagter, 2021). There are neurophysiological and phenomenological similarities between meditation and psychedelic experiences (Holas & Kamińska, 2023; Millière et al., 2018), especially in self-related processing. Moreover, it has been proposed that meditation, like psychedelics, can reduce anticipatory processing and diminish the weight of high-level priors in cognitive processing (Laukkonen & Slagter, 2021), which could lead to insight experiences. However, empirical research on meditative insight is scarce and often focuses on insights specifically pertaining to the Buddhist doctrine, such as illusoriness and impermanence of the self, or attachment (i.e., grasping or clinging to views or ideas which, according to Buddhism, are false; Ireland, 2013). Moreover, while there is evidence that meditation can also facilitate mystical-type experiences and insights (Van Gordon et al., 2019; Zanesco et al., 2023), their role in wellbeing outcomes has, to our knowledge, not been previously investigated. Thus, more research is needed to explore the broader range of insights facilitated by meditation and their role in wellbeing.

Most previous research on insights has relied on psychometric instruments, limiting researchers to the questionnaire's scope. Research on psychedelics has largely focused on mystical-type and psychological insights, leaving the prevalence of other types of insights unknown. Moreover, questionnaires may introduce biases by framing experiences within a specific conceptual framework. For example, the MEQ is based on Stace's (1961) highly specific and essentialist conceptualization of mystical experience, which posits that all mystical-type experiences share a common core (Jones & Gellman, 2022; Mosurinjohn et al., 2023).

Regarding psychedelics, the so-called classic psychedelics (i.e., substances that act as agonists on the serotonin 5HT2A receptor, such as psilocybin and LSD) are most robustly associated with transformative experiences (Chirico et al., 2022). However, non-serotonergic or non-classic psychedelic substances, such as ketamine, MDMA, and cannabis, may also facilitate such experiences (Earleywine et al., 2021; Holze et al., 2020; Rothberg et al., 2021). Notably, two prominent authors on mystical experience, James and Stace, both argued that mystical aspects do not depend on how the experience was facilitated; Stace labeled this the *principle of causal indifference* (James, 1902; Stace, 1961). More recently, philosopher Aidan Lyon has argued that almost any substance can have psychedelic properties (Lyon, 2024), and neuroscientific evidence points to similarities between different types of psychedelic substances (Nardou et al., 2023; Vollenweider & Kometer, 2010). In their review of qualitative research, Breeksema et al. (2020) noted phenomenological similarities between experiences across different substances (classic psychedelics, ibogaine, ketamine, and MDMA), including the facilitation of insights. However, knowledge of the content of these insights and possible similarities and differences between drugs remains limited.

In sum, both psychedelic and meditation experiences have been considered potentially transformative (Chirico et al., 2022), and they share phenomenological and neural characteristics (Holas & Kamińska, 2023; Millière et al., 2018). However, it is not known how

similar these two types of experiences are in terms of insights, which have been proposed as central elements in both. Moreover, little is known about how insights differ across various psychedelic substances and how different types of insight are linked to psychological wellbeing.

In this study, we asked people with prior psychedelic or meditation experiences, irrespective of the drugs or meditation techniques involved, to complete a survey in which they provided a narrative report detailing their most meaningful psychedelic or meditation experience and the insights they had during these experiences. Narrative reports were utilized to allow participants to freely describe insights of any type and in their own words, without being confined to predefined questionnaires. We recruited participants with a broad range of previous psychedelic experiences to explore similarities and differences across various psychedelics. Then, we analyzed insights described in these reports. The preregistered (https://osf.io/5pa8f) research questions of the study were: 1) What are the key types of insights in psychedelic and meditation experiences that can be identified from the narrative reports? 2) Do the insights, as reflected in the reports, differ when the experience has been facilitated by psychoactive substances versus meditation? 3) Do the insights differ depending on which psychoactive substance they have been facilitated by? and 4) How are the occurrences of insights in the reports associated with current psychological wellbeing and perceived changes in wellbeing?

2. Method

2.1. Procedure and participants

An online, anonymous survey was used to collect data. Two versions of the survey were created: one for participants reporting a psychedelic experience and another for participants reporting a meditation experience. The two versions were identical except for the study description and sections referring specifically to psychedelics or meditation (e.g., questions about the type of drug or meditation technique used to facilitate their experiences).

The survey on psychedelic experiences was titled "Study about psychedelic experiences" and asked the participants to report one single psychedelic experience that they considered their most personally meaningful or important, referred to as "the Experience" (capitalized). The survey specified that the Experience must have been facilitated by "psychoactive drugs (i.e., substances that can

Table 1
Demographic information across those reporting a psychedelic vs. meditation experience.

	Psychedelics		Meditation	
Age ($W = 5331$, $p < 0.001$)	*M*	*SD*	*M*	*SD*
	39.57	12.95	51.63	14.11
Gender ($\chi^2 = 2.99$, $p = 0.22$)	*n*	*%*	*n*	*%*
Female	44	36.1	26	44.1
Male	77	63.1	31	52.5
Other	1	0.8	2	3.4
Education ($W = 3509$, $p = 0.27$)	*n*	*%*	*n*	*%*
Primary education	1	0.8	0	0.0
Lower Secondary education	5	4.1	1	1.7
Higher Secondary education	14	11.5	2	3.4
Vocational education	3	2.5	4	6.8
University: Bachelor's degree	38	31.1	18	30.5
University: Master's degree	41	33.6	23	39.0
University: Doctoral degree	14	11.5	7	11.9
Income[a] ($W = 3011$, $p = 0.063$)	*M*	*SD*	*M*	*SD*
Income compared to average (=3)	3.27	1.09	2.90	1.23
Religion ($\chi^2 = 48.93$, $p < 0.001$)	*n*	*%*	*n*	*%*
Agnostic	22	18.0	3	5.1
Atheist	22	18.0	1	1.7
Buddhist	2	1.6	19	32.2
Christian	6	4.9	5	8.5
Hindu	0	0.0	1	1.7
Jewish	1	0.8	0	0.0
Muslim	0	0.0	0	0.0
Non-denominational	7	5.7	3	5.1
Spiritual but not religious	48	39.3	20	33.9
Other	14	11.5	7	11.9
Diagnosed psychiatric problems	*n*	*%*	*n*	*%*
Not disclosed ($\chi^2 = 0.37$, $p = 0.54$)	4	3.3	1	1.7
Severe depression ($\chi^2 = 2.10$, $p = 0.15$)	20	16.4	5	8.5
Bipolar disorder ($\chi^2 = 0.002$, $p = 0.96$)	6	4.9	3	5.1
Psychosis or schizophrenia ($\chi^2 < 0.001$, $p = 0.98$)	2	1.6	1	1.7
Anxiety disorder ($\chi^2 = 2.23$, $p = 0.14$)	23	18.9	6	10.2

Notes: a = Income was assessed with the question "Please estimate your personal income compared to the average income in your current country of residence", answered on an ordinal scale from 1 (*much below average*) to 5 (*much above average*); *t* = Student *t*-test value; $\chi 2$ = chi square test value; *W* = Mann-Whitney test value.

produce an altered state of consciousness, such as LSD, psilocybin, cannabis, MDMA, ketamine, ibogaine, etc.)". Meditation experiences were collected similarly, using the title "Study about meditation experiences" and requiring that the Experience be facilitated by "meditation (e.g. silent meditation, chanting, Holotropic breathing, yoga, etc.)". Full surveys are available at the Open Science Framework (https://osf.io/v4p2a/files/osfstorage).

The surveys were distributed by contacting 180 psychedelic and 110 meditation societies, as well as through snowball sampling on social media. The data was collected during autumn 2022 and spring 2023. Participants were required to be at least 18 years old. Each participant received and completed only one survey (either the meditation or the psychedelic version).

2.2. Measures

The survey consisted of the following sections, presented in this order: 1) demographic and other background information; 2) background details of the Experience (e.g., type of drugs or meditation techniques used to facilitate the Experience, the set and setting, and the elapsed since time since the Experience); 3) an open-ended question asking participants to describe all aspects of the Experience; 4) a question about insights, which is the focus of the present study. Next, the wellbeing questions were administered, including 5) perceived changes in wellbeing resulting from the Experience (counterbalanced); and 6) standardized questionnaires assessing current wellbeing and psychological flexibility (counterbalanced). The open-ended questions were always presented before the standardized questionnaires to minimize possible biases or priming effects that could arise from exposure to the questionnaires before completing the open reports.

Demographic data. The first part of the survey collected demographic information, including age (continuous), gender (male, female, and other), and other background details (see Table 1). We also asked about previously diagnosed psychiatric conditions with the question "Have you ever been diagnosed *by a medical professional* with any of the following conditions" (emphasis original), followed by the following response options: *I don't wish to give this information*; *Severe depression*; *Bipolar disorder*; *Psychosis or schizophrenia*; *Anxiety disorder*; *Autism spectrum disorder / Asperger*; *Obsessive-compulsive disorder*; *Attention deficit hyperactivity disorder (ADHD or ADD)*; and *Other diagnosed psychiatric or neurological condition, please specify*. For analyses where psychiatric diagnoses were used as covariates, all the conditions except for the neurological ones (i.e., autism and ADHD) were aggregated into a single dummy-coded variable (0 = no diagnosis, 1 = diagnosis of psychiatric condition).

Open-ended questions. After providing background information, participants were asked to describe the Experience (i.e., the single psychedelic or meditation experience they regarded as their most meaningful) using the following fully open-ended question: "Please write down everything you experienced during the Experience (what happened, where, who was present, thoughts, feelings, images, scenarios) as accurately and in as much detail as possible. Remember that every detail is important". After this, the question about insights was presented: "Did the Experience involve insights (i.e., feeling that one has accurately and deeply understood something)?", followed by the response alternatives *yes*, *no*, and *don't know*, and an open field to describe these aspects ("If yes, please describe these aspects in English below"). Answers to the fully open-ended question are mainly analyzed and reported in another study, but they were also utilized in the present study to identify insights when they were not explicitly mentioned in the insight-specific question.

Perceived changes in wellbeing. To assess perceived changes in wellbeing, participants were asked to rate different aspects of wellbeing in response to the following question: "As a result of the Experience, have you noticed any persisting increases or decreases in the following? 1) How satisfied you are with your life as a whole; 2) How positive you feel in your daily life; 3) How negative you feel in your daily life; 4) The extent to which you feel that your life has meaning and purpose; and 5) The extent to which you feel you have peace and harmony in your mind". Each statement was rated on a five-point scale, ranging from *Decreased a lot* (1) through *Not changed (stayed the same)* (3) to *Increased a lot* (5).

Current wellbeing. Current psychological wellbeing was assessed using the Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS; Ng Fat et al., 2017), which consists of seven items. The scale measures hedonic and eudaimonic wellbeing, functionality, and interpersonal relationships. The average score of all items was used in the present study, and the reliability of the scale was good (Cronbach's alpha = 0.81). As an additional measure of psychological wellbeing, we used the seven-item Peace of Mind Scale (PoMS; Lee et al., 2013) to measure a sense of inner peace and harmony in one's life. The scale showed excellent reliability (Cronbach's alpha = 0.90).

Psychological flexibility. The PsyFlex scale (Gloster et al., 2021) was used to assess the six core processes of psychological flexibility: Present moment awareness, Acceptance, Defusion (not identifying with one's thoughts and emotions), Self-as-context (seeing the self as a stable observer of thoughts and emotions), Values (awareness of one's values), and Commitment (acting according to one's values). The PsyFlex contains six items. In the analyses, we used both the average of all items, which had acceptable reliability (Cronbach's alpha = 0.78), and the individual items that tap on the components of psychological flexibility. The focus on the individual components is motivated by the multidimensional nature of psychological flexibility (Krabbe et al., 2024).

The Mystical Experience Questionnaire. The MEQ30 (Barrett et al., 2015) was used as a quantitative measure of mystical-type features during the Experience. The scale includes 30 items across four factors: Mystical, Positive Mood, Transcendence of time and space, and Ineffability. The MEQ-analyses were not preregistered; they were conducted post hoc to complement the qualitative analyses (this method is known as triangulation). The scale demonstrated excellent reliability (Cronbach's alpha = 0.95).

2.3. Analyses

Qualitative analysis. A thematic analysis with a codebook approach was performed (Boyatzis, 1998; Braun & Clarke, 2022). As

outlined in the preregistration, we aimed to identify themes in the insight reports related to metaphysical and psychological insights, as well as emergent themes arising from the data. In practice, the approach was mainly inductive or bottom-up, allowing themes to be derived directly from the data.

The analysis proceeded in two stages: 1) development of a codebook (i.e., an instruction manual on how to identify specific themes in the reports; (see Appendix A, https://osf.io/v4p2a/files/osfstorage), and 2) application of the codebook by two independent raters who evaluated the reports. To minimize bias, the order of reports was randomized, and the identity of whether the reports described psychedelic or meditation experiences was concealed from the codebook developer and raters. The codebook was developed iteratively by the first author (J.J.) through repeated readings of the insight reports. Preliminary thematic categories were created during an initial review and refined through subsequent readings. The method was based on reflexive thematic analysis (RTA; Braun & Clarke, 2021), with the aim of categorizing the insights into a parsimonious yet comprehensive set of categories.

Using the codebook, two independent raters (E.L. and C.W.) performed dichotomous ratings to determine the presence or absence of each theme in the reports (0 = did not occur, 1 = occurred in the report). While the primary focus was on the thematic insight reports, the completely open-ended reports were also read when participants referred to them (e.g., "see previous response"), or when themes could not be identified from the insight reports alone.

Statistical analyses. All the analyses were based on the preregistration (https://osf.io/5pa8f), unless stated otherwise. Differences in the occurrence of insights in psychedelic vs meditation reports, as well as between psychoactive drug types used to induce psychedelic experiences, were examined using chi square tests. Multiple regression analyses were conducted to examine whether the occurrence of insight themes predicted perceived changes in different aspects of wellbeing, as well as current wellbeing (SWEMWBS), peace of mind (PoM), and psychological flexibility (PsyFlex). Predictors included the occurrences of the themes (each theme entered as a separate predictor, dummy coded: 0 = theme absent, 1 = theme present). The themes were those listed in Table 6, except for the pooled categories and the theme Psychological: Other, which had unacceptable reliability. In addition to the themes, all models included type of report (psychedelics vs meditation) as a fixed factor and controlled for age (continuous), dichotomized gender (male = 0; female = 1), and lifetime occurrence of any psychiatric diagnosis (0 = no diagnosis, 1 = diagnosis of psychiatric condition). Age and gender were added as covariates because they were preregistered and were assumed to potentially affect the results. Additionally, psychiatric disorders were included due to their potential influence on wellbeing measures, and they were pooled and dichotomized to preserve statistical power.

For the perceived changes in well-being and individual components of psychological flexibility, which were measured with Likert-type scales with discrete values on an ordinal scale, we used ordinal logistic regression. For the scales with average values, linear regression models were used, as the data was continuous. Separate models were used for each dependent variable (i.e., five perceived changes in well-being variables, two variables regarding current wellbeing, one variable for the aggregated score of psychological flexibility, and six variables for the individual components of psychological flexibility). Predictor estimates were disregarded if the model was not significant.

As post hoc analyses, we examined differences in mystical-type features (MEQ30) between psychedelic and meditation reports, as well as between psychoactive drug types used to induce psychedelic experiences. This was done to examine the extent to which the analyses using the qualitatively coded themes corresponded to those based on the MEQ30. Differences in MEQ30 scores between psychedelic and meditation reports and between classic and non-classic psychedelics were analyzed using the Mann-Whitney *U* test (non-parametric tests were used given the non-normality of the data and small sample sizes).

Because all the main analyses were preregistered, we did not apply formal corrections for multiple comparisons. Rather than mechanically adjusting *p*-values, we interpret the findings in the context of prior evidence and theoretical coherence, consistent with guidelines emphasizing prespecification and transparency over rigid error control procedures (Hooper, 2025).

Preregistration, open data, and ethical approval. The aims, measures, and analyses of this study were preregistered on the Open Science Framework (OSF) (https://osf.io/5pa8f). The data is openly available at OSF (https://osf.io/v4p2a/files/osfstorage), except for the open reports which are not shared to protect participant anonymity. Regarding the research questions outlined in the preregistration, the question of whether the completely open-ended reports correspond to the MEQ30 factor scores was not analyzed here, as the focus was on the insight reports. The analytical approach in this study extended beyond the preregistered plan by examining differences between the psychedelic and meditation reports in the MEQ30 scores. This was done to triangulate the qualitative results. The study was approved by the Research Ethics Committee at Åbo Akademi University, Finland (#15092022), and the research followed the declaration of Helsinki ethical principles of research, and the GDPR regulations regarding privacy and data management.

3. Results

3.1. Demographic data

Altogether, 213 participants (age: $M = 43.50$, $SD = 14.46$, range = 18—80; gender: 70 females, 108 males, 3 "other") completed the surveys (psychedelic experiences: $n = 147$, meditation experiences: $n = 66$). In the thematic question about insight experiences, 18

Table 2
Background information of past and current psychedelics use and meditation experiences.

	Psychedelics		Meditation	
Meditation frequency ($W = 6292$, $p < 0.001$)	*n*	%	*n*	%
Never	20	16.4	0	0.0
I have tried once or twice but do not practice regularly	23	18.9	0	0.0
Few times per year	13	10.7	2	3.4
Few times per month	22	18.0	0	0.0
Every week	25	20.5	11	18.6
Daily	15	12.3	34	57.6
Several times a day	4	3.3	12	20.3
Meditation experience ($W = 5541$, $p < 0.001$)	*n*	%	*n*	%
No meditation experience	32	26.2	0	0.0
Less than a month	4	3.3	0	0.0
1–6 months	3	2.5	2	3.4
7–12 months	2	1.6	0	0.0
Between 1 and 2 years	17	13.9	1	1.7
Between 2 and 5 years	18	14.8	4	6.8
Over 5 years	46	37.7	52	88.1
Frequency of psychedelics use ($W = 1268$, $p < 0.001$)	*n*	%	*n*	%
Never	0	0.0	28	47.5
Once	7	5.7	4	6.8
Twice	6	4.9	3	5.1
3–5 times	15	12.3	9	15.3
6–10 times	26	21.3	4	6.8
10–50 times	45	36.9	10	16.9
Over 50 times	23	18.9	1	1.7
Time since last psychedelics use ($W = 1124$, $p < 0.001$)	*n*	%	*n*	%
Over a year ago	24	19.7	51	86.4
9–12 months ago	8	6.6	2	3.4
6–9 months ago	7	5.7	1	1.7
3–6 months ago	15	12.3	1	1.7
1–3 months ago	23	18.9	0	0.0
2–4 weeks ago	19	15.6	3	5.1
One week ago	11	9.0	0	0.0
Less than one week ago	15	12.3	1	1.7

Note: W = Mann-Whitney test value .

(8 %) indicated in their categorical response (see Materials) that they did not experience any insights, and these were excluded from further analysis. In other words, 92 % of the participants reported experiencing an insight and described it in the open-ended report (however, in some cases, no insight could be identified in the qualitative coding, hence the "No insight" category in the qualitative themes). Additionally, 8 participants who did not write narrative reports were excluded. The remaining 187 reports were analyzed by two independent raters to determine whether multiple experiences, rather than a single most meaningful experience, were reported (kappa = 0.61, $p < 0.001$). Based on this analysis, 6 responses were excluded for describing multiple experiences. This resulted in a final dataset of $n = 181$ participants (psychedelic reports: $n = 122$; meditation reports: $n = 59$).

All demographic information is presented in Table 1, and past and current experiences of psychedelics and meditation is presented in Table 2. The participants differed with respect to age (meditators were, on average, older than those reporting a psychedelic experience), religion (psychedelic users were more likely to identify as atheist or agnostic, whereas meditators were more often Buddhist; Table 1). Moreover, as expected, participants reporting a psychedelic experience had more experience with psychedelics, while those reporting a meditation experience had more experience of meditation (Table 2).

3.2. Descriptive data of the psychedelic and meditation experiences

On average, the time since the Experience was slightly longer for those who reported a meditation experience ($M = 6.32$, $SD = 2.15$) as compared to those who reported a psychedelic experience ($M = 5.68$, $SD = 2.15$, where value 5 represents "6–12 months ago" and 6 represents "1–2 years ago"; see Table 3). The meditation experience mainly took place in a ceremonial space or retreat (54 %) or at home (31 %), whereas settings for the psychedelic experience were more varied. There were also differences in who was present during the Experience. Meditation experiences mainly occurred alone (44 %) or with several other people (42 %), some of whom were

Table 3
Time since the Experience and the setting of the Experience.

	Psychedelics		Meditation	
Time since the Experience ($W = 4368$, $p = 0.017$)	*n*	%	*n*	%
Less than one week ago	3	2.5	1	1.7
One week ago	2	1.6	1	1.7
2–4 weeks ago	5	4.1	4	6.8
1–3 months ago	16	13.1	2	3.4
3–6 months ago	9	7.4	4	6.8
6–12 months ago	13	10.7	2	3.4
1–2 years ago	13	10.7	9	15.3
2–5 years ago	34	27.9	10	16.9
Over 5 years ago	27	22.1	26	44.1
Setting ($\chi^2 = 33.77$, $p < 0.001$)	*n*	%	*n*	%
Home or home-like environment	51	41.8	18	30.5
Friend's home or home-like environment	18	14.8	0	0.0
Unknown person's home or home-like environment	2	1.6	0	0.0
Other private space	4	3.3	2	3.4
Nature	14	11.5	3	5.1
Ceremonial space or retreat	20	16.4	32	54.2
Space designed for therapeutic purpose	3	2.5	1	1.7
Public gathering (e.g., festival)	2	1.6	0	0.0
Other public space	8	6.6	3	5.1
Who was present ($\chi^2 = 40.03$, $p < 0.001$)	*n*	%	*n*	%
Alone	27	22.1	26	44.1
One other person	46	37.7	1	1.7
Several people, all familiar	29	23.8	7	11.9
Several people, some unfamiliar	20	16.4	25	42.4
Was there a guide, facilitator or therapist present ($\chi^2 = 29.19$, $p < 0.001$)	*n*	%	*n*	%
No	92	75.4	25	42.4
Yes, one	14	11.5	28	47.5
Yes, several	16	13.1	6	10.2
Main purpose of the Experience (multiselect) (χ^2, p)	*n*	%	*n*	%
No specific purpose / Cannot say (5.34, 0.021)	5	4.1	8	13.6
To relax and enjoy (8.27, 0.004)	33	27.0	5	8.5
Spiritual practice (14.12, < 0.001)	35	28.7	34	57.6
Therapeutic work (18.26, < 0.001)	45	36.9	4	6.8
Curiosity (21.5, < 0.001)	52	42.6	5	8.5
Social reasons (4.05, 0.044)	8	6.6	0	0.0
Self-improvement (9.84, 0.002)	44	36.1	8	13.6
Distraction from problems or boredom (0.002, 0.97)	4	3.3	2	3.4
Other specific purpose (0.33, 0.57)	13	10.7	8	13.6

Note: For the Main purpose of the Experience, the participant could select several options .

unfamiliar individuals (presumably in a retreat setting). In contrast, psychedelic experiences took place in more varied settings, although mainly with one other person present (presumably a sitter; 38 %). During psychedelic experiences, there were typically no guides, facilitators, or therapists present (75 %), whereas meditation experiences showed more variation (47 % with a guide, 42 % alone). Regarding the main purpose of the Experience (the participant could select several answer options), there was variation: the main purpose of psychedelic experiences was curiosity (43 %), therapeutic work (37 %), or self-improvement (36 %), whereas the meditation experience was aimed at spiritual practice (58 %), no specific purpose (14 %), self-improvement (14 %), or other specific purpose (14 %).

Drugs and meditation techniques used to facilitate the Experience are summarized in Table 4. To ease interpretation and analysis, the drugs were recoded into two groups: classical serotonergic psychedelics only ($n = 82$) vs. non-classic ($n = 40$), including both non-classic psychedelics only and a combination of classic and non-classic psychedelics.[1] The most used drugs were psilocybin (45 %) and LSD (34 %), as well as cannabis (20 %), which was mostly used in combination with other drugs. Most common meditation techniques were silent sitting or lying down (51 %), mindfulness (25 %), and "other" type of meditation (31 %), which included, for example, Zen, mantra, Metta, Vipassana, and walking meditation.

3.3. Codebook themes and coding reliability

Based on reading and rereading the reports, J.J. ended up with the following themes in the Codebook (see Appendix A): 1) Mystical-type, consisting of the subcategories *Unity*, *Metaphysical insight* (i.e., insight into the fundamental nature of reality), and *Other*; 2)

[1] In a preliminary analysis, we initially classified participants into separate groups for "Non-classic psychedelics only" ($n = 13$) and "Classic and non-classic psychedelics combined" ($n = 27$). However, these groups were aggregated to yield sufficient statistical power for the analyses.

Table 4
Drugs and meditation techniques used to facilitate the Experience in the psychedelics and meditation groups, respectively.

Psychedelics		
Individual drugs used	*n*	%
LSD or analogues	42	34.4
Psilocybin or 'magic mushrooms'	55	45.1
Ayahuasca	11	9.0
N,N-DMT	7	5.7
5-MeO-DMT or Bufo Alvarius	8	6.6
Mescaline or psychoactive cacti	3	2.5
Ibogaine	0	0.0
Salvia divinorum	1	0.8
MDMA, 'ecstasy' or 'molly'	21	17.2
Ketamine	4	3.3
Cannabis	24	19.7
Aggregated drug groups	*n*	%
Classic psychedelics only	82	67.2
Non-classic psychedelics and combined	40	32.8
Meditation		
Silent sitting or lying down	30	50.8
Voicework (e.g. chanting)	3	5.1
Breathwork (intentional manipulation of breath)	5	8.5
Bodywork (e.g. yoga)	3	5.1
Mindfulness	15	25.4
Other type of meditation	18	30.5

Note: The participant was able to select several drugs or techniques.

Table 5
Interrater agreement in the qualitative analysis.

Theme	Kappa	*p*
Mystical-type		
Unity	0.62	0<.001
Metaphysical	0.36	0<.001
Other	0.39	0<.001
Pooled Mystical[a]	0.63	0<.001
Psychological		
Metacognitive	0.49	0<.001
Values	0.40	0<.001
Compassion	0.49	0<.001
Other	0.08	0.30
Pooled Psychological[b]	0.53	0<.001
Philosophical-existential		
Purpose	0.61	0<.001
Values	0.42	0<.001
Other	0.41	0<.001
Pooled Philosophical-Existential[a]	0.50	0<.001
Other	0.38	0<.001
No insight	0.29	0<.001

a: The pooled rating indicates if any of the themes in the category was rated as occurring. For example, in the case of the category Mystical, if Unity, Metaphysical, or Other were rated as occurring, the pooled rating was one; if none of the themes occurred, the pooled rating was zero).
b: In the case of Psychological insight, the pooled rating did not include PS:O, since it was not reliable.

Psychological, with the subcategories *Metacognitive awareness*, *Values* (i.e., personal priorities or values), *Compassion* (i.e., compassion, love, acceptance, forgiveness), and *Other*; 3) Philosophical-existential, with the subcategories *Purpose* (i.e., insight about the purpose or meaning of life), *Value* (insight of what is objectively valuable, in contrast to psychological or personal value insight), and *Other*. Moreover, a separate category (*Other*) was created for insights that did not fit into the other categories, and for cases where no insight

could be identified (*No insight*). The main categories were not analyzed separately (only the themes under each category were analyzed), but we created a pooled rating for each category, such that the pooled rating was positive if any of the themes in that category occurred. The themes are illustrated in more detail in the next section.

All the 181 reports were analyzed for themes using the codebook. The interrater agreement statistics are summarized in Table 5. In general, there was statistically significant agreement, ranging from fair (0.21–0.40) to moderate (0.41–0.60) except for Psychological: Other. However, the pooled ratings showed substantial agreement for Mystical (0.63) and moderate agreement for Psychological (0.53) and Philosophical-existential (0.50) categories (Cohen, 1960).

The category Psychological: Other was omitted from further analysis due to non-significant reliability. The coding of cases with discrepant ratings were resolved through a consensus meeting involving the coders (E.L. & C.W.) and the codebook developer / supervisor (J.J.).

3.4. Illustration of insight themes

Here we provide a heuristic description of the themes, illustrating how participants themselves formulated their insights. A more comprehensive list of examples can be found in Appendix B (https://osf.io/v4p2a/files/osfstorage).

Mystical-type insight. The mystical-type category *Unity* was defined in the Codebook as insight into the unity or connectedness of everything as well as self-transcendence. This included experiencing ego dissolution or seeing the illusoriness of the self/other-distinction (e.g., “I am not just me, but on some level, I am part of the whole universe, and everything is one”, female, 43 years, meditation). In some reports, the insight of unity was related to a specific object (e.g., “We are all the same. We are all one… ‘I’ am the same as that cat”, male, 42 years, psychedelics). Some reports of unity were less clearly mystical in the traditional sense of involving a connection with something sacred or supernatural (e.g., “We all belonged, and we were all the same meaningless piles of electrons that just had happened to organize in a certain way”, male, 34 years, psychedelics). By contrast, some reports explicitly referred to unity with or connection to God (e.g., “It showed me that we are all emanations of God”, male, 47 years, psychedelics).

Metaphysical insight was defined as an insight into the fundamental nature of reality. This type of insight sometimes co-occurred with the Unity insight (e.g., “I’m not separate … I’m in an energy soup”, female, 54 years, meditation; “We are all beings made of love and light … we are all fragments of god”, male, 35 years, psychedelics). There were also metaphysical insights without explicit mentions of unity (e.g., “Ultimate reality is just a pure present moment of consciousness”, male, 33 years, psychedelics; “There is no time. Everything flows”, male, 43 years, psychedelics).

The Mystical-type insight category *Other* was defined as insight that involved transcending the limits of ordinary perception and thought but did not fit into the other two mystical-type categories (e.g., “I could see through myself to how, where, and when my perception of the universe began and ended”, male, 67 years, psychedelics; “We are always surrounded by divine presence and guidance especially if we’re open to it”, female, 57 years, psychedelics; “I understand that there are multiple, vast, complex dimensions of consciousness or reality or the universe than we understand as humans”, female, 64 years, meditation).

Psychological insight. Psychological *Metacognitive insight* was defined as awareness of the processes of one’s own mind, such as deeper awareness of one’s own psychological processes, emotions, or behaviors. Examples in this category included awareness of maladaptive behaviors or thoughts, or what needs to be changed (e.g., “Understood reasons for my alcohol abuse and changed those patterns”, female, 35 years, psychedelics). Especially in the meditation reports, there were also insights related to mindfulness, such as non-identification with thoughts (e.g., “Sharper observation of thought created in my mind… depersonalization from them”, male, 47 years, meditation). Additionally, there were more general metacognitive insights, with large variance between participants (e.g., “I finally accepted and understood my past”, male, 30 years, psychedelics; “I’m not a victim”, male, 41 years, meditation).

A psychological *Value insight* was taken to concern with what is subjectively meaningful to a person, or what they prioritize in life (e.g., “I had to admit I’m in a wrong professional role… my relationship to materialism became to the surface as well”, female, 58 years, psychedelics; “I realized I love my family”, male, 31 years, meditation). This type of insight was considered different from philosophical-existential value insight, which pertained to what was perceived as objectively important, in contrast to personal priority.

Several reports involved aspects of compassion, acceptance, forgiveness, love, gratitude, and trust. These were categorized under the broad category *Compassion* (e.g., “I can love myself and ease the pain, and be available to share love and compassion with others”, other gender, 33 years, psychedelics; “I accepted my death more than twice”, male, 25 years, psychedelics; “I am on the right path, and things will go all right and that I am finding my dharma, my path and task on earth”, female, 54 years, meditation).

Philosophical-existential insight. This class of insights captured philosophical-existential themes besides the mystical ones. The category *Purpose* was created for insights related to the perceived purpose and meaning of life (e.g., “We are here on Earth to

Table 6
Frequencies of insight themes in psychedelic and meditation reports.

	Psychedelics		Meditation			
Mystical-type	*n*	%	*n*	%	χ^2	*p*
Unity	22	18.0	16	27.1	1.98	0.160
Metaphysical	15	12.3	9	15.3	0.30	0.580
Other	17	13.9	14	23.7	2.69	0.101
Pooled Mystical	39	32.0	30	50.8	6.01	0.014*
Psychological						
Metacognitive	28	23.0	13	22.0	0.02	0.890
Value	11	9.0	1	1.7	3.44	0.063
Compassion	23	18.9	9	15.3	0.35	0.552
Pooled Psychological	54	44.3	21	35.6	1.23	0.267
Philosophical-existential						
Purpose	7	5.7	2	3.4	0.46	0.496
Value	16	13.1	4	6.8	1.62	0.203
Other	17	13.9	9	15.3	0.06	0.812
Pooled Philosophical-existential	32	26.2	12	20.3	0.75	0.386
Other	20	16.4	12	20.3	0.43	0.514
No insight	6	4.9	1	1.7	1.11	0.292

experience life", other gender, 33 years, psychedelics; "The last, maybe most obvious, insight was the purpose of my life", female, 43 years, meditation).

Philosophical-existential *Value* insight pertained to what the person perceived as objectively valuable, including the inherent value of existence itself (e.g., "The world is beautiful and valuable", male, 47 years, psychedelics; "Life is so much more beautiful, meaningful and mysterious than we realize!", male, 42 years, meditation). In some reports it was difficult to discern whether the insight pertained to one's personal priorities or objective values. In the case of a general value statement (i.e., not explicitly personal), we considered it to reflect an objective value insight (e.g., "Love is the most important thing in life", female, 32 years, psychedelics).

The category *Other* under Philosophical-existential insight included a broad range of philosophical-existential insights about, for example, death, limits of human understanding, or the human condition (e.g., "We are all going to die", male, 31 years, psychedelics; "I understand that we are so much more than we ever believed", female, 72 years, meditation; "I understood how little I know about everything", female, 42 years, psychedelics; "To understand the nature and cause of suffering… the internal bondages we create", female, 45 years, meditation).

Other types of insight. Finally, the category *Other* was created for insights that did not fit into any of the categories described above, including a wide variety of insights (e.g., "All the humans around you are like you", male, 31 years, psychedelics; "I had… a revelation about the importance of genetic-lineage", male, 58 years, psychedelics; "Insight into possibilities of my body", male, 41 years, meditation; "The materialistic paradigm is flawed with unfortunate consequences on mental health and on society values", female, 45 years, psychedelics; "I understood that all illegal drugs are in fact *not* bad, and in some cases actually good for you", female, 33 years, psychedelics).

3.5. Occurrences of insight themes in psychedelic and meditation reports

The frequencies of the insight themes in the psychedelic and meditation reports are presented in Table 6. In the psychedelic reports, the most common theme was Psychological insight (44 % of the reports), followed by Mystical-type (32 %) and Philosophical-existential (26 %) insights. In contrast, in the meditation reports, the most common theme was Mystical-type insight (51 %), followed by Psychological (36 %), and Philosophical-existential (20 %) insights. Mystical-type insights were significantly more common in reports of meditation experiences compared to psychedelic experiences; however, no other differences between the different types of reports were observed.[2]

Value insights were categorized into two different types: Psychological insight and Philosophical-existential insight. This distinction was based on the former being more subjective (personal priorities) and the latter being more objective (what is objectively valuable). However, these two categories were sometimes difficult to distinguish and conceptually overlapped. Thus, we pooled the Psychological and Philosophical-existential value insights post hoc, so that the pooled value insight was positive if either type of value insight was present. The pooled value insight was present in 25 (20.5 %) reports describing psychedelics experience and in 5 (8.5 %)

[2] Given that the psychedelic reports consisted of both classic and non-classic psychedelics, we conducted a post hoc analysis restricting the sample to only classic psychedelics ($n = 82$), compared with the meditation reports ($n = 59$). In these analyses, no significant group differences were found (all $ps > 0.07$), including for pooled mystical-type insights ($p = 0.16$). All post hoc comparisons are reported in Appendix C at https://osf.io/v4p2a/files/osfstorage.

Table 7
Perceived changes in wellbeing, current wellbeing, and psychological flexibility in individuals reporting psychedelic and meditation experiences.

	Psychedelics		Meditation			
Perceived changes in wellbeing	*M*	*SD*	*M*	*SD*	*W*	*p*
Satisfaction with life	4.42	0.73	4.37	0.96	3243	0.659
Positive affect	4.07	0.78	4.34	0.10	3737	0.024*
Negative affect	2.09	0.93	1.95	0.92	2834	0.294
Meaning and purpose	4.14	0.90	4.17	1.07	3328	0.466
Peace and harmony	4.15	0.84	4.44	0.75	3751	0.021*
Current wellbeing and psychological flexibility	*M*	*SD*	*M*	*SD*	*W*	*p*
Wellbeing (SWEMWBS)	3.65	0.53	3.81	0.44	4315	0.029*
Peace of mind (PoMS)	3.31	0.75	3.69	0.55	4670	0.001**
Psychological flexibility (PsyFlex) average	3.31	0.59	4.42	0.45	4746	0<.001***
Present moment awareness	4.12	0.99	4.49	0.70	4342	0.015*
Acceptance	4.09	0.81	4.42	0.68	4401	0.009**
Defusion	3.84	0.84	4.19	0.82	4446	0.007**
Self-as-context	4.13	0.86	4.54	0.75	4626	0<.001***
Values	4.30	0.77	4.44	0.62	3870	0.367
Commitment	4.13	0.84	4.41	0.65	4197	0.051

Note: SWEMWBS = Short Warwick-Edinburgh Mental Wellbeing Scale; PoMS = Peace of Mind Scale.

reports describing meditation experiences, with a significant difference ($\chi^2 = 4.15$, $p = 0.042$).[3]

3.6. Differences in insight themes across psychoactive drugs

We examined differences in the frequencies of insight themes across reports of psychedelic experiences induced by different psychoactive drugs. Analyses were conducted using the aggregated drug classes (i.e., classic psychedelics only vs. non-classic psychedelics and a combination of classic and non-classic psychedelics; see Table 4). No significant differences in the occurrence of insights were found (all *ps* > 0.06), except for pooled mystical-type insights, which were more frequent in the classic psychedelics group (39 %) compared to the non-classic/combined group (18 %; $\chi^2 = 5.73$, $p = 0.017$).

3.7. Relationships between insight themes and wellbeing

Descriptive data on perceived changes of wellbeing, current wellbeing, and psychological flexibility among individuals reporting psychedelic and meditation experiences are summarized in Table 7. Participants reporting a meditation experience indicated slightly greater perceived changes in positive affect and peace and harmony. Moreover, meditators scored higher on all measures of current wellbeing and psychological flexibility, except for awareness of Values and Commitment.

Next, we examined whether the insight themes predicted these variables. In the regression analyses below, model predictor estimates are reported here only if the model fit was significant. All estimates and model fit indices are presented in Appendix D (https://osf.io/v4p2a/files/osfstorage).

Perceived changes in wellbeing. To examine associations between the occurrences of insights and perceived changes in wellbeing, we conducted five logistic regression analyses with insight themes, report type, and covariates (age, gender, psychiatric diagnosis) as predictors and well-being scores as outcome variables.

Models with perceived changes in life satisfaction, negative affect, and peace and harmony as outcome variables were not significant ($\chi^2 = 20.93$, $p = 0.14$; $\chi^2 = 20.71$, $p = 0.15$; $\chi^2 = 23.34$, $p = 0.077$, respectively). However, the model with perceived changes in positive affect as the outcome variable was significant ($\chi^2 = 40.33$, $p < 0.001$). Among the insight themes, Psychological *Metacognitive* insight ($E = 0.84$, $SE = 0.43$, $p = 0.048$) and Philosophical-existential *Value* insight ($E = 1.52$, $SE = 0.62$, $p = 0.014$) predicted perceived improvements in positive affect. In contrast, the absence of insights (*No insight*) predicted a decrease in positive affect ($E = -1.92$, $SE = 0.91$, $p = 0.034$). Additionally, participants reporting meditation experiences showed greater improvements in positive affect ($E = 0.76$, $SE = 0.38$, $p = 0.044$), as did those with psychiatric diagnoses ($E = 1.30$, $SE = 0.42$, $p = 0.0022$).

A model with perceived improvements in the sense of meaning and purpose in life as the outcome variable was also significant ($\chi^2 = 37.56$, $p = 0.001$). Mystical-type insight *Other* predicted perceived improvements in the sense of meaning and purpose in life ($E = 2.14$, $SE = 0.61$, $p < 0.001$), while *No insight* was a negative predictor ($E = -1.84$, $SE = 0.83$, $p = 0.028$).

Current wellbeing. To examine relationships between the occurrences of insights and current well-being, we performed two linear regression analyses with insight themes, report type, and covariates (age, gender, psychiatric diagnosis) as predictors and well-being scores as outcome variables. The model with current wellbeing as the outcome variable was significant ($F = 2.05$, $p = 0.015$). Among the insight themes, only *No insight* was significant, negatively predicting current wellbeing ($B = -0.52$, $SE = 0.20$, $p = 0.010$).

[3] This difference remained significant when comparing meditation reports to classic psychedelics only reports: pooled value insights were more frequent in the classic psychedelic reports (23 %) compared with the meditation reports (8 %; $\chi^2 = 5.25$, $p = 0.022$). All post hoc comparisons are reported in Appendix C at https://osf.io/v4p2a/files/osfstorage.

Additionally, age was a significant positive predictor of current wellbeing ($B = 0.010$, $SE = 0.003$, $\beta = 0.29$, $p < 0.001$).

The model with peace of mind as the outcome variable was likewise significant ($F = 2.55$, $p = 0.002$). Surprisingly, among the themes, Psychological *Compassion* insight predicted lower current peace of mind ($B = -0.32$, $SE = 0.14$, $p = 0.024$). Age was also positively associated with peace of mind ($B = 0.013$, $SE = 0.004$, $\beta = 0.31$, $p = 0.001$).

Psychological flexibility. To test the relationship between the occurrences of insights and psychological flexibility, we performed a linear regression analysis with insight themes, report type, and covariates (age, gender, psychiatric diagnosis) as predictors and psychological flexibility score as the outcome variable. The model was significant ($F = 2.79$, $p < 0.001$). Surprisingly, Psychological insight *Compassion* was a negative predictor of psychological flexibility ($E = -0.32$, $SE = 0.14$, $p = 0.024$), while other predictors were non-significant ($ps > 0.060$). Among the covariates, age was a positive predictor of psychological flexibility ($B = 0.013$, $SE = 0.003$, $\beta = 0.33$, $p < 0.001$).,[45]

3.8. Post-Hoc analyses of the Mystical experience Questionnaire scores

As the analysis revealed only minimal differences in the insight themes between the psychedelic and meditation reports (see Table 7), we suspected that our approach, having relatively low reliability, might have not been sensitive enough to detect possible differences. Thus, as a post hoc test (not preregistered), we examined whether the meditation and psychedelic reports differed in the MEQ30 scores. No significant differences were found in the mean total scores of the MEQ30 (psychedelic reports: $M = 3.34$, $SD = 1.05$; meditation reports: $M = 3.30$, $SD = 1.17$; $U = 3155$, $p = 0.93$) or in any of the subscale scores ($ps > 0.19$), except for a near-significant difference in the *Ineffability* subscale (psychedelic reports: $M = 3.91$, $SD = 1.19$; meditation reports: $M = 3.38$, $SD = 1.53$; $U = 2574$, $p = 0.058$).[6]

As another post hoc test, we examined whether the average MEQ30 scores differed between the two aggregated drug groups: classic psychedelics vs non-classic/combined. No differences were observed in the average score ($U = 1302$, $p = 0.69$) or in any of the subscales (all $ps > 0.30$), except for a near-significant difference in Ineffability (classic psychedelics: $M = 4.04$, $SD = 1.15$; non-classic/combined: $M = 3.64$, $SD = 1.24$; $U = 1501$, $p = 0.079$).

4. Discussion

Insight is a key component of transformative experiences, which can be facilitated by both psychedelics and meditation. In this study, we aimed to identify and compare insights in reports of personally meaningful psychedelic and meditation experiences, to examine their associations with wellbeing, and explore differences across various psychoactive drugs used to induce psychedelic experiences.

Among all respondents, 92 % reported experiencing an insight, indicating that insights are highly prevalent in personally meaningful psychedelic and meditation experiences. In the thematic analysis, the reported insights were classified into three main types: Mystical-type (occurred on average in 32 % of the psychedelics reports and 51 % of the meditation reports), Psychological (44 % of the psychedelics reports, 36 % of the meditation reports), and Philosophical-existential (26 % the psychedelics reports, 20 % of the meditation reports). Surprisingly, no differences were observed in the occurrence of insights between psychedelic and meditation reports, except for Mystical-type insights, which were more prevalent in meditation reports.

A possible explanation for the higher occurrence of Mystical-type insights in meditation reports is that meditation practices are often conceptually framed in Buddhist metaphysical terms (Gethin, 1998; Struhl, 2022). This framing may influence the content of the

[4] Given the multifactorial nature of psychological flexibility, we also examined how insights were related to its different components, using a series of logistic regression analyses with the different components of psychological flexibility as outcome variables and insight themes, report type, as well as covariates (age, gender, psychiatric diagnosis) as predictors. The models with *Acceptance*, *Values*, and *Commitment* as outcome variables were not significant ($\chi^2 = 17.71$, $p = 0.28$; $\chi^2 = 18.93$, $p = 0.22$; and $\chi^2 = 24.04$, $p = 0.064$, respectively). However, the model with *Present moment awareness* as the outcome variable was significant ($\chi^2 = 34.83$, $p = 0.003$). Philosophical-existential insight *Other* predicted higher Present moment awareness ($E = 1.14$, $SE = 0.49$, $p = 0.019$), as did age ($E = 0.047$, $SE = 0.012$, $p < 0.001$). The model with *Defusion* as the outcome variable was likewise significant ($\chi^2 = 31.20$, $p = 0.008$). *No insight* negatively predicted *Defusion* ($E = -1.57$, $SE = 0.79$, $p = 0.047$), and, surprisingly, so did *Compassion* insight ($E = -1.16$, $SE = 0.40$, $p = 0.0036$). Among the covariates, age predicted higher *Defusion* ($E = 0.027$, $SE = 0.011$, $p = 0.015$). The model with *Self-as-context* as an outcome variable was also significant ($\chi^2 = 33.67$, $p = 0.004$), but among all the predictors, only age positively predicted *Self-as-context* ($E = 0.036$, $SE = 0.012$, $p = 0.0027$) (for all the estimates, please see Appendix D; https://osf.io/v4p2a/files/osfstorage).

[5] As a post hoc test, we reran all the regression analyses, restricting the psychedelic group to only classic psychedelics. Overall, the results for perceived changes in wellbeing and current wellbeing were largely consistent with the original analyses. However, there were differences for current peace of mind and psychological flexibility. Specifically, the model predicting current peace of mind was not significant, while the model predicting psychological flexibility was significant. Interestingly, *Psychological Value insight* was associated with lower psychological flexibility, and *Compassion* insight was no longer a significant predictor, contrary to the original analysis. All these post hoc analyses are reported in Appendix E (https://osf.io/v4p2a/files/osfstorage).

[6] Given that both classic and non-classic psychedelics were included in the psychedelic group, we conducted a follow-up analysis including only reports of classic psychedelics ($n = 82$), compared to meditation reports ($n = 59$). There were no significant differences in the mean total MEQ30 score ($U = 2157$, $p = 0.88$), or in the subscales Positive mood ($U = 2520$, $p = 0.68$), Transcendence ($U = 2501$, $p = 0.733$), or Ineffability ($U = 2202$, $p = 0.36$). However, meditation reports scored higher on the Mystical subfactor ($M = 3.46$, $SD = 1.26$) compared to classic psychedelic reports ($M = 2.77$, $SD = 1.67$) ($U = 2965$, $p = 0.023$).

experience, how it is reported, or both. In Buddhist meditation, the concept of the self is often emphasized, with practices directly aimed at revealing its interrelated and fluctuating nature (Albahari, 2014; Gethin, 1998). In our analysis, insights about the illusory nature of the self were classified under the Mystical-type category *Unity*. Another possible reason for the higher occurrence of Mystical-type insights in the meditation reports is that spiritual intention was more common among meditation participants (58 % vs. 29 % in psychedelics), which could increase mystical-type themes. Interestingly, despite this difference in the qualitative analysis, MEQ30 questionnaire scores did not differ between the reports of the two types of experiences. This could be due to MEQ30 measuring broader mystical-type phenomenology beyond the specific domain of insight, but it could also reflect a phenomenon observed in previous research that open reports and questionnaires tend to yield different results, even when they tap on the same construct (Sikka et al., 2017, Sikka et al., 2021).[7]

In the theoretical literature on meditation, it has been proposed that meditation facilitates a broad range of insight experiences (Brown et al., 2007), but previous empirical literature has mainly focused on Buddhist-type insights regarding impermanence, suffering, and illusoriness of the self (Ireland, 2013). The present results indicate that meditation can also facilitate Mystical-type insights, Psychological insights, and Philosophical-existential insights. This is in line with theorizing that meditation increases metacognitive awareness of one's thoughts, behaviors, and emotions, which, combined with increased present-moment awareness and enhanced flow of bottom-up stimuli, could facilitate a broad spectrum of insights (Brown et al., 2007; Dahl et al., 2015; Laukkonen & Slagter, 2021).

In reports of psychedelic insights, the most common type of insight was Psychological (44 %), followed by Mystical-type (32 %), and Philosophical-existential (16 %). This finding stands in contrast to previous literature, which has often emphasized the importance of mystical-type features and insights in psychedelic experiences (Kangaslampi, 2023; Ko et al., 2022; Richards, 2016; Smith, 2000). The present findings align with research suggesting that psychedelic experiences encompass a broad range of experiential features with therapeutic potential, including insights (Breeksema et al., 2020; Yaden et al., 2024).

Overall, besides the difference in Mystical-type insights, reports of psychedelic and meditation experiences were very similar. This similarity was corroborated by the lack of difference in the MEQ30 scores. This finding is somewhat surprising, given that the individuals who reported psychedelic experiences and meditation experiences differed not only in how their experience was facilitated but also in demographic factors and the set and setting of the experience, which are known to affect that content of at least psychedelic experiences (Carhart-Harris et al., 2018). The findings are in line with previous research highlighting the phenomenological and neurocognitive similarities between meditation and psychedelic experiences (Holas & Kamińska, 2023; Letheby, 2022; Millière et al., 2018), as well as Stace's hypothesis of causal indifference, entailing that mystical-type or transformative experiences do not depend on how they are facilitated. The findings are also in line with neuroscientific theories which hold that transformative or pivotal experiences can be facilitated in several ways (Brouwer & Carhart-Harris, 2021).

The hypothesis of causal indifference was to some degree supported also by the lack of differences in insights and mystical-type aspects (MEQ30 scores) between drug types, with the exception of pooled Mystical-type insights, which were more frequent in experiences facilitated by classic psychedelics (39 %) compared to non-classic psychedelics/combined (18 %). This difference is in line with a previous randomized double-blind trial observing higher MEQ30 scores with LSD compared to MDMA or D-amphetamine (Holze et al., 2020). Interestingly, in our sample this difference only emerged in the qualitative insight categories, not in the MEQ30 scores, indicating that these two methods probe slightly different constructs. However, this was the only significant difference among the 14 insight types, and overall, reports of the classic and non-classic psychedelic experiences were surprisingly similar. This is in line with previous neurocognitive research suggesting that various psychoactive substances may have psychedelic effects (Nardou et al., 2023; Vollenweider & Kometer, 2010) and supports the notion that various substances with different pharmacological mechanisms can be considered as psychedelic (Lyon, 2024).

4.1. Insight categories and their relationship to previous literature

The Mystical-type insight categories *Unity* and *Metaphysical* insight roughly correspond to Stace's (1961) classic notion of mysticism, at least when they co-occurred. According to Stace, unity is a necessary condition of the mystical, and the nature of reality is revealed through the unitary experience; thus, unity and metaphysical insight are intertwined. However, several insights were difficult to categorize, and the class *Mystical-type: Other* included insights (e.g., being surrounded by divine presence or insight into dimensions of reality beyond what can be perceived by humans) that were intuitively mystical-type but did not fit neatly within Stace's classic notion of mysticism, which emphasizes unity. This suggests that Stace's conception of mysticism may not fully correspond to the self-reported contents of mystical-type experiences (cf. Mosurinjohn et al., 2023). In future research the correspondence could be tested more directly by examining to what extent each of Stace's seven mystical-types features occur in the narrative reports.

Psychological insights included *Metacognitive* insight (23 % in psychedelic reports, 22 % in meditation reports) and *Value* insight (9 % in psychedelic reports, 1.7 % in meditation reports), which correspond to the operationalizations of psychological insight in previous literature (e.g., Davis et al., 2021; Wolff et al., 2024). A third category, encompassing compassion, acceptance, forgiveness, and

[7] Another possible reason why Mystical-type insights were less frequent in the psychedelic reports compared to meditation reports is the inclusion of a wide spectrum of substances in the psychedelic group. When the analyses were repeated using only classic psychedelics, the difference in Mystical-type insights vanished (see fn. 2) but a difference emerged for the MEQ30 subfactor Mystical, with meditators scoring slightly higher (see fn. 6). Overall, these findings suggest that the differences in insights between psychedelic and meditation reports in this sample were small or negligible.

love, was identified in 19 % and 15 % of psychedelic and meditation reports, respectively. The notion of acceptance corresponds to previous operationalizations, such as the Acceptance/Avoidance Promoting Experience Questionnaire (APEQ; Wolff et al., 2022), linked to psychological flexibility and psychological insight. Previous research has also highlighted the role of self-compassion (Agin-Liebes et al., 2024; Fauvel et al., 2021), empathy (Blatchford et al., 2020; Pokorny et al., 2017), positive and self-transcendent emotions (Goldy et al., 2024; Newton & Moreton, 2023), and love in psychedelic experiences (Watts et al., 2017). As to meditation, these phenomena have not been extensively studied empirically, but many meditation traditions emphasize the importance of compassion (Gethin, 1998).

Finally, the Philosophical-existential insight category included insights of the purpose or meaning of life, but these occurred in only 6 % and 3 % of the psychedelic and meditation reports, respectively (cf. Móró et al., 2011). The Philosophical-existential category also included *Value* insights, which occurred in 13 % and 7 % of the psychedelic and meditation reports, respectively. These value insights were primarily related to love and seeing the value of existence itself, in line with previous research highlighting the importance of self-transcendent value insights in psychedelic experiences (Kähönen, 2023, 2024).

Compared to meditation reports, psychedelic reports included higher frequencies of both Philosophical-existential *Value* insights and Psychological *Value* insights, though the differences were not statistically significant. "Objective" Philosophical-existential *Value* insights were distinguished from "subjective" psychological ones as they appeared to be different (e.g., realizing the importance of family or reevaluating career choices vs. the insight that everything is valuable or that love is most important). However, during the coding process, distinguishing between these two types of value insights was difficult. In a post hoc analysis, the two types of value insights were pooled, revealing that pooled *Value insights* occurred significantly more frequently in psychedelics reports (20 %) than in meditation reports (8.5 %). Given the connection between values and emotions (Deonna & Teroni, 2015; Kähönen, 2024; Kauppinen, 2024), this could be due to the broader spectrum of emotions in psychedelic compared to meditation experiences, and the importance of positive emotions in psychedelic experiences (Goldy et al., 2024). In line with this hypothesis, a computerized sentiment analysis (VADER) of the same reports analyzed in the present study revealed that reports of psychedelic experiences involved more positive and negative emotions compared to meditation reports (Kallio-Mannila et al., 2025).

4.2. Relationship between insights and wellbeing

Compared to those reporting psychedelic experiences, meditators reported greater improvements in positive affect as well as in peace and harmony and scored higher on most measures of current wellbeing and psychological flexibility. However, in regression models that accounted for covariates (age, gender, and psychiatric diagnoses) and insight themes, the type of report (psychedelic vs. meditation) was a significant predictor only for perceived changes in positive affect, with meditators reporting greater improvement. The lack of differences between individuals reporting psychedelic and meditation experiences indicates that covariates and insight themes were more important predictors than the method by which personally meaningful experiences were facilitated.

It has been suggested that insights underlie the effects of psychedelics and meditation on wellbeing (Holas & Kamińska, 2023). In our results, Psychological *Metacognitive* insight and Philosophical-existential *Value* insight predicted perceived improvements in positive affect, in line with previous quantitative research (Davis et al., 2020, 2021; Krabbe et al., 2024). Additionally, Mystical-type Insight: *Other* predicted improvements in the sense of meaning and purpose in life. Notably, these results remained consistent in a follow-up analysis that excluded non-classic psychedelics, suggesting that these findings are robust (see fn. 5). This aligns with existing research indicating that both psychedelics and meditation can enhance perceived meaning in life (Garland et al., 2015; Hartogsohn, 2018; Qiu & Minda, 2023) and foster positive affect and self-transcendence (Goldy et al., 2024; Newton & Moreton, 2023; Schutt et al., 2024). The results also align with theoretical literature in transpersonal, existential, humanistic, and positive psychology, where perceived meaning in life and spirituality are seen as important components of wellbeing (Rowan, 2006; Steger et al., 2013). Notably, the absence of any identifiable insight in a person's report correlated negatively with perceived changes in both positive affect and meaning in life, which further supports the importance of insight for wellbeing.

Regarding the associations between insights and current wellbeing, no consistent patterns emerged, and the results varied when non-classic psychedelics were excluded from the analyses (see fn. 5). For example, in the original analysis, *Compassion* insight was a negative predictor of peace of mind, but this effect disappeared when non-classic psychedelics were excluded, suggesting that this finding may not be robust.

Given the consistent positive associations between psychological and mystical-type insights and perceived changes in positive affect and meaning in life, alongside the lack of consistent positive associations with current wellbeing, it can be hypothesized that insights may lead to short-term increases in wellbeing, but these effects may not last long-term. This contrasts with the literature on transformative experiences, which suggests that such experiences produce sustained changes in wellbeing (Chirico et al., 2022). However, given the cross-sectional nature of the present study, these findings should be interpreted with caution.

4.3. Limitations

The findings of the study should be considered in light of several limitations. First, the retrospective design of the study and the relatively long interval between the experiences and reports (1–2 years on average) may introduce recall biases. Participants may conflate what occurred during the actual experience with how it was later recalled and reported. Moreover, the relatively long interval may weaken the observed associations between the Experience and current wellbeing or psychological flexibility, as the effects of such experience could diminish over time. Second, we did not incorporate attention checks or control for the possibility of bot responses, a known risk in online surveys (Peer et al., 2022). However, based on reading the narrative reports, it appears highly likely that the

participants followed the instructions and were attentive genuine respondents. Third, the use of retrospective perceived wellbeing change measures is susceptible to memory biases, which may lead to the overestimation of peak experiences (Alaybek et al., 2022). Fourth, and importantly, the coding of the narrative reports showed relatively low inter-rater agreement. While this can be considered as a limitation, it also indicates the inherent difficulty of categorizing insights. This is unsurprising given the wide variety of insights and deeply personal and often ineffable nature of transformative experiences. Finally, it is important to note that the study design may have encouraged participants to focus on more positive experiences, as the prompt emphasized "personally meaningful" events. Thus, the reported experiences may not fully capture the range of psychedelic and meditation experiences, which can also include challenging experiences associated with negative outcomes (Evans et al., 2023; Lindahl et al., 2017).

5. Conclusions

To our knowledge, no prior study has directly compared insights in reports of psychedelic and meditation experiences. Here, we investigated reports of insight experiences during personally meaningful psychedelic and meditation experiences, aiming to identify the types of insights that occurred. Reports of both types of experiences included mystical-type, psychological, and philosophical-existential insights, with only minor differences between psychedelic and meditation experiences. These results highlight the similarities between personally meaningful psychedelic and meditation experiences, as well as between experiences facilitated by different types of psychedelic substances. Furthermore, the results suggest that both psychedelics and meditation can facilitate a broad range of insights beyond mystical-type insights, and that these insights are associated with perceived changes in wellbeing. In conclusion, the findings support the hypothesis that transformative experiences are not exclusive to classic psychedelics and can be facilitated through various means.

Author contributions

The study was conceptualized and planned by JJ and PS together with HV. Data was gathered by JJ, HV, EL, and CW. The qualitative analyses were performed by JJ, EL, and CW, and supervised by PS. Quantitative analyses were conducted by JJ and AK. The first article draft was written by JJ, then revised by all the authors, including JK who contributed to sections regarding values.

Ethical approval

The study was approved by the Research Ethics Committee at Åbo Akademi University, Finland (#15092022).

Consent to participate

The participants gave informed consent in written form before starting the study.

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CRediT authorship contribution statement

Jussi Jylkkä: Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Hilla Väyrynen:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Enyu Lin:** Writing – review & editing, Investigation, Formal analysis. **Catharina Walldén:** Writing – review & editing, Investigation, Formal analysis. **Andreas Krabbe:** Writing – review & editing, Formal analysis. **Juuso Kähönen:** Writing – review & editing. **Pilleriin Sikka:** Writing – review & editing, Supervision, Project administration, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The anonymous quantitative data is available at the Open Science Framework (https://osf.io/v4p2a/files/osfstorage).

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