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Wood, Tim, Kock, Merle, Van Dam, Nicholas T, Galante, Julieta and Childs-Fegredo, Jasmine (2026) Intense Meditation-Related Experiences (IMREs) and Perceived Impacts on Self and Worldview: An Interpretative Phenomenological Analysis. Mindfulness.

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https://doi.org/10.1007/s12671-026-02871-1

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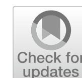

Intense Meditation-Related Experiences (IMREs) and Perceived Impacts on Self and Worldview: An Interpretative Phenomenological Analysis

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Received: 25 July 2025 / Accepted: 6 May 2026
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Abstract

Objectives Meditation can elicit intense experiences that change the sense of self, alter worldview, and evoke strong negative and positive emotions, impacting daily life. These intense meditation-related experiences (IMREs) often begin suddenly but their emotional impact and meaning can change significantly as meditators reflect on and interpret them over time, shaped by an interplay of embodied and conceptual experience in ecosocial context. Unanswered research questions revolve not just around the onset and trajectories of IMREs, but also their interpretations and potentially transformative impacts on life.
Method This study employed Interpretative Phenomenological Analysis (IPA), a methodology that allows for in-depth inductive analysis. Semi-structured interviews with 13 participants analyzed phenomenological lived experience, meaning-making, and perceived impacts of IMREs.
Results Four main themes describing meditators' experience and meaning-making process were developed through the analysis: (1) Watching the self and the world transform; (2) From exploding emotional experiences to receiving insight; (3) Weighing what to say: finding solace or falling silent; and (4) Towards new perspectives and agency. The themes illustrate how meditation sparked transformative experiences that changed how these meditators see themselves and exercise agency in the world.
Conclusions Discussion of findings explores how meditators were impacted by IMREs while exercising agency in how they chose to understand and respond to them. The meaning of experience for some was immediately clear while for most it clarified through conversation with others over time. Meditators used concepts from science and meditative practice traditions to make sense of their experiences. Participants' IMREs were transformative experiences that afforded new ways of perceiving and acting in the world.

Keywords Meditation · Self · Nonordinary experiences · Adverse effects · Meaning making · Qualitative research

While mindfulness and meditation practices offer potential health benefits (Galante et al., 2021), they can also present meditators with powerful and intense changes in the sense of self (Dambrun et al., 2019; Lindahl & Britton, 2019).

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Published online: 19 May 2026

Psychologists describe "the self" and "sense of self" in various ways, but many agree on a model of first-person experience composed of a sense of self with two interacting aspects: embodied and conceptual (Britton et al., 2021a, 2021b; Lindström et al., 2022). Disruption to the sense of self can be experienced as euphoric or dysphoric; while loss of the sense of self may signal pathology especially when associated with a pattern of impairment, meditators in some religious communities expect and appraise such experiences of self-loss as a sign of progress, potentially even the goal of meditative practice (Deane et al., 2020; Lindahl et al., 2020). As meditation techniques historically embedded in religious contexts have been repurposed as secular interventions for work, education, and medicine (Burke et al., 2017; Chen, 2022; Farias et al., 2020; McMahan, 2023), an ever-growing number of people seeking the health benefits of a secular intervention may encounter challenges posed by an altered sense of self or transformative experience without the buffering context of community or shared worldview (Jönhagen et al., 2024; Lindahl et al., 2021). Worldviews are tacit beliefs and value systems through which individuals interpret reality and make meaning of experience (Koltko-Rivera, 2004; Taves et al., 2018).

Such religious or shared worldviews serve many helpful functions, as they facilitate connection and shared understanding with others (Jost et al., 2008) and can situate distress in a larger context or purpose (Palitsky et al., 2023). While some meditation-related experiences may be clinically relevant regardless of context, this study is particularly interested in context and meaning-making efforts in relation to experience appraisal and psychological distress. One study observed that some meditators were able to find relief from challenging experiences by applying aspects of a relevant worldview to find satisfying meanings for the experience—often helpful meanings came from such worldviews that were different than their day-to-day perspective and meditation catalyzed a new receptivity to thinking about the world differently (Lindahl & Britton, 2019). An example of this is using a scientific concept like "neuroplasticity" or a religious concept like "kundalini" to answer a question like, "How could meditation cause me to experience such dramatic and electrifying changes?" As meditation is increasingly offered in the mode of healthcare rather than religious practice, researchers and clinicians need to understand the range of challenges that meditators encounter, and how elements of scientific, religious, and other worldviews impact meditators as they engage with them to make meaning of experience.

Contextual and conceptual factors shape both immediate perception of meditation-related experiences and later deliberation on meaning (Ekici et al., 2020; Schlosser et al., 2019; Taves, 2020). Intense meditation-related experiences (IMREs) impact both embodied and conceptual aspects of experience (Britton et al., 2021a, 2021b; Lindahl & Britton, 2019). Previous research demonstrates impacts on embodied processes in ways that alter self-other boundaries, the sense of ownership of experience, and the sense of agency (Christoff et al., 2011; Lindahl & Britton, 2019). Conceptual processes that can change with meditation practice include changes in self-narratives and worldviews (Lindahl et al., 2023; Poletti et al., 2024).

Meditators are embedded in social contexts which influence the motivations, narratives, values, and beliefs they bring to meditation practice. Concepts drawn from conversations with other people and with religious communities help meditators appraise their experiences, determining which experiences are true, good, and valuable and which are not (McMahan, 2023). Previous studies argue that context is essential in understanding meditation effects, most notably that worldviews can shape meditation-related experience, and meditation-related experiences can impact worldviews, in turn (Lindahl et al., 2023; Poletti et al., 2024). Here are two hypothetical examples to illustrate. Meditative experience can shape a worldview: a Jewish contemplative whose unexpectedly profound experience of *devekut*—cleaving to God—could dissolve her sense of self, making experientially real what her teachers had only described conceptually. A worldview can shape experience: a secular meditator could have a meditative experience of sheer bliss and focus his attention on his brain structuring his perception of a brain-based experience. Worldviews come from social contexts like meditation practice communities and shape meditators' experiences, while also being shaped by them.

Context constrains and situates meanings made after a stressful experience (Park, 2010), as meaning is enacted by the meditator in relation to people and objects (ecosocial context). Much more can be learned about IMREs by analyzing meditators' perceived embodied and conceptual changes, and exploring how they change the perceived affordances of ecosocial context. Affordances are perceivable action possibilities shaped by self-relevance (e.g., goals, values, etc.; J. J. Gibson, 2014), and as such represent concepts enacted in context.

IMREs can be usefully interpreted within the enactivist framework. Enactivism is a theory of cognition commonly employed by meditation researchers, which understands mind and world as co-emergent (Berkovich-Ohana et al., 2024; Gallagher et al., 2024; Varela et al., 2017). Rather than treating mind/body and self/world as separate domains, enactivism describes continuous interactions between embodied, conceptual, and ecosocial processes, through which both experience and its meaning are co-constituted (Thompson & Cosmelli, 2011; Varela et al., 2017). Experience and perception do not represent the world in itself; they are filtered through and colored by self-relevant goals (e.g., stress relief, enlightenment) rather than being a neutral

internal picture of external events (Carvalho & Rolla, 2020; Vago & Silbersweig, 2012). An enactive approach to cognition situates experience ecologically; an account of what experience was like and what it meant depends on investigating processes that interact across apparent dichotomies of mind/body and self/world. For this analysis of IMREs, we introduce the term *self-in-world* to refer to a person's given orientation toward a particular pattern of experience based on self-concepts, schemas, worldviews, and the embodied actions they afford. Meditators use a variety of concepts to understand meditation-related experiences and enact their meanings, at times drawing on concepts from religious contexts (e.g., nondual, mystical), and at other times secular (e.g., psychology, neurology; Lindahl et al., 2021). Our process-oriented approach regards meaning making as constrained by the embodied-conceptual-ecosocial ecology implied by enactivism.

So far, studies of intense meditation-related experiences have included qualitative interviews (Frank & Marken, 2022; Lindahl et al., 2017; Poletti et al., 2024), but not an in-depth exploration of the unfolding experience: from onset to enacted meaning. One study has adopted such an interpretative-phenomenological approach, noting that worldviews impact experience, and experience impacts worldviews—a recursive loop not just between embodied and conceptual aspects of individual experience but also between each individual and the social context in which they are embedded (Poletti et al., 2024). However, understanding the effects of meditation requires attention not just to the phenomenological qualities of individual experiences, but also the process of meaning-making which can have a transformative impact (Sparby & Sacchet, 2025).

IMREs have the potential to alter and transform self-experience (Kirberg & Chadha, 2024; MacKenzie, 2022). They can alter the assumed structure of self-in-world experience in a way that challenges fundamental assumptions about the nature of one's own conscious experience and relatedness to the world (Nave et al., 2021) and involves a feeling of "passivity" or loss of control (Bledow, 2022). Transformative experiences offer you a new subjective perspective or make you a different kind of person through changes that are epistemic and personal (Paul, 2014). Meaning-making proceeds from experience, on the basis of experiential knowledge which could not be anticipated until the transformation has taken place. A changed point of view may reorient one's mental relation to the world and also to oneself, potentially impacting goals, preferences, and self-narrative (Crone, 2021). While there is some debate on the epistemic value of transformative experiences, such as insights, they can be seen as referring to experiential knowledge, rather than propositional knowledge about the world (Bledow, 2022).

Addressing the abovementioned gaps in the literature, this study aims to understand subjective experiences and meanings of IMREs, using Interpretative Phenomenological Analysis (IPA) methodology through an explicit interpretative stance. Our analysis sought to characterize embodied and conceptual changes that participants described as "intense" and causally attributed to meditation practice. Furthermore, the study sought to explore how meditators conceptually frame their experience (i.e., an insight into reality, or an error in brain information processing, etc.), and how they perceive changes in self-narrative (i.e., "I've become patient" or "I'm no longer a people-pleaser") in relation to intense meditation-related experiences. Immediate aspects of experience will be referred to as spontaneous and reflection over time as deliberate. This approach opens a developmental perspective of what an IMRE is like, over time, from onset to potentially transformative impacts, including the individual and collective process of understanding its meaning.

While this study is adjacent to rich debates about consciousness, "non-self," neurology and brain function, and diverse taxonomies of the senses of self, we neither questioned participants about nor had any ambition to resolve them (Arnold et al., 2019; Farb et al., 2007; J. E. Gibson, 2024). Questions used in interviews with participants explored embodied and conceptual aspects of experience by asking "what it was like" and "what it meant," respectively. While participants advocated for diverse conceptions of self and world in their interpretations of IMREs (i.e., no-self, nondualism, brain function, etc.), we focused on the shared process—employing concepts adopted from a context to make meaning of experience.

Method

This study sought to understand what it is like to experience an intense meditation-related experience through the lens of first-person experience, by interviewing meditators who reported such an experience in the past 5 years, using screening measures to identify those who met these criteria. Interview questions explored onset, meditators' emotional appraisal of the experience, and how they might make sense of the experience in their social context (Lindahl & Britton, 2019). Interpretative Phenomenological Analysis was selected as the methodology due to alignment with research questions, to understand the first-person perspective of IMREs, particularly what it is like to experience and make sense of them. This methodology explores the mutual effects of phenomenological experience and meaning-making (Smith et al., 2009). IPA is idiographic, proceeding from in-depth case-by-case analysis to the generation of a summary table of group-level themes (Smith et al., 2021). The study was undertaken in accordance with ethical requirements and approval from the University of Melbourne Human Ethics

Committee (Ref: 2023–25592-36,851–4). Prior to participating in any aspect of the study, all participants provided written, informed consent.

Participants

Purposive sampling was used in accordance with IPA methodology, by using a survey to identify interview participants. Inclusion criteria were being an adult, being an English speaker, having a current and/or previous meditation practice, and reporting in the survey an intense experience that became central to their identity. Exclusion criteria were attributing the experience to substance use and not meeting causal attribution criteria for meditation-related experiences (e.g., experience first occurred during or after meditating, perceived to be caused by meditation, changed with practice) as detailed by Britton et al., (2021a, 2021b). Participants endorsed experiences on the Inventory of Meditation Experience (IME; Van Dam et al., 2024), when taking our screening survey. The IME has two scales: intensity and valence. Endorsing at least one item *2-slightly* or greater met our operationalization for experiencing potential onset of an intense meditation-related experience (IMRE). Sufficient scores on the IME along with the Centrality of Event Scale (CES; Berntsen & Rubin, 2006) addressed the two requirements for participation in an IPA study recommended by Smith et al. (2021) that participants needed to have had the lived experience being studied and ability to articulate it.

Thirteen meditators (5 male, 8 female), who experienced IMREs, were recruited (see Table 1). For this methodology, this is considered a large sample size (Smith & Fieldsend, 2021). All participants used one or more meditation practices and reported intense meditation-related experiences during or as a result of practice. The most common practices were as follows: self-enquiry/observation (e.g., non-dual, koan), deliberate breathing (e.g., pranayama, breathwork), and cultivating practices (e.g., loving kindness [metta], self-compassion, Brahmaviharas). Age was surveyed in bins rather than as an integer, roughly corresponding with broad developmental periods of adulthood (Halloran, 2024).

Procedure

Participants were part of a study about the dose–response effects (i.e., the relationship between amount of practice and outcomes) of meditation (Bowles et al., 2022) or recruited through a social media advertising campaign via Facebook. The second recruitment method was used to expand the pool of participants to identify a sufficient number who had experienced harm and were willing to be interviewed for a sister IPA study. Potential participants took a survey run on Qualtrics (Provo, UT) software, where they were presented with an overview of the study and the consent form. Potential participants then went on to complete a series of measures related to the dose response study and their responses to scales (CES and IME; Berntsen & Rubin, 2006; Van Dam et al., 2024) were used as inclusion criteria in the current study. Quantitative analysis of survey data will be reported separately (manuscript, in preparation). Participants needed to have had an IMRE and be able to reflect on its meaning, screened for with the IME-intensity and CES scales. IME intensity scale scores were > 70, which suggested participants rated several of the 30 IME scale items as *very intense.* Centrality of Event Scale (CES) scores were > 25, which reflected having an experience, which on average impacted their self-narrative. The rationale for these two measures was that the first captures the subjective experience of interest and the second reflects having been meaningfully impacted by it; the first is largely associated with spontaneous experience, and the second with deliberate reflection on its meaning.

Those who met the inclusion criteria for an interview and consented to be contacted for an interview scheduled an interview appointment after they were invited by email, read the plain language statement, and completed the participant consent form. The interviews took 45–90 min and were conducted online via Zoom. Interviews were transcribed using Otter.ai (2024) and checked for accuracy individually by the lead author (TW) using visual review of text while listening to the audio.

Data Analysis

IPA was conducted on 13 transcribed interviews employing IPA methodology (Smith et al., 2021). Using this inductive phenomenological approach, the dataset was read and re-read with increasing levels of notation at the individual and then group level. NVivo 14 software (Lumivero) and Trello (Fog Creek Software) were used to notate and aggregate during successive steps of IPA analysis. A review of themes revealed convergence and divergence among the cases, summarized in Tables 2.

IPA analysis is reflexive, and the researcher kept a reflexive journal following each interview and after the analysis of each case. Researcher bracketing was employed, including deliberately suspending prior assumptions, personal biases, and preconceived beliefs regarding the phenomenon under study. This aimed to engage with the phenomenon from an open and neutral standpoint, thereby enabling a more rigorous and objective understanding (Tavakol & Sandars, 2025). The journal was used to reflect on the relationship between the collected cases, each participant's perspective, and the researcher's positionality.

Table 1 Participant information

Number	Pseudonym	Gender	Age	Practicing tradition	Retreat experi-ence
1	*Olivia*	F	45–54	No faith or tradition	No
2	*Diego*	M	35–44	Advaita Vedanta and Buddhism	No
3	*Matilda*	F	35–44	No faith or tradition	Yes
4	*Maya*	F	45–54	Buddhism, Christianity, Hinduism	No
5	*Alexander*	M	45–54	No faith or tradition	Yes
6	*Katherine*	F	55–65	No faith or tradition	Yes
7	*Emma*	F	55–65	Yogic	Yes
8	*Dorothy*	F	45–54	Buddhism, Hinduism, Yogic	No
9	*Ruhi*	M	18–34	No faith or tradition	Yes
10	*Nani*	F	35–44	Buddhism	No
11	*Farzam*	M	45–54	Yogic, no faith or tradition	No
12	*Musonda*	F	45–54	Buddhism, Taoism, Yogic, Zen	Yes
13	*Lawson*	M	18–34	Buddhism, secular	Yes

Table 2 Table of themes

Group experiential theme	Sub-theme
A. Watching the self and the world transform	• **Witnessing changes in aspects of self** • **Witnessing a changing perceptual world**
B. From exploding emotional experiences to receiving insight	• **Enduring devastation** • **Abiding elation** • **Emerging with insight after suffering impasse**
C. Weighing what to say: Finding solace or falling silent	• **No words** • **Telling others the story**
D. Towards new perspectives and agency	• **Changing thought and action** • **The trajectory of understanding self in context of other**

To align with the research questions, the epistemological stance was enactivist, which enabled a bi-directional analysis of experience and thought (Poletti et al., 2024), in ecosocial context. Enactivism is a theory of cognition which takes self-world relations as the unit of analysis, or in other words, conceptual knowledge about oneself—situated in a lifeworld—applied bodily through action (Popova & Rączaszek-Leonardi, 2020; Thompson, 2010). The ontological approach was critical realist (Bhaskar, 1998), which enabled an examination of IMREs as a type of lived experience impacting embodied and conceptual aspects of self-experience, even though the self cannot be directly observed or measured and the typologies of intense experience are diverse. In sum, this positionality meant that interviewees' experiences were regarded as genuine, without adopting as fact, the concepts participants applied to interpret their meaning (i.e., nondual, kundalini, brain processing, etc.). Rather than regarding meaning as entirely invented (constructivism) or discovered (perennialism), this study regards meaning-making as participants applying concepts to understand IMREs within the constraints of individual experience in ecosocial context. This positionality enabled a process-oriented analysis focused on self-world relations over time, since enactivism regards sensorimotor loops between self and world as the unit of cognition, not mere mental representations of self or world (Kirmayer, 2025). Triangulation with a senior IPA researcher (JCF), supervisor (JG), and co-author (MK), attended to aspects of rigor in qualitative research (Morse, 2015) including the thematic coding, and a reflexive IPA analysis.

Results

Four group-level experiential themes (GETs) with two or three subthemes were identified among the experiential narratives of participants, highlighting convergence and divergence among the participants. Each subordinate theme is supported by at least three supporting quotations from participants aligning with recommendations from Smith et al.

(2021), and each theme drew on supporting content from over half of the participants.

A. Watching the Self and the World Transform

All participants experienced shifts in both perceived sense of self and relation to their world; they reported a perceptual shift and related differently to the world afterwards. When asked about an intense meditation-related experience, participants described an encounter with a changed sense of self and changed world, which were sometimes linked. When asked about the meaning of her experience, Musonda shared: "…it means everything and nothing, because it was just a moment. But then… it was a complete rearrangement of my inner self and maybe a bit of the outer world."

Witnessing Changes in Aspects of Self

All meditators witnessed changes in aspects of the sense of self, which occurred both spontaneously as an embodied subject and deliberately during the process of autobiographical narration. This theme focuses particularly on spontaneous embodied and perceptual shifts marking the onset of IMREs. Eight meditators described a range of changes to their embodied sense of self, as it stopped, dissolved, or expanded—sometimes through "energy-like" transformations like exploding or becoming light.

Matilda noted a period of time during a 30-min walking meditation devoid of experience, during which she was entirely unaware of any sensation, perception, or object of consciousness until she "came back":

> I don't know how long I was in it, so totally not here… everything stopped… like I was unconscious… I can't tell you where I went or what I did.

Other meditators also described experiences "like general anesthesia" where the flow of experience stopped, while others described experiences of nothingness, vastness, emptiness, or spaciousness. Maya had an experience like this, with no aspect of the physical "me":

> there was awareness, but that I wasn't there, there was no aspect of the physical me… I was thin air...

There were also transformations of the sense of self such as dissolution of self-other boundaries and expansions of perceived self, through energy-like somatic experiences. Olivia shared that as a result of meditating, "the boundaries between your body and the [environment]… you don't feel so separate…" and Alexander said the "body dissolves or becomes part of the broader room around me." A few participants also experienced an expanded sense of self as they seemingly became light radiating outward, or as Farzam reported, "my physical self… exploded into the universe… there was nothing else other than me." Meditators' embodied experience drastically altered, in a way that sparked questions about their sense of self (i.e., "Who am I that I could have this experience of the world?"). Frequently, meditators reported an expanded sense of self, formerly confined to the body, now extended into the world and in relation to others.

In summary, meditators reported a wide range of self-related experiences when describing the onset of an IMRE. During many of these unanticipated experiences, meditators' subjective sense of self stopped, dissolved, or expanded; these were profound encounters with a changed self.

Witnessing a Changing Perceptual World

The experienced world of the participants appeared to change as a result of meditation. What they sensed, perceived, and their mode of being in the world seemed to shift from seeming separation to increasing connectedness. Recalling a period of time that he was practicing intensively, Ruhi described a moment when his mind became "very, very, very quiet," followed by a 3-month period during which hearing was amplified and unfiltered—sometimes noticing every conversation and clinking glass in the room. Maya described how practicing meditation made her attend differently to the world, noticing gradations between seemingly separate things:

> …after the meditation, I'd drive home and the red and green lights, they weren't just in the circle… my eyesight could see more of the color, seeping into thin air.

Maya and Alexander both saw changes in the physical world that mirrored changes in their sense of self, informing how they understood the nature of reality. For her, it was a boundarylessness and "seeping into thin air" while for Alexander it was dissolution. He first experienced himself "dissolve," then saw a client "dissolve," during a work meeting,

> I was going through a meeting and I actually had someone kind of [exhale] dissolve in front of me as she was talking… just part of a broader flow of the universe.

Months later, during a breath-focused meditation he reached deep concentration and serenity, which transformed the way he perceived the world, immediately afterwards:

> …the entire world was just so vivid. It was so beautiful. Walking past plants that are just straggly plants, but they were the most beautiful things I'd seen… most vivid experience of that absolute wonder and rapture… I've ever experienced.

Nature inspired many participants as they observed and expanded into it. Dorothy said, "I was like put into nature and I was part of nature and everything was amazing." Many

participants talked about birdsong, crickets and feeling enveloped in the natural world. Lawson's meditation caused him to perceive a bird differently:

> …observing the bird and noticing it being part of my mind…it brought about this like deep sense of connection… intimacy with the world around me… we were totally linked.

Lawson's IMRE shifted his worldview. He was "quite destabilized" after watching The Matrix as a child. In the movie, everyone's perception of the world was a false computer simulation, so he wondered if he could trust his senses and then questioned his understanding of the world, is the "foundation of [my] experience trustworthy?" He began to read Buddhist philosophy and meditate, then years later had an experience that answered his question, "in silent meditation… looking around at the trees and the birds and the river… noticing the, the unfathomability of it… the joy that I was feeling was that it was like otherworldly… divine…" Alongside his personal joy was sorrow about the unfairness of the world. Then, reflecting further on "that question" sparked by the Matrix he said,

> yes, absolutely…the ground of being is, is trustworthy… complete or perfect, but… to be able to see that is often beyond my own capabilities…I think that's where the trust aspect comes in.

He mentioned that Buddhist author Rob Burbea's book helped him understand his sensations and perceive the world in terms of the concept, "unfathomability." His experience sparked a process of seeking to understand the "unfathomable" and "divine" aspect of reality, though he would never have used those words beforehand.

In summary, changes in the normal perception of the world seemingly imposed themselves on meditators and were accompanied by questions that unsettled previous understandings of the world (i.e., "What is the world like that I could have this experience of it?"). All meditators witnessed their worlds, and their role in it, changing as a result of meditation, from heightened sensations and altered perceptions to adopting a new mode of relating to the world.

B. From Exploding Emotional Experiences to Receiving Insight

Meditators described a range of extremely negative and positive experiences, often accompanied by insights into themselves and the world. Sometimes the meaning of experience was clear in a moment of insight—like Farzam who said, "I came into the knowing… it was a spontaneous relaying of how it wanted to relate…" and other times the meaning was clear only upon reflection. Life challenges showed up in meditation, and meditation-related challenges showed up in life. For 10 of the 13 meditators, a meditation-related insight helped them through the challenges. The clearest examples of this theme are the stories of Musonda, Diego, and Dorothy as they went from exploding emotional experiences to receiving insight; they each had negative emotions and positive emotions, and came to new insights and understandings as a result of their intense meditation-related experiences.

Enduring Devastation

Negative emotions ranging from stress to terror marked many meditators' experiences in this study. Others in the study described feeling "lost," "hopeless," "angry," "frustrated," and "stressed." Musonda talked about an experience that unfolded right after she had a beautiful mindfulness meditation. She said that right after those few minutes of beauty began a very dark period of her life, lasting 3 months:

> The challenge was like nothing I've experienced; I could only describe it as having… shreds ripped off you… I was in trauma... out of control, waking up screaming at everyone…

Diego had been practicing a nondual meditation when he also encountered a challenging experience. He was in a mode of meditative self-inquiry, then, aspects of his self disappeared and it was more terrifying than he could have anticipated:

> Suddenly, suddenly, there in this infinitely empty void--no body… just deep terror… I'm about to be snuffed out… in terms of my entire life, this was the most terrifying... I was losing my sense of self…

Dorothy was dealing with a crisis in her family and was meditating as a form of self-care. During this period, she was alarmed by seeing a light with no physical source. She shared,

> I was in the depths of despair about that was going on in my life… I remember having my eyes closed but I had a bright light here [gestures above her head]… it was coming down on me… it was scary because I didn't quite know what's going on… when I shut my eyes, the light was still there.

In summary, meditators had diverse experiences enduring negative emotions during or after meditation, often associated with an embodied change in sense of self and conceptually with uncertainty regarding the cause or meaning of the experience; for some, it was a passing fear but other participants endured an embodied and mental upheaval that was nothing less than "devastation."

Abiding Elation

Meditators spoke about strong positive emotions such as amazement, joy, love, awe, wonder, and rapture, which they shared with enthusiasm, like Farzam, who shared about his IMRE, "you can't even describe the joy… this ecstatic feeling of beauty and love and you're flowing in a feeling of overjoy of this, it's love!".

Musonda had positive mindfulness meditation experiences before and after a period of difficulty. She practiced meditation while sitting on a sand dune, looking at a blue sky, and saw "…millions of little lights in the sky… like little Paisleys or sperms, or fireflies in the shape…" She saw these beautiful tiny shooting lights in the sky on two occasions, right before and right after a challenging period. She enthusiastically described her joy and amazement:

> I could really feel the energy…enjoy it… accept that it was real… I was just like, 'Wow!' took a photo, because I knew I would want to remember that moment… pinpoint it, in history, for myself.

Diego had two intensely positive experiences related to his loss of a sense of self. While hugging his wife one day, his sense of self transformed into an expansive love. He described the impact on his "whole world, and sense of identity:"

> an explosion where now… that boundary, our container of love just explodes and you're even willing to sacrifice, you're sacrificing your own identity.

Soon after this experience which again happened while hugging his wife, he lost his sense of self for the third time, while meditating. This time, applying his new conceptual understanding that love requires self-sacrifice, he was able to meet the experience with equanimity and peace.

Dorothy's initial reaction to seeing a nonphysical light grabbed her full attention and made her wonder how it was possible. What happened next was that she felt a flood of emotion that helped her perceive what was going on as good and helpful:

> I didn't feel like the energy source… was anything bad… I just it felt safe, protected… I felt okay about it… because it was filled with this, this love.

Many others shared positive experiences, which they especially savored after challenging experiences.

In summary, emotions shaped meditators' perceptions and interpretations of intense meditation-related experiences. Katherine, describing many different meditative experiences, said, "the ones I pay most attention to are these ones, the emotional processing." Where the meaning of an IMRE was unclear, participants' attention was often drawn or directed to aspects that were charged with emotion.

Emerging with Insight after Suffering Impasse

Emerging with insight after suffering impasse was a theme for ten participants in the study, demonstrated throughout this section by the three who had the broadest emotional range between impasse and insight: Musonda, Diego, and Dorothy. For each, there was a clear sense of something being communicated, the meaning of which was understood in a moment or on reflection of a moment.

Musonda talked about moving away from her former understanding of spirituality, which was theoretical, into a new experiential understanding, inspired by her vision of those tiny lights in the sky:

> I saw, that life energy that's in everything… that raw spirit, which is truth and love… there's no duality.

Diego also described a flash of insight that made him "willing to sacrifice… [his] identity." He was not content to stop with a negative outcome to his journey with meditation, "You wouldn't have these gurus sitting there smiling if that was the final realization." He spoke in superlative terms about attaining this insight into the nondual nature of reality:

> … this body or brain whatever... that's not what is conscious. And at that moment the the non-duality aspect of the realization hit home… It means everything right now… Like that was it, that ultimate insight. I cannot have any better insight than that. That is it.

Dorothy likewise had an insight that she felt was the clear meaning of her experience. She didn't know how it happened, perhaps she had "connected to the universe." She described its meaning as:

> Love, empathy, compassion… that's how we're connected… that was the universe telling me like, if I'm going to navigate this human space, then it's with love

Although most participants' new understandings aligned, like these insights into love, nonduality, and connectedness, a few insights conflicted—Dorothy stood convinced of the continuity of her father's soul after his death, while Alexander felt resolved that humans don't have a soul and that everything is impermanent. While these specific interpretations diverged, all participants experienced a disruption of self-in-world and applied concepts (e.g., soul, impermanence) to make new meaning of experience.

In summary, when meditators found satisfactory interpretive frames for IMREs in a moment or upon reflection, it reshaped meditators' self-narratives. Ten of the participants reported a challenge or impasse in life or meditation characterized by uncertainty, which resolved with new understanding and positive emotions.

C. Weighing What to Say: Finding Solace or Falling Silent

There were a variety of important reasons that meditators didn't talk about their experiences, and at the same time they mentioned appreciating conversations to discuss their experience and make sense of it. Despite having experienced IMREs, meditators reported difficulty making sense of them. Consequently, articulating and explaining these experiences to individuals without prior exposure posed a significant challenge. Because transformative experiences are not fully intelligible without firsthand experience, attempts to describe them to those lacking experiential knowledge inevitably remain incomplete. As Ruhi put the problem, "I don't have a shared language with anyone… I've read over 200 books, and each of these books didn't have a shared language."

No Words

Not talking about their experience was a common theme for a variety of reasons, including fear of judgement, not having anyone to talk to, not being able to make sense of it, and not having a shared language to meaningfully convey their experience to others in a way that could be heard and understood.

One of the strongest and most immediate impacts of these meditation experiences on participants in the study was knowing they couldn't talk about it openly for fear of judgement:

> I always have to give a disclaimer, 'Hey, don't think I'm crazy'… that's how it's actually impacted me… I can't explain my experience to people because they might find that experience, [is] not something in their world.

Lawson mentioned "I don't think I would talk to my family about this," regarding his experience of the divine, because his perspective on a transcendent reality had shifted away from his atheist upbringing.

Several participants mentioned that talking to others was not something they undertook to make meaning; the meaning was experiential, not merely conceptual. Ruhi expressed dismay and isolation about not having a shared language to talk meaningfully with others and spoke about how we need to approach meaning making collectively. He warned,

> …we have a very, very, like hyper-individualistic understanding of how to apply meditation… very dangerous… you are part of whole, you are part of an infinite number of wholes… it needs to be about mass coregulation.

Ruhi lamented a lack of words with mutually understood meanings with which to communicate his experience to others and he suggested ongoing interfaith dialogue as a potential solution.

In summary, participants in the study were impacted by having experiences that they could not or chose not to speak about with others. For some, the meaning of experience was immediately clear and needed no explanation, others feared social rejection, and still others had no words and no shared language to describe what they lived through and wanted to discuss with others. Not having satisfying meanings or language for the IMRE was a personal and interpersonal challenge, as was having new understandings of self and world that differed from what their friends and family thought.

Telling Others the Story

In certain circumstances, participants talked about what happened and what it meant to them. Most participants had found at least one person to talk to, and meaningfully related what they had experienced and how they changed as a result. Those who had a mostly positive experience seemed more eager to share it with others, but even those whose experience posed a great deal of challenge appreciated conversations with trusted friends or family.

Katherine had conversations about experiences that were not difficult for her to share with others and said,

> I just found it so exciting and enriching and stimulating to have conversations about my meditations.

That was also the case with Nani who thought meditation was for new age vegan hippies who were nuts, not people like her. She experienced transformative benefits, became a meditator and told her best friend.

> [my best friend] was shocked because she knows I was a skeptic. And I remember her saying to me, 'You can teach an old dog new tricks.'

Musonda, whose experience was intensely challenging, said,

> I had those few friends that I could tell anything, the whole way through and that didn't care if I cried the whole way through, because they believed me.

In summary, every participant spoke about meditation with others to some degree; when they could or couldn't speak with others reveals the strong impact of social context on their process of meaning-making. Some had an adequate interpretative framework to make sense of their experience already, while others were striving to understand and manage the emotional impact by consulting with others. These conversations were frequently a key element of enacting new understandings of self and world.

D. Towards New Perspectives and Agency

In response to the transformations they witnessed, meditators reflected on their intense meditation-related experiences and adopted new ways of looking at self and world. Participants described how new understandings once grasped, could be applied in action, "… something happens and then you need to understand what that is, and then take the next level." Meditators often integrated their IMREs over time, by adopting satisfying explanations, developing capabilities, and enacting a new sense of self in the world.

The Trajectory of Understanding Self in Context of Others

In order to explain the meaning of their meditation experiences, participants often described themselves in relation to their families. From childhood to the present moment, they often described a trajectory, where the present could only be understood in social context.

Olivia talked about how going for walks with her mother in childhood became the expression of her spirituality and likely enabled her meditation-related experience, which happened in nature:

> I was thinking… my love of nature, my mom's love of nature… being ingrained in me as a child, that I was open to this experience.

Diego said he grew up in a religious community in a religious country fraught with hypocrisy and contradiction. When he moved to university in a less religious country, he became atheist but said that atheism framed his life in a way that it lost meaning. He started to meditate in order to make sense of his relationship to the world. Influenced by these different social environments, he now blends religious insights—mediated by experiences borne of his meditation practice—and scientific rationality to understand himself,

> in both a rational way, and in the non-conceptual meditative way… two sides to it… no self and self are just two sides of the same coin.

Nani gauged her need to meditate and her progress in meditation based on how she related to her family. A recent break-up made her stressed and sleepless. She gauged the success of her meditation practice in relation the quality of her interactions with others,

> I was a bit short with [my kids], and… my parents… [meditation] was able to get me back to a place that I wanted to be… happy, not stressed, getting good sleep... more productive at work… with the kids I had more patience.

Several others talked about the death of their parents and how their IMREs helped them understand what was happening spiritually for their parents; for Emma, Dorothy, and Musonda their experiences helped them cope with the grief.

In summary, each of the meditators talked about themselves in relation to other people, and for most of them it was a key part of making sense of their IMRE. They described themselves on a trajectory from childhood to the present that impacted the ways they understood themselves in relation to others and made sense of events of life.

Changing Thought and Action

New insights and understanding that arose from experience were integrated into meditators' lives through new ways of thinking and acting. Perhaps the greatest impact of IMREs on participants was that it enabled them to enact a new understanding of self in the world. First, meditators witnessed a changed sense of self or perception of the world; the next part of the story is their response to it. Meditators moved from spontaneous experience to deliberate reflection and from self-regulation to self-determination. Participants engaged with their experiences to develop and build capabilities, sparked by their unexpected encounters with a transformed sense of self and world. Ruhi talked about how understanding grows from experience, followed by reflection on it:

> those experiences… give you another perspective or another view on reality, that you then need to figure out how to contextualize… the capacity to make sense of these things, helps… them to kind of mature… point attention where it needs to go.

Insights needed to be translated into action, as Matilda shared about the insights she received in the form of a roadmap for navigating her life that required her to act,

> So the roadmap was this beautiful place. But it showed me that… I had things to do along the way.

As a result of Alexander's experience, he thought more of himself and the world in terms of the Buddhist concept of impermanence, something he was exerting an ongoing effort to understand and enact. Newly adopted modes of understanding could reframe a participant's entire approach to life, not just to making sense of this one experience, like it did for Diego,

> …this is the core identity… that I'm going to now live my life with.

Some participants let go of self-judgements, previous self-beliefs and worldviews, and explored new perspectives on themselves in the world. Several developed a capacity to modulate their perspective, zooming in and out like a camera lens, altering the perceived experiential

landscape. Lawson described this as, "perceptual shifts which happen that you can kind of move in and out of especially when you're doing deep practice…" and Olivia observed, "you can merge in and out… into the world around you, you can come further away from it… you do have a sense of control." This capacity to modulate how they experienced self in relation to world, seemed to afford new ways of thinking and acting.

Multiple participants talked about the development of new capabilities as a key to translating new perspectives into action. For instance, Matilda, Katherine, and Emma spoke about mastering emotional self-regulation and moving toward self-determination. Katherine shared, "I've probably got the most agency I've ever had in my whole life… confidence that I can manage myself, my emotions."

In summary, participants frequently adopted new perspectives in response to their IMRE. These shifts allowed them to meaningfully translate what they had learned from meditation into their lives, changing their thought and action. Thinking in new ways about self and world helped meditators enact a different sense of self, as they perceived new possibilities and acted on them.

Articulating Findings in Relation to Research Questions

Participants' IMREs were transformative experiences with disruptive changes in perceived self and world at onset, followed by interpretation of the meaning of experience, and resulting in epistemic and personal changes. The onset was passive with spontaneous perceptual shifts, emotional responses and insights, followed by degrees of more active deliberate reflection. Emotions arose immediately, as well as in response to new understandings; the meaning of experience was sometimes clear as a spontaneous insight, but mostly understood over time as meditators adopted new concepts regarding self and world. Realizing the meaning of their experience (through discovery and/or invention) often signaled meditators' shift from self-regulation of a negatively appraised experience toward self-determination, in which satisfying understandings of self and world were enacted. Additionally, the anatomy of IMREs seemed to be composed both of a core experience and subsequent interpretation through appraisal and meaning making. Figure 1 represents the spontaneous onset and deliberate iterative process of reflection, recasting memories (e.g., childhood, places, relationships, the IMRE experience itself)

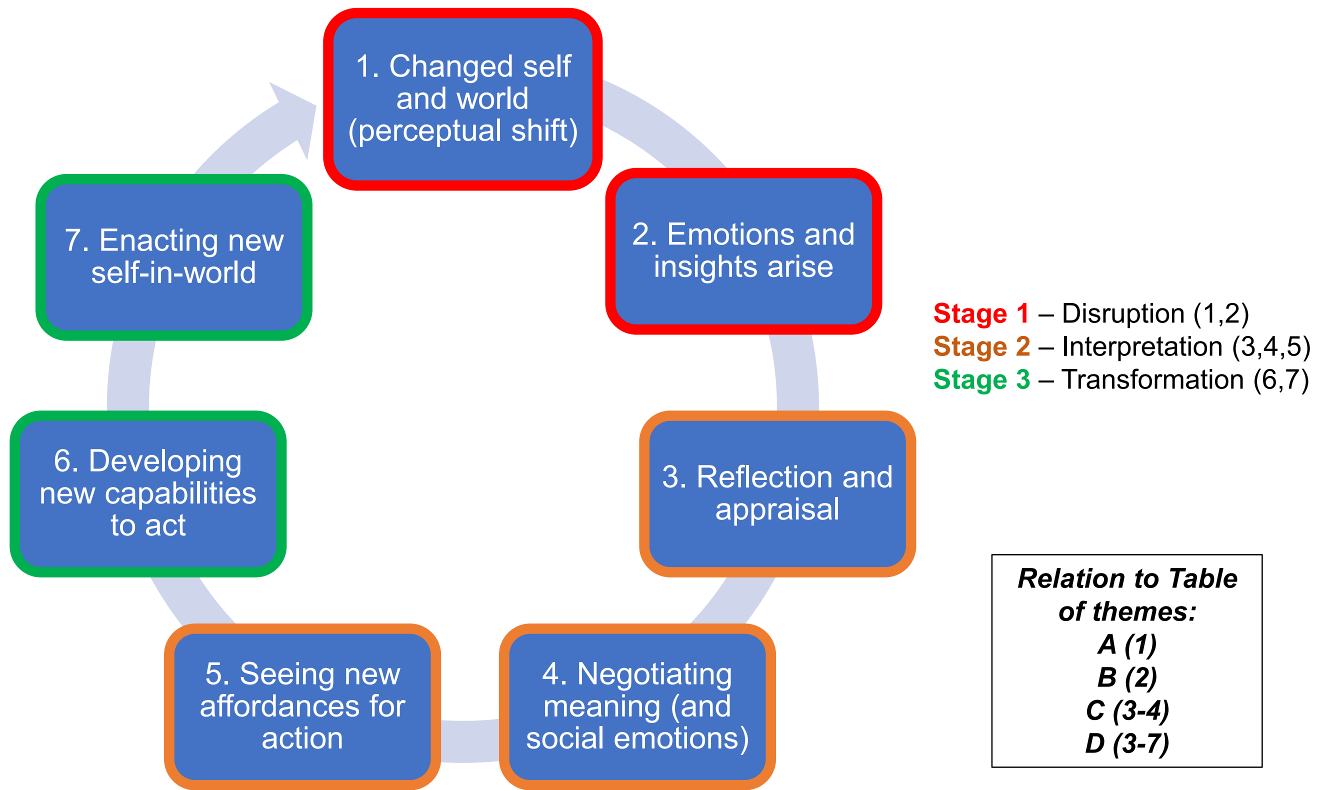

Fig. 1 IMRE Impacts on the Self: Disruption, Interpretation, and Transformation

and changing the enacted understanding of self-in-world. It approximates sequential unfolding of an intense meditation-related experience. Its relation to Table 2 of Group Experiential Themes is as follows: *Theme A*: W*atching the self and the world transform*—(1) Changed self and world; *Theme B: From exploding emotional experiences to receiving insight*—(2) Emotions and insights arise; *Theme C: Weighing what to say: finding solace or falling silent*—(3–4) Reflection and appraisal, Negotiating meaning; *Theme D: Towards new perspectives and agency*—(3–7) Reflection and appraisal, Negotiating meaning, Seeing new affordances for action, Developing new capabilities to act, Enacting new self-in-world.

Discussion

We found that intense experiences can disrupt meditators' everyday perceptions of themselves and the world, affording new perspectives and ways of enacting self-in-world. As suggested in previous research, the impact on meditators was shaped by both what the experience was like and what it meant (Britton et al., 2021a, 2021b; Palitsky et al., 2023). Additionally, this study found that meanings seemed to have corresponding affordances—or possibilities for action—which were explored by meditators as meanings were enacted. Building new capabilities and enacting new understandings of self and world constrained and characterized satisfactory meaning-making, and at the same time some concepts and approaches to meaning did not enable meditators to satisfactorily reconstrue themselves in relation to the world. Meditators expressed emotions like grief and sadness as they let go of an old way of enacting self in relation to others, and joy and hope as they enacted self-transformation.

Previous scholarship on intense meditation-related experiences is mixed regarding the causal relationship between positive affect and changes in the sense of self (Canby et al., 2024); some see emotion as an effect resulting from changes in the sense of self (Taves, 2020), while others view emotion as playing a causal role in eliciting self-transcendent states through deliberate processes like reflection and savoring (Garland & Fredrickson, 2019). Participants within the study described emotions both as a cause and an effect. Positive emotions (e.g., joy, bliss, hope) arose spontaneously when encountering apparent self-transcendent aspects of reality and when receiving insights (e.g., love, awe, wonder). Positive emotions also helped meditators make meaning of experience. For example, one person reappraised an initially frightening experience (seeing a nonphysical light) as reassuring, because the core experience was accompanied by a positive emotion—love.

Negative affect has been documented in previous research associated with self-boundary dissolution and loss of multiple aspects of selfhood (Canby et al., 2024; Lindahl & Britton, 2019). For many meditators in this study (like Matilda who used the metaphor "roadmap"), the sense of self was like a map helping them navigate the world; negative emotions (e.g., sadness, fear, terror) often arose from the disorientation of finding oneself in unmapped territory, after dissolution or loss of the sense of self in meditation or associated with unbearable life circumstances. At the same time, meditators reported how emotions (negative and positive) helped direct attention to aspects of experience needing meaning-making, aiding their efforts to remap self-in-world.

Meditators seemed to find remapping satisfactory to the degree that it was guided by emotional attunement and enacted. Meaningful explanations seemed to decrease distress associated with a stressful experience, a finding echoed by research on common factors (e.g., therapeutic alliance, expectation of change, and the provision of a coherent explanation) in counseling psychology and in the meaning making literature (Laska et al., 2014; Park, 2010). Worldviews enabled and constrained the process of meaning-making to the degree that they afforded cogent explanations for experience. Emotions associated with experience and its appraisal seemed related to multiple factors: the historical path of the individual's life narrative, the development of meditation-related capabilities, the meditator's engagement with interpretive frames or worldviews, meditator readiness to live out a changed self-in-world, and the constraints of social context. Although the remapping of self-in-world involved spontaneous aspects of experience (i.e., self-evident insights, loss of sense of self), IMREs also involved iterative appraisals about what happened, why, and what it means, emphasizing the process orientation of meaning-making (Taves & Asprem, 2017). This remapping was also socially mediated, suggesting that meaning is co-produced not just individually authored (Taves & Paloutzian, 2022).

Changes in the sense of self that seemed to elicit or follow strong emotions were loss of the sense of self or dissolution of its boundaries, which are documented in previous research about intense meditation-related experiences (loss of self or boundary dissolution—Canby et al., 2024; Hanley et al., 2020; Nave et al., 2021; Vago & Silbersweig, 2012; Van Dam et al., 2024; Yaden et al., 2017). Meditators were challenged by the lack of concepts or "shared language" to explain their experiences, or as one participant reported she couldn't tell other people about what she had perceived because it was "not something in their world." Most meditators in this group discovered interpretive frames or worldviews, social contexts, and developed capabilities that afforded satisfying meanings, using concepts such as impermanence and unfathomability. From the vantage point of new perspectives, meditators perceived new affordances. These possibilities for action constituted new relationships

to objects and people in their environment, which were used as meditators developed the capabilities to enact a different sense of self—remapping the perceived world in action. This agrees with previous scholarship on enactive approaches to intentional or meaningful relations, that they shape perception and are expressed in relations between self and other (Moore & Barresi, 2017; Popova & Rączaszek-Leonardi, 2020). Meditators made meanings not just through mental representation but also through intentional object- or goal-directed activity.

Meditators exercised agency as they explored the meaning of IMREs for themselves and with others. Our findings point to a powerful role of social context in meaning making as suggested by previous scholarship (Andersen & Przybylinski, 2018). Adopting new worldviews often enabled meditators to see possibilities for action (i.e., perceive affordances), while developing capabilities enabled enaction (i.e., using affordances). Agency is a building block of the sense of self (Kirmayer et al., 2020) closely related to enacting healthy behaviors and is a significant determinant of health, at times altered in forms of psychopathology (David et al., 2012; Haggard, 2017). Agency was exercised by using meaning-making capabilities: to consult with others about the meaning of experience, to feel and understand emotions, and to skillfully persist (or acquiesce) in the process of meaning-making.

Central to the notion of a healthy self-concept in psychology is the extent to which the self demonstrates temporal stability (Sheldon et al., 1997), minimal fluctuations in response to environmental influences (Nezlek & Plesko, 2001), and where self-beliefs are clearly defined (Campbell et al., 1996) such that the individual can reliably manage life events with sufficient life satisfaction (Diener et al., 1999), minimal negative affect, and optimal positive affect. By contrast, the end goal of traditional mindfulness with its context of Buddhist psychology is commonly seen to be the deconstruction of a false sense of self, leading to enduring, effortless well-being, or the nondual experience of enlightenment (Trungpa, 2005). This differential understanding of what constitutes a desirable self-structure has clinical implications in relation to diagnoses of psychosis, depersonalization, dissociation, and similar conditions (Lindahl et al., 2020, 2021). While some IMREs will warrant clinical intervention, meditators and their practice communities may feel competent to manage some of the functionally impairing symptoms that accompany IMREs. In an attempt to include these considerations, the latest Diagnostic and Statistical Manual of Mental Disorders (DSM-5) added the category "Moral, Religious or Spiritual Problem" for crises associated with experiences arising from spiritual practices (Spittles, 2025). However, this area needs more work to reduce IMRE-related harm.

Limitations

Survivor bias (Wilshire, 2017) may have skewed the longitudinal study sample from which participants were recruited for this study, favoring those more positively inclined toward meditation due to long-term commitment to practice. This sample did not capture meditators who experienced adverse effects and stopped meditating, or who did not find their experience meaningful, but participants did report intense psychological distress and lasting bad effects. Results are idiographic and not generalizable to all meditators in all contexts. For example, different meditation practices, traditions, and approaches may have different effects (Palmer et al., 2024). Participants were reflecting on experiences that could have happened up to 5 years ago, introducing problems with the accuracy of their IMRE memory recall. Finally, Fig. 1 is only a descriptive model; it needs testing and varied somewhat for participants.

Implications for Future Research

IMREs were often composed of a dramatic shift in the embodied sense of self (e.g., loss of a sense of self, dissolution of self-boundaries) that could elicit negative emotion, followed by a process of meaning-making and enaction that reconstrued the conceptual sense of self and lead to positive emotion. These experiences could elicit varied emotions and be interpreted in diverse ways. For example, Musonda's experience of seeing millions of tiny lights could be regarded as an experience of *blue field entoptic phenomenon* and/or as a moment of personal insight. With this understanding, clinicians might view client presentations from a humanistic rather than diagnostic lens in which client distress is immediately pathologized. Clinicians accompanying clients to make meaning may wish to help them respond to questions that arose as a result of the experience and help them to perceive and use newly available affordances.

Future studies could also evaluate the clinical application of the process diagram depicted in Fig. 1 to ascertain if the stages correspond with personal experience, encourage progress through stages, or help the client feel less alone in their experience, as a few examples. Interpretative Phenomenological Analysis has proven to be a useful method for investigating meditation effects on the sense of self (Lawrence et al., 2024), and worldviews (Poletti et al., 2024), as well as the process of enacted meaning-making, in this study. Researchers should continue to investigate the range of meditation-related challenges, the interpretive frames applied,

and the impact of these interpretations on meditators as they invest effort in meaning-making following intense meditation-related experiences (Palitsky et al., 2023).

Acknowledgements The authors would like to thank the interviewees for their participation and the reviewers and editor for exceptionally helpful feedback.

Author contributions Tim Wood: Analysis - original; Analysis – review and editing; Conceptualization; Data collection; Resources; Writing – original draft; Writing – review & editing Merle Kock: Analysis – review and editing; Conceptualization; Writing – review & editing Nicholas T. Van Dam: Analysis – review and editing; Conceptualization; Methodology; Resources; Supervision; Writing – review & editing Julieta Galante*: Analysis – review and editing; Conceptualization; Methodology; Resources; Supervision; Writing – review & editing Jasmine Childs-Fegredo*: Analysis – review and editing; Conceptualization; Methodology; Resources; Supervision; Writing – review & editing*equal contributions

Funding Open Access funding enabled and organized by CAUL and its Member Institutions. This work was supported by the Contemplative Studies Centre, which was established via a philanthropic gift from the Three Springs Foundation, Pty, Ltd. Merle Kock was supported by the Research Foundation – Flanders (FWO-Vlaanderen) under a PhD fellowship (11I1624N) and by the SofinaBoël Fund for Education and Talent under a SofinaBoël fellowship (V437523N), Tim Wood was supported by the Commonwealth through an Australian Government Research Training Program (RTP) Scholarship [DOI:https://doi.org/10.82133/C42F-K220].

Data Availability No datasets were generated or analyzed during the current study.

Declarations

Ethics Approval Ethical approval was obtained from the Research Ethics Committee at University of Melbourne (Ref: 2023-25592-36851-4).

Informed Consent Written informed consent was obtained prior to participation in the study and for anonymized data to be published.

Conflict of interest The authors declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

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References

Andersen, S. M., & Przybylinski, E. (2018). Shared reality in interpersonal relationships. *Current Opinion in Psychology, 23*, 42–46. https://doi.org/10.1016/j.copsyc.2017.11.007

Arnold, A. J., Winkielman, P., & Dobkins, K. (2019). Interoception and social connection. *Frontiers in Psychology, 10*, Article 2589. https://doi.org/10.3389/fpsyg.2019.02589

Berkovich-Ohana, A., Brown, K. W., Gallagher, S., Barendregt, H. P., Bauer, P. R., Giommi, F., Nyklíček, I., Ostafin, B. D., Raffone, A., Slagter, H. A., Trautwein, F.-M., Vago, D. R., & Amaro, A. (2024). Pattern theory of selflessness: How meditation may transform the self-pattern. *Mindfulness, 15*(8), 2114–2140. https://doi.org/10.1007/s12671-024-02418-2

Berntsen, D., & Rubin, D. C. (2006). The centrality of event scale: A measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behaviour Research and Therapy, 44*(2), 219–231. https://doi.org/10.1016/j.brat.2005.01.009

Bhaskar, R. (1998). The possibility of naturalism: A philosophical critique of the contemporary human sciences. *Routledge*. https://doi.org/10.4324/9781315756332

Bledow, N. (2022). The epistemic value of non-religious mystical experiences. *Religions, 13*(11), Article 1116. https://doi.org/10.3390/rel13111116

Bowles, N. I., Davies, J. N., & Van Dam, N. T. (2022). Dose-response relationship of reported lifetime meditation practice with mental health and wellbeing: A cross-sectional study. *Mindfulness, 13*(10), 2529–2546. https://doi.org/10.1007/s12671-022-01977-6

Britton, W. B., Desbordes, G., Acabchuk, R., Peters, S., Lindahl, J. R., Canby, N. K., Vago, D. R., Dumais, T., Lipsky, J., Kimmel, H., Sager, L., Rahrig, H., Cheaito, A., Acero, P., Scharf, J., Lazar, S. W., Schuman-Olivier, Z., Ferrer, R., & Moitra, E. (2021). From self-esteem to selflessness: An evidence (gap) map of self-related processes as mechanisms of mindfulness-based interventions. *Frontiers in Psychology, 12*, Article 730972. https://doi.org/10.3389/fpsyg.2021.730972

Britton, W. B., Lindahl, J. R., Cooper, D. J., Canby, N. K., & Palitsky, R. (2021b). Defining and measuring meditation-related adverse effects in mindfulness-based programs. *Clinical Psychological Science, 9*(6), 1185–1204. https://doi.org/10.1177/2167702621996340

Burke, A., Lam, C. N., Stussman, B., & Yang, H. (2017). Prevalence and patterns of use of mantra, mindfulness and spiritual meditation among adults in the United States. *BMC Complementary and Alternative Medicine, 17*(1), 316. https://doi.org/10.1186/s12906-017-1827-8

Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavallee, L. F., & Lehman, D. R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology, 70*(1), 141–156. https://doi.org/10.1037/0022-3514.70.1.141

Canby, N. K., Lindahl, J., Britton, W. B., & Córdova, J. V. (2024). Clarifying and measuring the characteristics of experiences that involve a loss of self or a dissolution of its boundaries. *Consciousness and Cognition, 119*, Article 103655. https://doi.org/10.1016/j.concog.2024.103655

Carvalho, E. M. D., & Rolla, G. (2020). An enactive-ecological approach to information and uncertainty. *Frontiers in Psychology, 11*, Article 588. https://doi.org/10.3389/fpsyg.2020.00588

Chen, C. (2022). *Work pray code: When work becomes religion in Silicon Valley*. Princeton University Press.

Christoff, K., Cosmelli, D., Legrand, D., & Thompson, E. (2011). Specifying the self for cognitive neuroscience. *Trends in Cognitive Sciences, 15*(3), 104–112. https://doi.org/10.1016/j.tics.2011.01.001

Crone, K. (2021). Personal identity, transformative experiences, and the future self. *Phenomenology and the Cognitive Sciences, 20*(2), 299–310. https://doi.org/10.1007/s11097-020-09699-7

Dambrun, M., Berniard, A., Didelot, T., Chaulet, M., Droit-Volet, S., Corman, M., Juneau, C., & Martinon, L. M. (2019). Unified consciousness and the effect of body scan meditation on happiness: Alteration of inner-body experience and feeling of harmony as central processes. *Mindfulness, 10*(8), 1530–1544. https://doi.org/10.1007/s12671-019-01104-y

David, A. S., Bedford, N., Wiffen, B., & Gilleen, J. (2012). Failures of metacognition and lack of insight in neuropsychiatric disorders. *Philosophical Transactions of the Royal Society B: Biological Sciences, 367*(1594), 1379–1390. https://doi.org/10.1098/rstb.2012.0002

Deane, G., Miller, M., & Wilkinson, S. (2020). Losing ourselves: Active inference, depersonalization, and meditation. *Frontiers in Psychology, 11*, Article 539726. https://doi.org/10.3389/fpsyg.2020.539726

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276–302. https://doi.org/10.1037/0033-2909.125.2.276

Ekici, Ç., Garip, G., & Van Gordon, W. (2020). The lived experiences of experienced Vipassana Mahasi meditators: An interpretative phenomenological analysis. *Mindfulness, 11*(1), 140–152. https://doi.org/10.1007/s12671-018-1063-4

Farb, N. A. S., Segal, Z. V., Mayberg, H., Bean, J., McKeon, D., Fatima, Z., & Anderson, A. K. (2007). Attending to the present: Mindfulness meditation reveals distinct neural modes of self-reference. *Social Cognitive and Affective Neuroscience, 2*(4), 313–322. https://doi.org/10.1093/scan/nsm030

Farias, M., Maraldi, E., Wallenkampf, K., & Lucchetti, G. (2020). Adverse events in meditation practices and meditation-based therapies: A systematic review. *Acta Psychiatrica Scandinavica, 142*(5), 374–393. https://doi.org/10.1111/acps.13225

Frank, P., & Marken, M. (2022). Developments in qualitative mindfulness practice research: A pilot scoping review. *Mindfulness, 13*(1), 17–36. https://doi.org/10.1007/s12671-021-01748-9

Galante, J., Friedrich, C., Dawson, A. F., Modrego-Alarcón, M., Gebbing, P., Delgado-Suárez, I., Gupta, R., Dean, L., Dalgleish, T., White, I. R., & Jones, P. B. (2021). Mindfulness-based programmes for mental health promotion in adults in nonclinical settings: A systematic review and meta-analysis of randomised controlled trials. *PLoS Medicine, 18*(1), Article e1003481. https://doi.org/10.1371/journal.pmed.1003481

Gallagher, S., Raffone, A., Berkovich-Ohana, A., Barendregt, H. P., Bauer, P. R., Brown, K. W., Giommi, F., Nyklíček, I., Ostafin, B. D., Slagter, H., Trautwein, F.-M., & Vago, D. R. (2024). The self-pattern and Buddhist psychology. *Mindfulness, 15*(4), 795–803. https://doi.org/10.1007/s12671-023-02118-3

Garland, E. L., & Fredrickson, B. L. (2019). Positive psychological states in the arc from mindfulness to self-transcendence: Extensions of the mindfulness-to-meaning theory and applications to addiction and chronic pain treatment. *Current Opinion in Psychology, 28*, 184–191. https://doi.org/10.1016/j.copsyc.2019.01.004

Gibson, J. J. (2014). *The ecological approach to visual perception: Classic edition*. Psychology Press. (Original work published 1979)

Gibson, J. E. (2024). Meditation and interoception: A conceptual framework for the narrative and experiential self. *Frontiers in Psychology, 15*, Article 1393969. https://doi.org/10.3389/fpsyg.2024.1393969

Haggard, P. (2017). Sense of agency in the human brain. *Nature Reviews Neuroscience, 18*(4), 196–207. https://doi.org/10.1038/nrn.2017.14

Halloran, E. C. (2024). Adult development and associated health risks. *Journal of Patient-Centered Research and Reviews, 11*(1), 63–67. https://doi.org/10.17294/2330-0698.2050

Hanley, A. W., Dambrun, M., & Garland, E. L. (2020). Effects of mindfulness meditation on self-transcendent states: Perceived body boundaries and spatial frames of reference. *Mindfulness, 11*(5), 1194–1203. https://doi.org/10.1007/s12671-020-01330-9

Jönhagen, E., Wood, T., Niemi, M., & Galante, J. (2024). Mindfulness teacher trainees' experiences (MTTE): An investigation of intense experiences in mindfulness-based interventions. *PLoS ONE, 19*(4), Article e0301593. https://doi.org/10.1371/journal.pone.0301593

Jost, J. T., Ledgerwood, A., & Hardin, C. D. (2008). Shared reality, system justification, and the relational basis of ideological beliefs. *Social and Personality Psychology Compass, 2*(1), 171–186. https://doi.org/10.1111/j.1751-9004.2007.00056.x

Kirberg, M., & Chadha, M. (2024). Depersonalization, meditation, and the experience of (no-) self. *Journal of Consciousness Studies, 31*(5–6), 151–177.

Kirmayer, L. J. (2025). The place of the social in psychiatry: From structural determinants to the ecology of mind. *Social Psychiatry and Psychiatric Epidemiology*. https://doi.org/10.1007/s00127-024-02772-5

Kirmayer, L. J., Gómez-Carrillo, A., Langlois-Thérien, T., Ramstead, M. J. D., & Gold, I. (2020). Culture, self, and agency: An ecosocial view. In L. J. Kirmayer, C. M. Worthman, S. Kitayama, R. Lemelson, & C. Cummings (Eds.), *Culture, Mind, and Brain* (1st ed., pp. 244–272). Cambridge University Press. https://doi.org/10.1017/9781108695374.012

Koltko-Rivera, M. E. (2004). The psychology of worldviews. *Review of General Psychology, 8*(1), 3–58. https://doi.org/10.1037/1089-2680.8.1.3

Laska, K. M., Gurman, A. S., & Wampold, B. E. (2014). Expanding the lens of evidence-based practice in psychotherapy: A common factors perspective. *Psychotherapy, 51*(4), 467–481. https://doi.org/10.1037/a0034332

Lawrence, O. E., Soylemez, K. K., Lusher, J., & Carretero-Resino, A. M. (2024). An interpretative phenomenological analysis of daily meditation and its impact on one's sense of self. *World Journal of Advanced Research and Reviews, 22*(3), 1810–1821. https://doi.org/10.30574/wjarr.2024.22.3.1958

Lindahl, J. R., & Britton, W. B. (2019). "I have this feeling of not really being here": Buddhist meditation and changes in sense of self. *Journal of Consciousness Studies, 26*(7–8), 157–183.

Lindahl, J. R., Britton, W. B., Cooper, D. J., & Kirmayer, L. J. (2021). Challenging and adverse meditation experiences: Toward a person-centered approach. In M. Farias, D. Brazier, & M. Lalljee (Eds.), *The Oxford Handbook of Meditation* (pp. 841–864). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780198808640.013.51

Lindahl, J. R., Cooper, D. J., Fisher, N. E., Kirmayer, L. J., & Britton, W. B. (2020). Progress or pathology? Differential diagnosis and intervention criteria for meditation-related challenges: Perspectives from Buddhist meditation teachers and practitioners. *Frontiers in Psychology, 11*, Article 1905. https://doi.org/10.3389/fpsyg.2020.01905

Lindahl, J. R., Fisher, N. E., Cooper, D. J., Rosen, R. K., & Britton, W. B. (2017). The varieties of contemplative experience: A mixed-methods study of meditation-related challenges in Western Buddhists. *PLoS ONE, 12*(5), Article e0176239. https://doi.org/10.1371/journal.pone.0176239

Lindahl, J. R., Palitsky, R., Cooper, D. J., & Britton, W. B. (2023). The roles and impacts of worldviews in the context of

meditation-related challenges. *Transcultural Psychiatry, 60*, 637–650. https://doi.org/10.1177/13634615221128679
Lindström, L., Kajonius, P., & Cardeña, E. (2022). Dissolution of what? The self lost in self-transcendent experiences. *Journal of Consciousness Studies, 29*(5), 75–101. https://doi.org/10.53765/20512201.29.5.075
MacKenzie, M. (2022). Meditative experience and the plasticity of self-experience. In J. H. Davis (Ed.), *Routledge Handbook on the Philosophy of Meditation* (pp. 241–255). Routledge. https://doi.org/10.4324/9781003127253-19
McMahan, D. L. (2023). *Rethinking meditation: Buddhist meditative practice in ancient and modern worlds*. Oxford University Press.
Moore, C., & Barresi, J. (2017). The role of second-person information in the development of social understanding. *Frontiers in Psychology, 8*, 1667. https://doi.org/10.3389/fpsyg.2017.01667
Morse, J. M. (2015). Critical analysis of strategies for determining rigor in qualitative inquiry. *Qualitative Health Research, 25*(9), 1212–1222. https://doi.org/10.1177/1049732315588501
Nave, O., Trautwein, F.-M., Ataria, Y., Dor-Ziderman, Y., Schweitzer, Y., Fulder, S., & Berkovich-Ohana, A. (2021). Self-boundary dissolution in meditation: A phenomenological investigation. *Brain Sciences, 11*(6), Article 819. https://doi.org/10.3390/brainsci11060819
Nezlek, J. B., & Plesko, R. M. (2001). Day-to-day relationships among self-concept clarity, self-esteem, daily events, and mood. *Personality and Social Psychology Bulletin, 27*(2), 201–211. https://doi.org/10.1177/0146167201272006
Palitsky, R., Cooper, D. J., Lindahl, J. R., & Britton, W. B. (2023). Relationships between religious and scientific worldviews in the narratives of western Buddhists reporting meditation-related challenges. *Journal of Contemplative Studies*, 1–28. https://doi.org/10.57010/GDCW6138
Palmer, T., Kadri, K., Fakra, E., Scholl, J., & Fouragnan, E. (2024). Differential relationship between meditation methods and psychotic-like and mystical experiences. *PLOS ONE, 19*(12), Article e0309357. https://doi.org/10.1371/journal.pone.0309357
Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin, 136*(2), 257–301. https://doi.org/10.1037/a0018301
Paul, L. A. (2014). *Transformative experience*. Oxford University Press.
Poletti, S., Bauer, P., & Lutz, A. (2024). Worldviews from within: A qualitative investigation of metaphysical and ethical beliefs among European long-term Buddhist practitioners and novice mindfulness practitioners. *Mindfulness, 15*, 2647–2667. https://doi.org/10.1007/s12671-024-02448-w
Popova, Y. B., & Rączaszek-Leonardi, J. (2020). Enactivism and ecological psychology: The role of bodily experience in agency. *Frontiers in Psychology, 11*, Article 539841. https://doi.org/10.3389/fpsyg.2020.539841
Schlosser, M., Sparby, T., Vörös, S., Jones, R., & Marchant, N. L. (2019). Unpleasant meditation-related experiences in regular meditators: Prevalence, predictors, and conceptual considerations. *PLOS ONE, 14*(5), Article e0216643. https://doi.org/10.1371/journal.pone.0216643
Sheldon, K. M., Ryan, R. M., Rawsthorne, L. J., & Ilardi, B. (1997). Trait self and true self: Cross-role variation in the Big-Five personality traits and its relations with psychological authenticity and subjective well-being. *Journal of Personality and Social Psychology, 73*(6), 1380–1393. https://doi.org/10.1037/0022-3514.73.6.1380
Smith, J. A., & Fieldsend, M. (2021). Interpretative Phenomenological Analysis. In P. M. Camic (Ed.), *Qualitative research in psychology: Expanding perspectives in methodology and design* (2nd ed., pp. 147–166). American Psychological Association. https://doi.org/10.1037/0000252-008
Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretative Phenomenological Analysis: Theory, method and research*. SAGE.
Smith, J. A., Larkin, M., & Flowers, P. (2021). *Interpretative Phenomenological Analysis: Theory, method and research* (2nd ed.). SAGE.
Sparby, T., & Sacchet, M. D. (2025). The third wave of meditation and mindfulness research and implications for challenging experiences: Negative effects, transformative psychological growth, and forms of happiness. *Mindfulness, 16*(8), 2156–2170. https://doi.org/10.1007/s12671-025-02607-7
Spittles, B. (2025). The humanistic and transpersonal origins of the diagnostic and statistical manual's religious or spiritual problem category. *Journal of Humanistic Psychology*, 00221678251377123. https://doi.org/10.1177/00221678251377123
Tavakol, M., & Sandars, J. (2025). Twelve tips for using phenomenology as a qualitative research approach in health professions education. *Medical Teacher, 47*(9), 1441–1446. https://doi.org/10.1080/0142159X.2025.2478871
Taves, A. (2020). Mystical and other alterations in sense of self: An expanded framework for studying nonordinary experiences. *Perspectives on Psychological Science, 15*(3), 669–690. https://doi.org/10.1177/1745691619895047
Taves, A., & Asprem, E. (2017). Experience as event: Event cognition and the study of (religious) experiences. *Religion, Brain & Behavior, 7*(1), 43–62. https://doi.org/10.1080/2153599X.2016.1150327
Taves, A., Asprem, E., & Ihm, E. (2018). Psychology, meaning making, and the study of worldviews: Beyond religion and non-religion. *Psychology of Religion and Spirituality, 10*(3), 207–217. https://doi.org/10.1037/rel0000201
Taves, A., & Paloutzian, R. F. (2022). Believing and appraising in context: Cognizing experiences as events. *Frontiers in Psychology, 13*, Article 913603. https://doi.org/10.3389/fpsyg.2022.913603
Thompson, E. (2010). *Mind in life: Biology, phenomenology, and the sciences of mind*. Harvard University Press.
Thompson, E., & Cosmelli, D. (2011). Brain in a vat or body in a world? Brainbound versus enactive views of experience. *Philosophical Topics, 39*(1), 163–180. https://doi.org/10.5840/philtopics201139119
Trungpa, C. (2005). *The sanity we are born with: A Buddhist approach to psychology*. Shambhala Publications.
Vago, D. R., & Silbersweig, D. A. (2012). Self-awareness, self-regulation, and self-transcendence (S-ART): A framework for understanding the neurobiological mechanisms of mindfulness. *Frontiers in Human Neuroscience, 6*, 296. https://doi.org/10.3389/fnhum.2012.00296
Van Dam, N. T., Targett, J., Burger, A., Davies, J. N., & Galante, J. (2024). Development and validation of the inventory of meditation experiences (IME). *Mindfulness, 15*(6), 1429–1442. https://doi.org/10.1007/s12671-024-02384-9
Varela, F. J., Thompson, E., & Rosch, E. (2017). *The embodied mind, revised edition: Cognitive science and human experience*. MIT Press.
Wilshire, C. (2017). The problem of bias in behavioural intervention studies: Lessons from the PACE trial. *Journal of Health Psychology, 22*(9), 1128–1133. https://doi.org/10.1177/1359105317700885
Yaden, D. B., Haidt, J., Hood, R. W., Vago, D. R., & Newberg, A. B. (2017). The varieties of self-transcendent experience. *Review of General Psychology, 21*(2), 143–160. https://doi.org/10.1037/gpr0000102

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