



Subjective Experiences of Committed Meditators Across Practices Aiming for Contentless States

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Accepted: 9 May 2023 / Published online: 22 June 2023
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Abstract

Objectives Contentless experience involves an absence of mental content such as thoughts and perceptions. It is often described as *pure consciousness* or complete stillness/silence, and is a goal in Shamatha, Thai Forest, and Stillness Meditation. This study examined the subjective character of the deepest experience of stillness/silence typically reported in each practice, and whether there are differences in reports across traditions.

Method Eighty-four Shamatha, 80 Thai Forest, and 88 Stillness Meditation participants (*M* lifetime hours practice = 2305; median = 671; range = 5–34,021) provided usable responses to an online questionnaire. Participants were presented with 48 types of mental content described as absent or present in traditional texts, including well-recognized forms of content such as thoughts and perceptions, and less obvious forms—referred to in this paper as abstract content—such as wakefulness, naturalness, calm, bliss/joy, and freedom. Participants indicated the extent to which each type of content was part of their deepest experience of stillness/silence during a specific retreat or during class and home practice.

Results In each tradition, participants typically reported a highly positive experience involving low awareness of content such as thoughts and perceptions, and a high degree of abstract content such as calm and mental relaxation. Across the practices, there were robust differences with respect to bliss/joy, wakefulness, absorptiveness, and depth.

Conclusions The reported experiences are contentless in the sense that participants reported little awareness of content such as thoughts and perceptions. However, the experiences are not the states devoid of all content (and therefore identical to one another) that have been classically referred to in academic literature. These findings demonstrate the importance of examining contentless experiences in a fine-grained manner that takes into account abstract forms of content and assesses differences as well as similarities.

Keywords Meditation · Consciousness · Pure consciousness · Stillness · Silence · Phenomenology

Meditation has been examined at length in major scientific disciplines including neuroscience, and cognitive and clinical psychology. There is, however, a paucity of scientific work dedicated to investigating and describing individuals'

subjective experience (e.g., Abdoun et al., 2019; Gamma & Metzinger, 2021; Louchakova-Schwartz, 2013; Lutz et al., 2015; Nave et al., 2021; Petitmengin et al., 2019; Przyrembel & Singer, 2018). In both the meditation context and more generally, the field of research focused on subjective experience is not as well established as the mainstream disciplines, but it is vital to progress in each of them (Bitbol & Petitmengin, 2013; Schwitzgebel, 2008; Thompson, 2008). For example, a major project in neuroscience is identifying the neural correlates of consciousness. Determining the brain activity associated with specific forms of consciousness depends on having detailed and reliable descriptions of the relevant subjective experience. The importance of rigorous investigations into subjective experience has been recognized through the development of neurophenomenology, the scientific discipline concerned with integrating

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such investigations with neuroscience, and cognitive science more broadly, in order to advance those fields (Lutz & Thompson, 2003; Varela, 1996; for recent examples in the meditation context, see Aboun et al., 2019; Nave et al., 2021; Przyrembel & Singer, 2018).

One experience in meditation that stands out for investigation is “contentless” experience, in which mental content such as thought, sense-perception, body-perception, and mental imagery is absent (Forman, 1990b; Shear, 2006; Stace, 1961). Meditators typically describe this as an experience of complete stillness or silence (Brahm, 2014; McKinnon, 2011; Meares, 1986; Wallace, 2011b; for reviews see Woods et al., 2020, 2022a, 2022b). Contentless experience is interesting from a range of perspectives: a consciousness perspective, in that it has been treated as *pure consciousness* or *consciousness as such* (Metzinger, 2020a, 2022); a cognitive perspective, in that it does not involve thoughts, perceptions, or mental images and therefore seems very different to most normal waking experience (Woods et al., 2022a); a meditation perspective, in that it is a goal of many meditation practices (Forman, 1990b; Shear, 2006); and a clinical perspective, in that the meditation traditions associate it with improvements to mental and physical health (Pearson, 2013, pp. 399–425; Shear, 1990b). The experience has been the subject of recent discussions and analyses in cognitive science and philosophy, but empirical work in this area has been scarce (Costines et al., 2021; Gamma & Metzinger, 2021; Josipovic & Miskovic, 2020; Metzinger, 2020a; Millière et al., 2018; Millière, 2020).

Meditation practices said to lead to contentless experience include the Shamatha meditation focused on by Alan Wallace (Wallace, 2006), Thai Forest breath meditation as described by Ajahn Brahm (Brahm, 2014), and Stillness Meditation as developed by Ainslie Meares (McKinnon, 2016; Meares, 1968). The Shamatha and Thai Forest meditations are classic Buddhist practices. The Shamatha practice is from Tibetan Buddhism and the Thai Forest practice is from Theravada Buddhism (Brahm, 2014; Wallace, 2006). Stillness Meditation is a secular practice that was designed in the 1960s for the treatment of anxiety and pain (Meares, 1968, 1969). Stillness Meditation is interesting because the technique clearly contrasts with classic practices like Shamatha and Thai Forest.

In Shamatha and Thai Forest, the meditator practises focusing their attention on a meditation object (Brahm, 2014; Wallace, 2006; for review see Woods et al., 2022b). At a very advanced stage, where they can maintain “perfect,” or near perfect, focus on the object for long periods, they release the object (Shamatha) or it spontaneously disappears from consciousness (Thai Forest). Stillness Meditation does not involve a meditation object. The meditator simply gives up the effort of *doing* anything, other than maintaining the

meditation posture (McKinnon, 2011, 2016; Meares, 1986; for review see Woods et al., 2022b).

We will refer to the experience that is aimed for in a practice as a “goal-state.” In the main strand of academic literature on contentless states, goal-states like those in Shamatha, Thai Forest, and Stillness Meditation have been treated as contentless experience, and this experience is described as having no content (e.g., Fasching, 2008; Forman, 2011; Shear, 1999; Stace, 1961; see further Woods et al., 2022a). In his foundational text, W. T. Stace (1961, p. 86) stated that, “There [is] no mental content whatever but rather a complete emptiness, vacuum, void.” Robert Forman described the experience as involving “the barest being conscious” (Forman, 1999, p. 132) and as a virtual or complete blankness (1986, p. 49, 1998, p. 7), and said that afterwards, “One just knows that one wasn’t ‘gone’, dead, blacked out” (Forman, 1998, p. 7). Jonathan Shear (1990a, p. 396) stated that the “defining characteristic” of the experience is that “it is completely devoid of all empirical qualities and content – including even abstract contents such as blissfulness, ‘the divine’, etc.” Academics have frequently argued or assumed that, since contentless experiences have no content, there is nothing to differentiate them and they are therefore identical: An individual may have the experience at different time points, or different individuals may have the experience, but in each case what it is like to have the experience is the same (Almond, 1982; Bernhardt, 1990; Bucknell, 1989a, 1989b; Forman, 1990a; Shear, 1990b). From these understandings, it follows that the goal-states in Shamatha, Thai Forest, and Stillness Meditation are identical experiences lacking all content.

Texts from within the meditation traditions (e.g., Brahm, 2014; Meares, 1986; Wallace, 2006) provide a different picture. Careful analysis of these texts has indicated that in many and perhaps most meditation practices, including Shamatha, Thai Forest, and Stillness Meditation, the so-called contentless goal-states involve numerous forms of abstract content such as wakefulness, naturalness, calm, bliss/joy, and freedom (Brahm, 2014; Woods et al., 2022a). The expression “abstract content” is not a technical or precisely defined term. We use it in this manuscript simply as a way to distinguish content such as wakefulness, naturalness, etc., from more obvious or well-recognized forms of content such as thoughts, perceptions, and mental images. Unlike in some other contexts (e.g., Laukkonen & Slagter, 2021), the term abstract does not refer to thoughts or concepts increasingly generalized or removed from some basic and underlying sensory representation or experience.

As the analysis of the traditional texts has indicated that the Shamatha, Thai Forest, and Stillness Meditation goal-states involve numerous forms of abstract content, it has suggested that the goal-states in the practices are not truly contentless. The analysis has indicated that the goal-states are contentless in the more limited sense of lacking

well-recognized forms of content such as thoughts, perceptions, and mental images. Analysis of the traditional texts has also pointed to possible differences in the contentless goal-states across the practices. Most features of the goal-states are reported or implied in the traditional texts in all three practices, however the precise nature and level/degree of those features may vary.

What does one find if they take a sample of meditators in each of the three traditions and gather and analyze reports of their experiences using scientific method? Do meditators report that all or virtually all content is absent, as per the classical academic understanding of the contentless goal-states? Do they report that content such as thoughts and perceptions is absent but that abstract content is present, as per the understanding in the meditation traditions? Or is it the case that both these forms of contentless experience are just some distant ideal, far removed from anything meditators actually report? A further question concerns differences in the reports across the practices. Are there differences, and if so do they fit with what we understand about the meditation techniques?

The present study addresses these questions. To our knowledge, it is the first participant-based research comparing experiences reported in the three practices, or any pairing of them. Using a structured questionnaire participants reported their deepest experience of stillness/silence during a retreat (Shamatha and Thai Forest) or during class and home practice over a 7-day period (Stillness Meditation). The study investigates the subjective character of the typical experience reported in each practice, and determines whether there are differences in the reported experiences across the three traditions. The study examines meditators as they actually do the practices, rather than modifying the techniques or meditators' practice regimens for the purposes of the research.

Experiences of stillness/silence in meditation are not all contentless. Meditators can have experiences of stillness/silence where content such as thought and perception remains present (Fontana, 2010; Gawler & Bedson, 2011; Wallace, 2014a). In this study, we deliberately focused on participants' experiences of stillness/silence rather than asking them directly whether they had a contentless experience. One reason for this is that participants might not know what the term contentless experience means. That term is used to describe the relevant experience in the academic literature, but in the meditation traditions the experience is often referred to in other ways, for example as a stillness/silence without thoughts and perceptions. A second reason for not asking participants directly whether they had a contentless experience is that doing this might prime or tempt them to answer yes and then confabulate such an experience.

Inquiring about participants' deepest experience of stillness/silence is a more open approach than asking about

contentless experience specifically, and it left participants free to report experiences *with* content such as thought and perception, or experiences *without* such content. In the traditional texts on Shamatha, Thai Forest, and Stillness Meditation, contentless states are described as experiences of stillness/silence, and are presented as the deepest experiences in the practices, or the deepest forms of stillness/silence (e.g., Brahm, 2014; Meares, 1986; Wallace, 2006). On this basis we reasoned that if participants had contentless experiences in their practice, they would be likely to report them when asked to describe their deepest experience of stillness/silence.

Head-to-head comparisons of different types of meditation remain relatively rare in meditation research (Goldberg et al., 2017; Kok & Singer, 2017). More commonly, a single form of meditation is compared to passive control condition/s or to non-meditation active control/s. In the present study each practice is an active control with respect to the other practices. This is aimed at reducing discrepancies across conditions in non-specific factors such as being subject to an intervention; undertaking "meditation"; having positive expectations; having particular social desirability, investment, and aspirational biases; and having a well-qualified, enthusiastic, and supportive teacher.

Method

Participants

Participants were 88 Shamatha, 86 Thai Forest, and 89 Stillness Meditation practitioners who completed the questionnaire. Eligibility criteria were that meditators (a) were aged 18 or over and living in Australia on an ongoing basis; (b) had attended one of the selected retreats (Shamatha or Thai Forest) or classes (Stillness Meditation) in the previous 2 weeks; and (c) had spent at least 9 hrs at the retreat, or in Stillness Meditation classes leading up to the questionnaire (for accredited Stillness Meditation teachers this was reduced to 6 hrs to fit with accreditation procedures). The majority of Stillness Meditation participants satisfied the third criterion by attending one 50-min class each week for 11 weeks. Meditators in each practice were invited to participate in the study via information sheets distributed by teachers or organizers of the retreats or classes.

Participants were excluded from data-analyses if they (a) indicated they had no relevant experience that they could meaningfully report on; (b) departed from the instructions by focusing on an experience outside of their formal practice in the applicable period; or (c) were suspected of having responded in a non-genuine manner.

In each practice, participants were committed practitioners with varying levels of experience. Participants'

commitment to practising and to the particular tradition was reflected in their practising in the period targeted in the research, practising within the tradition (i.e., with an appropriate teacher, in the right environment, following traditional guidelines, etc.), and in most cases having done a substantial amount of meditation practice in the past. The commitment arose independently of the research. This contrasts with, for example, meditation studies involving undergraduate or other participants who undertake a particular practice merely because they have been allocated to that group.

Retreats and Classes

In Shamatha and Thai Forest, retreats are considered the optimal environment for practising (Amaro, 2021; Wallace, 2014a). Stillness Meditation does not involve retreats: Meditators do not join together under supervision of a teacher to undertake a series of meditation sessions over the course of a single day or multiple days. In the initial learning phase in Stillness Meditation, meditators typically attend one 50-min class per week. At more advanced levels, they may attend less frequently. On days that meditators do not attend a class, they are encouraged to do home practice. Practising in a class is said to lead to a deeper experience, but home practice is still regarded as important (McKinnon, 2011; Meares, 1986).

The retreats and classes for the present study were conducted in Australia and were organized independently of the research. Attendance at specific retreats and classes ensured participants received high-quality instruction, guidance, and support concerning the meditation techniques, and provided confidence they were actually practising during the period of interest. The retreats and classes were conducted by leading teachers whose approaches are regarded as exemplars within the traditions. This avoided idiosyncratic contributions of teachers who are less central within the traditions—for example, presentations of the meditation techniques that are substantially different to the primary forms and which have been derived based on the teacher's personal views and preferences. All teachers had more than 10 years' experience as a teacher of the target practice.

Shamatha participants were recruited from three Shamatha retreats, and Thai Forest participants from four Thai Forest retreats. Retreats ran for between 5 and 10 days. The number of days and other basic information for individual retreats are provided in Table S1 in the Supplementary Information. The Shamatha retreats were identified by the first author (TW) and fifth author (NVD) based on background knowledge and consultation with retreat organizers. The Thai Forest retreats and Stillness

Meditation classes were identified by LB (the third author) and TW respectively. LB and TW personally practise the respective techniques.

Procedure

The questionnaire was administered via the Web-based platform, Qualtrics. Participants were sent a link to the questionnaire once they had finished their retreat (Shamatha and Thai Forest) or had satisfied the requirement above concerning hours attending classes (Stillness Meditation). They were asked to complete the questionnaire at their earliest convenience, and were sent reminders at 3- or 4-day intervals if required. On average, Shamatha and Thai Forest participants completed the questionnaire 3 days after the end of their retreat. Stillness Meditation participants completed it on average 5 days after their most recent class. Most Stillness Meditation participants undertook at least some home practice in the interval between their most recent class and completing the questionnaire.

Participants were reimbursed via a drawing to receive one of ten AUD100 gift vouchers. Retreat and class teachers were informed that the study was about experiences of stillness in meditation, but they were otherwise blind to the content of the questionnaire.

Measures

Demographics and Reasons for Practising

Participants provided demographic information and indicated their reasons for attending the retreat or practising Stillness Meditation (as applicable). They provided *Yes/No* responses to indicate whether they were attending/practising to reduce psychological symptoms, improve mental well-being, achieve spiritual growth or enlightenment, improve relationships, or cope with life events.

Practice History

Participants were asked various questions about their practice history. These included questions about frequency of practice, length of sessions, and days on retreat. The relevant questions and the response options are set out in Table S2 in the Supplementary Information.

Stillness or Silence

Participants were asked whether they had “any experience of mental stillness or silence” in their target practice in the target period. For Shamatha and Thai Forest participants the target period was the time spent at the retreat, and for Stillness Meditation participants it was the 7 days prior to

completing the questionnaire. If a participant answered Yes, the questions below were about their “deepest experience of stillness/silence” (selected by the participant) in their target practice in the target period. If they answered No or “I don’t remember or can’t say,” the questions were about their “deepest experience” (selected by the participant) in their target practice in the target period.

Dimensional Items

Participants were presented with the 48 items in Table 1. Each item is a type of mental content that the traditional texts report or imply is present in the goal-states in all three practices, or absent in the goal-states in all three practices (see Table S3 in the Supplementary Information for nuances and qualifications with respect to particular items). The 48 items can also be construed as dimensions of the goal-states, and we will therefore refer to them as the “dimensional items.” Participants indicated what awareness they had,

during the experience, of each of items 1–9 (e.g., *thoughts, emotions*). They then indicated the extent to which the experience involved each of items 10–38 (e.g., *stillness, silence*), and the extent to which the experience was items 39–48 (e.g., *vivid, deep*). For each of the 48 items, participants entered their ratings on a 7-point scale ranging from 1 (*No/none*) to 7 (*Very high*). Participants could alternatively respond “I don’t remember or can’t say.”

Foil Items

Participants responded on the same scale to three items devised by the research team: vividly perceiving all parts of your body at the same time, highly rational thinking, and progressing into more and more complex states. These items sound positive, or like advanced meditation experiences, but according to the traditional texts they are not part of the goal-state/s. In this paper, they are referred to as “foil” items because they were designed to catch or identify a certain

Table 1 Dimensional items

No.	Dimensional item	No.	Dimensional item
1	Thoughts	25	Happiness
2	Emotions	26	Relinquishing control
3	Images	27	Non-doing
4	Memories	28	Pure being, with a complete absence of doing
5	Things around you (e.g., sounds)	29	Effort
6	Your body	30	Losing your normal ego/self by becoming fully absorbed in the experience
7	Your breath	31	Reaching a ground state of the mind
8	Mental activity	32	Experiencing the essential nature of the mind
9	That you were having the experience	33	Experiencing the essence of knowledge or knowing
10	Stillness	34	A spiritual aspect
11	Silence	35	Inner security
12	Wakefulness	36	Inner freedom
13	Drowsiness	37	Timelessness
14	Clearness	38	A changed perception of time
15	Purity	39	Vivid
16	Simplicity	40	Deep
17	Naturalness	41	Profound
18	Calmness	42	Positive
19	Peacefulness	43	Negative
20	Ease	44	Good
21	Restfulness	45	Pleasant
22	Mental relaxation	46	Wonderful
23	Bliss	47	Beyond words/language
24	Joy	48	Difficult to describe to people who have not had [the experience]

The traditional texts indicate that items 1–9, 13, 29, and 43 are absent or virtually absent in the goal-states in each practice, and that the other 36 items are present (see Woods et al., 2022a, and Table S3 in the Supplementary Information). In the remainder of this paper, some of the 48 items will be abbreviated or paraphrased, rather than using the full wording. For clarity, item 9 (*that you were having the experience*) will be referred to as *awareness that I am having the experience*. The traditional texts indicate that during the goal-state/s the meditator does not have awareness that they are having the experience. The meditator is said to be so absorbed in the experience that it is only when they emerge from it that they recognize they have had it

type of non-genuine responding where participants simply endorse all items that sound positive or like advanced experiences. The foil items were interspersed with the dimensional items.

Proportion and Confidence

Participants were asked for what proportion of their total target practice in the target period they had the relevant experience (i.e., the experience they had described via the dimensional items). They responded on a scale ranging from 1 (*a very low proportion—5% or less*) to 6 (*a very high proportion—95 to 100%*). Participants were then asked, if they wished to access the experience again in their next session of the target practice, how confident they would be of being able to do so. They responded on a scale ranging from 1 (*no or almost no confidence*) to 5 (*total or almost total confidence*).

Data Analyses

Missing and anomalous data relating to the practice history variables were dealt with by applying the data-cleaning rules in the supplementary online material at <https://osf.io/kse3j/>. The rules were designed to provide a reasonable, systematic, and transparent approach: for example, imputing the mode in the relevant practice group where data was missing and imputation was appropriate.

The method for estimating participants' lifetime hours of meditation and other variables relating to past practice is provided in Section 4 of the Supplementary Information. The estimates are based principally on the practice history variables (see, similarly, Hasenkamp & Barsalou, 2012).

For some variables, there were a small number of univariate outliers ($|z| > 3.29$). These were truncated to the point where the z -scores equaled ± 3.29 (as applicable) (Field, 2018; Tabachnick & Fidell, 2013). Five univariate outliers for the item *negative* were excluded from analyses due to concerns about their reliability.

As some variables exhibited marked non-normality, non-parametric tests (Kruskal-Wallis) were used as the primary form of analysis for comparisons across practice groups. ANOVAs and ANCOVAs were conducted as secondary analyses. These were performed on the original variables (incorporating truncation), and/or, where appropriate, on transformed versions of the variables. Transformations were used to minimize non-normality and ensure that it was within reasonable bounds (Supplementary Information Section 5). Where non-parametric tests were used, we provide the mean

values (as opposed to mean rankings of values) for illustrative purposes. The false discovery rate method (Benjamini & Hochberg, 1995) was used to correct for multiple comparisons. All analyses were performed using SPSS Version 26 or 28.

Results

General

Four Shamatha, six Thai Forest, and one Stillness Meditation participant were excluded from analyses (see the "Method" section for the rationale). For the threshold question whether participants had experienced stillness/silence, 27 participants (10.7%) answered No or "I don't remember or can't say." In the dimensional items, each of those participants indicated that their deepest experience involved stillness/silence to some degree. On this basis, it was assumed that the deepest experience of these participants was the same as their deepest experience of stillness/silence. Across the 48 dimensional items, on average 4% of participants responded "I don't remember or can't say." Those responses were excluded from analyses. No correlations between dimensional items had Spearman's coefficient greater than 0.85, mitigating concerns that some items might be redundant. With the exception of the items *positive* and *pleasant* ($\rho = 0.82$), the correlations between dimensional items were all below 0.80. One participant did not answer several of the practice history questions, and 18 said they practised sporadically. Lifetime hours practice and related variables were not estimated for those 19 participants.

Group Characteristics

Kruskal-Wallis tests revealed significant differences across the practice groups for age and the eight main variables concerning past practice (Table 2). Findings for the key variables, lifetime hours practising some form of meditation and total hours of target practice in the target period, are also shown in Fig. 1.

Chi-square tests revealed significant differences across the practice groups for gender (% female in SH and SM > TF) and for the variable indicating whether participants had taught mindfulness meditation (Shamatha and Thai Forest) or Stillness Meditation (as applicable) in the past 2 years (% Yes in SH and TF > SM) (Table 3). Chi-square tests also revealed significant differences for three of the variables concerning reasons for practising (Fig. 2; Table S7 in Supplementary Information).

Table 2 Age and past practice—Kruskal–Wallis tests

Variable	Shamatha Meditation (SH)		Thai Forest Meditation (TF)		Stillness Meditation (SM)		p	Significant differences in post hoc comparisons ^a
	M	SD	M	SD	M	SD		
Age	54.35	12.03	46.95	12.62	56.31	13.79	<0.001*	SH and SM > TF
Months practised some form of meditation ^{b, d}	119.23	99.47	115.84	101.55	89.55	121.06	<0.001*	SH and TF > SM
Months practised mindfulness/SM ^{b, c, d}	97.80	81.19	107.25	99.96	53.79	72.11	<0.001*	SH and TF > SM
Hours of non-retreat practice per month ^d	20.52	24.72	19.88	19.73	10.08	7.53	<0.001*	SH and TF > SM
Lifetime hours of retreat practice ^d	213.46	278.09	292.93	308.73	9.46	33.09	<0.001*	SH and TF > SM
Lifetime hours practising some form of meditation ^d	3468.14	7130.41	3071.64	4458.20	1081.77	1762.94	<0.001*	SH and TF > SM
Lifetime hours practising mindfulness/SM ^{c, d}	2438.75	4302.53	2960.94	4462.43	652.28	1095.20	<0.001*	SH and TF > SM
Hours of target practice each day in the target period	1.23	1.33	5.00	0.00 ^e	0.31	0.26	<0.001*	SH > SM; TF > SM; TF > SH
Total hours of target practice in the target period	8.90	9.57	39.00	10.54	2.19	1.84	<0.001*	SH > SM; TF > SM; TF > SH

For age, *n* = 84, 79, and 87 for the three groups respectively. For the next six variables, *n* = 76, 72, and 85. For the final two variables, *n* = 84, 80, and 88

^aThe “greater than” sign indicates that in the post hoc comparison values were significantly higher in one group than another (*p* < 0.05)

^bExcluding gaps of one month or more

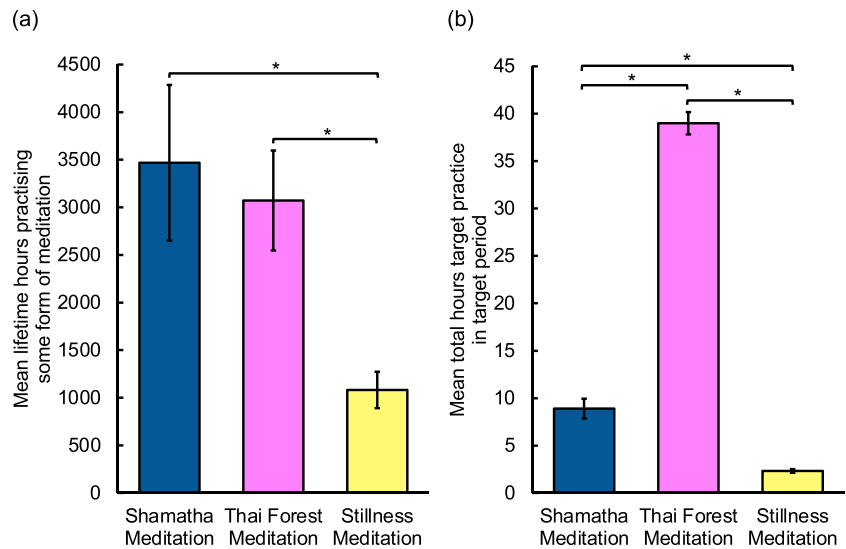
^cFor SH and TF participants, this variable relates to mindfulness meditation. For SM participants, it relates to SM

^dWith truncation of univariate outliers

^eSD = 0 for this group because the mean value of 5.00 was assumed for all participants (see the method for estimating lifetime hours practice and related variables in Section 4 of the Supplementary Information for further details)

* *p* < 0.05

Fig. 1 **a** Mean lifetime hours practising some form of meditation. **b** Mean hours of target practice in the target period. Error bars show standard error. * $p < .05$



Foil Items

In each practice, mean scores for the foil items were Low or close to Low. Figure 3 shows how they compare to the mean for the dimensional items that the traditional texts indicate are absent in the goal-states, and the mean for the dimensional items that the texts indicate are present in the goal-states (see Table S8 in Supplementary Information for full details).

Deepest Experience of Stillness/Silence

Experiential Profiles for Each Practice

Table 4 lists the 10 dimensional items with the lowest mean scores in each practice, and the 10 items with the highest mean scores. The table provides the experiential profiles for each practice, based on the participant reports and focusing on the most distinctive features (i.e., the items with lowest and highest scores). Nine of the 10 items with the lowest scores are the same in all three practices, although their exact rankings differ. The same applies for the 10 items with the highest scores.

Primary Comparisons Across Practice Groups

Kruskal-Wallis tests were used to compare scores across the practice groups for the 48 dimensional items and the proportion and confidence items. There were significant differences ($p < 0.05$) for 21 (43.8%) of the 48 dimensional items (Fig. 4). For 17 (81.0%) of the 21, the differences remained significant following the correction for multiple comparisons. For each of the remaining 27 dimensional items, there were no significant differences in scores across the practice groups (Fig. 5). For both the proportion and confidence items, there were significant differences that remained following the correction for multiple comparisons (Fig. 6).

Secondary Comparisons Across Practice Groups

ANOVAs were conducted for the 48 dimensional items and the proportion and confidence items (Table S13 in Supplementary Information). In the ANOVAs with non-normality

Table 3 Gender and teaching experience—Chi-square tests

Variable	Shamatha Meditation (SH)		Thai Forest Meditation (TF)		Stillness Meditation (SM)		<i>p</i>	Significant differences between individual groups ^a
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
Gender, female	84	73	80	55	88	78	0.003*	SH and SM > TF
Taught mindfulness/SM in the past 2 years, yes ^b	84	30	80	20	87	7	0.001*	SH and TF > SM

^aThe “greater than” sign indicates that in the post hoc comparison values were significantly higher in one group than another ($p < 0.05$)

^bFor SH and TF participants, this variable relates to mindfulness meditation. For SM participants, it relates to SM

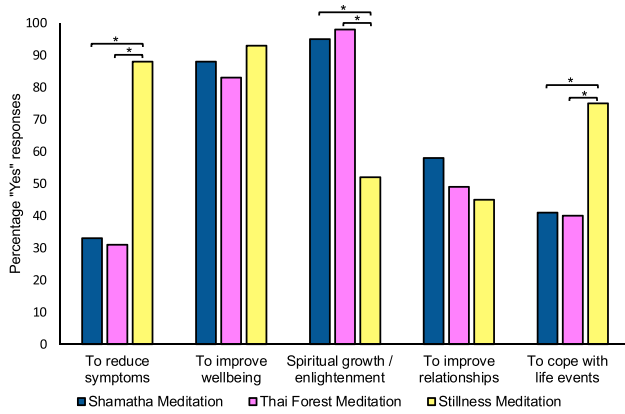


Fig. 2 Reasons for attending retreat or practising Stillness Meditation (as applicable). * $p < 0.05$

within reasonable bounds, significant differences that remained following the correction for multiple comparisons were found for 18 (94.7%) of the 19 items for which such differences had been identified in the Kruskal-Wallis tests. The pattern of differences (e.g., “SH and TF > SM”) was the same. For the 19th item (*ease*), the ANOVAs also revealed a significant difference with the same pattern as in the Kruskal-Wallis test (“SM > SH”), but the difference became non-significant following the correction for multiple comparisons.

Accounting for Past Practice

To determine whether between-practice differences in past practice could account for the differences in the Kruskal-Wallis tests, ANCOVAs were conducted using lifetime hours practising some form of meditation as the covariate. Lifetime hours could not be estimated for 19 participants (see above), so as a preliminary step ANOVAs were performed without those participants. The

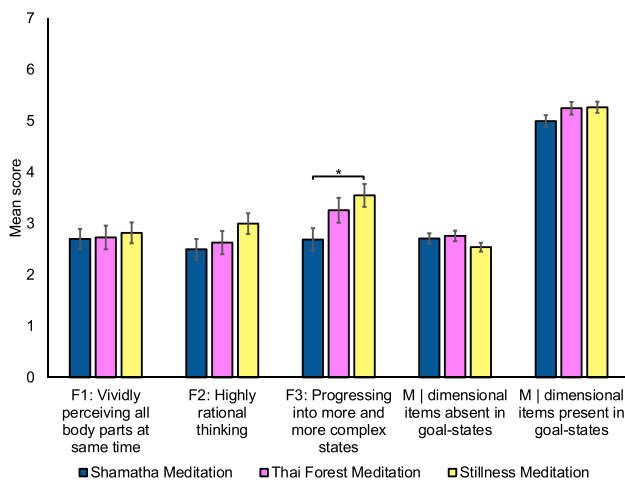


Fig. 3 Mean scores for the foil items and comparators. F1, F2, F3 = The three foil items. 1 = *No/none*, 2 = *Very low*, 3 = *Low*, 4 = *Lower-end-moderate*, 5 = *Higher-end-moderate*, 6 = *High*, 7 = *Very high*. Error bars show standard error. * $p < 0.05$

ANOVAs revealed significant differences that remained following the correction for multiple comparisons for 12 (24.0%) of the 50 items (Table S14 in Supplementary Information). The Kruskal-Wallis tests had also revealed significant differences that remained following the correction for multiple comparisons for these 12 items. For 11 of the items, the pattern of differences in those tests (e.g., “SH and TF > SM”) was the same. For the 12th item (*reaching a ground state of the mind*), the pattern was almost the same (Kruskal-Wallis test: “SM > SH and TF”; ANOVA: “SM > SH”, with “SM > TF” yielding $p = 0.052$).

The ANCOVAs were conducted on these 12 items (Table 5). When accounting for the covariate, significant differences following the correction for multiple comparisons remained for each item and the pattern of differences was the same as in the Kruskal-Wallis tests.

Accounting for Reasons for Practising

As indicated above, for three of the five reasons for practising variables (*to reduce psychological symptoms, spiritual growth/enlightenment, and to cope with life events*), there were significant differences between practice groups in the proportion of participants who answered Yes, that this was a reason for practising, as opposed to No. A final set of analyses was conducted to determine whether these between-practice differences in reasons for practising could account for the differences in the Kruskal-Wallis tests. Non-parametric tests (Mann-Whitney) were used to compare scores on each of the 50 items across the Yes/No reasons groups (collapsing across practice type) for the three reasons variables. Significant differences following the correction for multiple comparisons were found for six (31.6%) of the 19 items (*wakefulness, drowsiness, breath, awareness that I am having the experience, joy, vivid*) for which significant differences following the correction had been identified in the Kruskal-Wallis tests.

Estimated effect sizes (r) were determined for the difference across the practice groups and the difference across the Yes/No reasons groups (Table 6). For the first five of the six items, the difference across the practice groups (mean $r = 0.37$; range = 0.24–0.51) is greater than the difference across the reasons groups (mean $r = 0.23$; range = 0.18–0.32). For the sixth item (*vivid*), the difference across the reasons groups ($r = 0.29$) is greater than the difference across the practice groups (mean $r = 0.27$; range = 0.26–0.29).

Discussion

Contentless experience is commonly treated as *pure consciousness* or consciousness itself (e.g., Fasching, 2008; Forman, 1990b; Metzinger, 2020a; Stace, 1961). It is an important subject for cognitive science and philosophy, but is much in need of empirical research. In traditional texts, the experience is typically described as a complete

Table 4 10 items with lowest and highest mean scores in each practice

Shamatha Meditation				Thai Forest Meditation				Stillness Meditation			
Rank	Item	M	SD	Rank	Item	M	SD	Rank	Item	M	SD
Part A: 10 items with lowest mean scores in each practice											
1.	Negative	1.22	0.55	1.	Negative	1.21	0.52	1.	Negative	1.20	0.53
2.	Memories	1.95	1.08	2.	Drowsiness	1.93	1.39	2.	Memories	1.98	1.11
3.	Drowsiness	2.24	1.26	3.	Memories	1.94	1.23	3.	Images	2.26	1.45
4.	Emotions	2.41	1.43	4.	Effort	2.55	1.39	4.	Emotions	2.38	1.21
5.	Images	2.43	1.51	5.	Thoughts	2.60	1.59	5.	Things around you	2.45	1.19
6.	Thoughts	2.55	1.53	6.	Images	2.67	1.88	6.	Effort	2.51	1.44
7.	Things around you	2.75	1.40	7.	Emotions	2.88	1.84	7.	Breath	2.51	1.47
8.	Body	2.89	1.51	8.	Things around you	2.96	1.74	8.	Body	2.62	1.43
9.	Effort	2.89	1.55	9.	Body	3.03	1.71	9.	Mental activity	2.83	1.36
10.	Mental activity	2.90	1.65	10.	Mental activity	3.12	1.69	10.	Thoughts	2.87	1.35
Part B: 10 items with highest mean scores in each practice											
1.	Calmness	5.96	1.19	1.	Positive	5.95	1.22	1.	Stillness	6.21	1.01
2.	Positive	5.95	1.20	2.	Calmness	5.94	1.18	2.	Calmness	6.16	1.05
3.	Stillness	5.81	0.98	3.	Mental relaxation	5.85	1.26	3.	Mental relaxation	6.10	0.99
4.	Peacefulness	5.79	0.96	4.	Silence	5.81	1.26	4.	Positive	6.10	1.17
5.	Mental relaxation	5.76	0.98	5.	Stillness	5.79	1.17	5.	Good	6.09	1.19
6.	Pleasant	5.74	1.13	6.	Good	5.78	1.26	6.	Peacefulness	6.01	1.03
7.	Good	5.62	1.56	7.	Peacefulness	5.77	1.24	7.	Pleasant	6.00	1.28
8.	Ease	5.54	1.25	8.	Pleasant	5.77	1.25	8.	Ease	5.98	1.15
9.	Restfulness	5.35	1.49	9.	Ease	5.71	1.12	9.	Silence	5.92	1.29
10.	Silence	5.35	1.53	10.	Simplicity	5.63	1.31	10.	Restfulness	5.90	1.35

See Tables S9–11 in the Supplementary Information for *n* and truncation details. For Part A, items are ranked from lowest to highest based on mean score. If means were identical up to six decimal places, the item with the lowest *SD* is ranked higher. The only items which do not appear in Part A for all three practices are *drowsiness*, which appears only for Shamatha and Thai Forest, and *breath*, which appears only for Stillness Meditation. For Part B, items are ranked from highest to lowest based on mean score. If means were identical up to six decimal places, the item with the lowest *SD* is ranked higher. The only items which do not appear in Part B for all three practices are *restfulness*, which appears only for Shamatha and Stillness Meditation, and *simplicity*, which appears only for Thai Forest

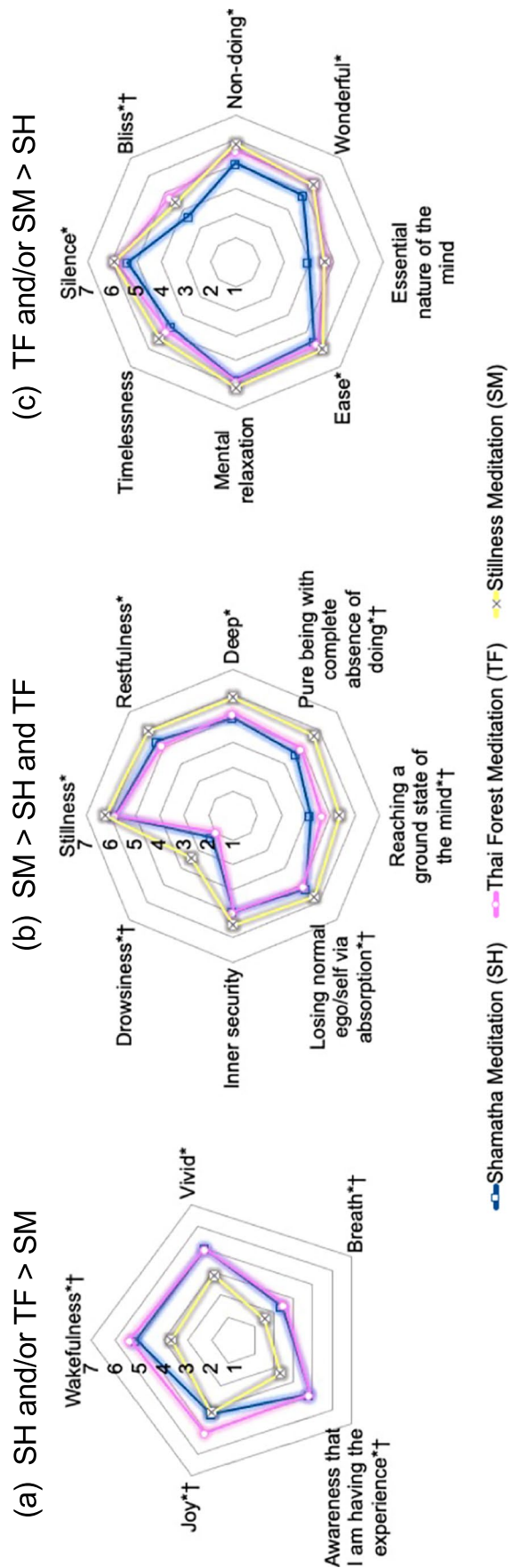


Fig. 4 Mean scores for dimensional items with significant differences. **a** Items for which Shamatha and/or Thai Forest scores are significantly higher than Stillness Meditation scores. For the item *joy*, Thai Forest scores are significantly higher than Shamatha and Stillness Meditation scores. For the other four items, Shamatha and Thai Forest scores are significantly higher than Stillness Meditation scores. **b** Items for which Stillness Meditation scores are significantly higher than Shamatha and Thai Forest scores. **c** Items for which Thai Forest and/or Stillness Meditation scores are significantly higher than Shamatha scores. For the items *ease*, *mental relaxation*, and *timelessness*, Stillness Meditation scores are significantly higher than Shamatha scores, and there are no significant differences with respect to Thai Forest. For the other five items, Thai Forest and Stillness Meditation scores are significantly higher than Shamatha scores. In each of the three panels, 1 = *No/none*, 2 = *Very low*, 3 = *Low*, 4 = *Lower-end-moderate*, 5 = *Higher-end-moderate*, 6 = *High*, and 7 = *Very high*. See Tables S9 and S10 in the Supplementary Information for *n*, *SD*, and *p* values, and truncation details. †Items which pass the additional analyses described in the “Accounting for past practice” and “Accounting for reasons for practising” sections. *Items for which difference remains significant ($p < 0.05$) when correcting for multiple comparisons

Fig. 5 Mean scores for dimensional items with no significant difference. The scale labels for numbers 1–7 are as for Fig. 4. To present the data clearly, the items have been ordered based on the lowest mean score for each item. For example, the lowest mean score for the item *negative* is 1.20 (Stillness Meditation). As that is the lowest of all the lowest mean scores for the 27 items, that item (*negative*) is placed at the top of the figure. The item *memories* has the next lowest of all the lowest mean scores (Thai Forest: 1.94), and it is therefore the next item to the right. See Table S11 in Supplementary Information for *n*, *SD*, and *p* values, and truncation details

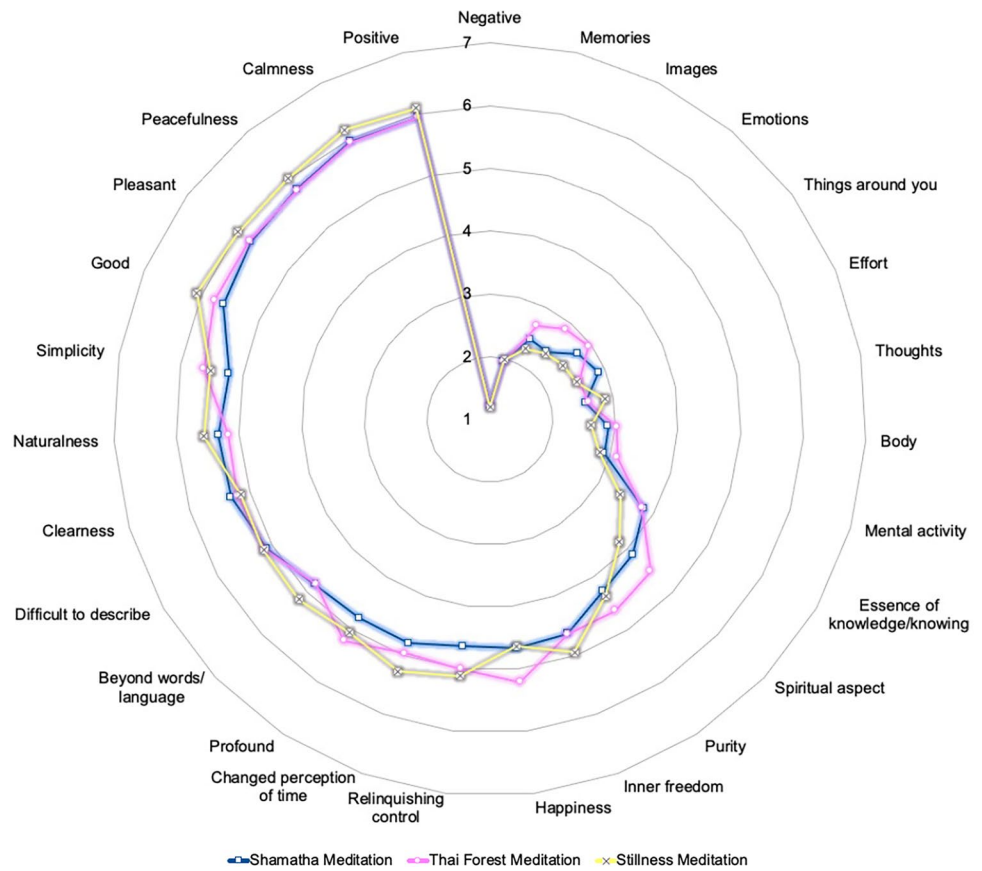


Fig. 6 Mean scores for the proportion and confidence items. For both items, Stillness Meditation scores are significantly higher than Shamatha and Thai Forest scores, even when correcting for multiple comparisons. For the proportion item, the mean scores are in the range covering 2 = *Low proportion* (5 to 25%), 3 = *Lower-end-moderate proportion* (25 to 50%), and 4 = *Higher-end-moderate proportion* (50 to 75%). For the confidence item, the mean scores are in the range 3 = *Moderate degree of confidence* to 4 = *High degree of confidence*. Error bars show standard error. See Table S12 in Supplementary Information for *n*, *SD*, and *p* values. * $p < 0.05$

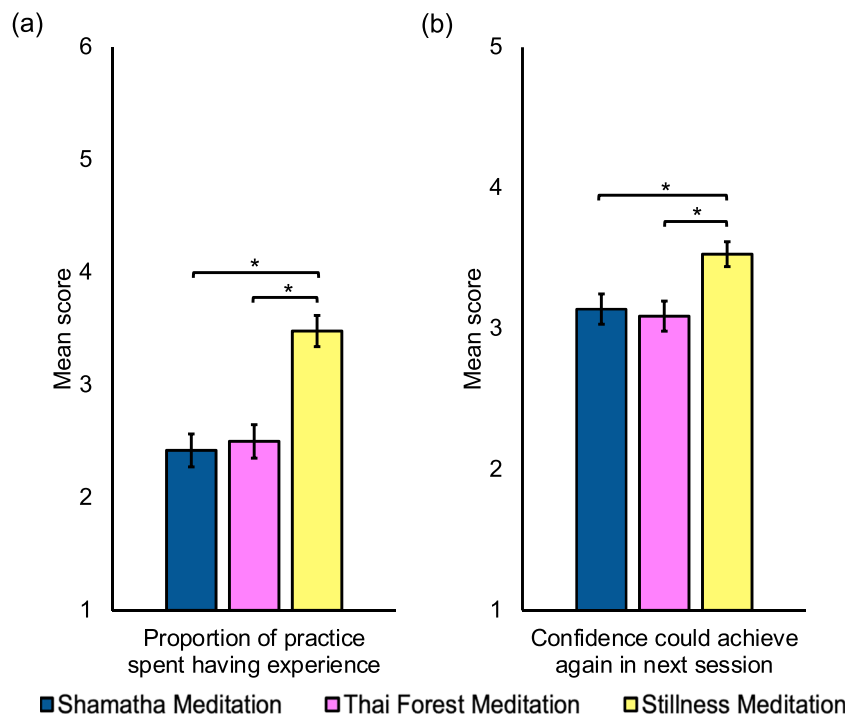


Table 5 ANCOVAs

Item	Form ^a	<i>p</i>	η_p^2	Significant differences in post hoc comparisons ^b
Breath	Log	0.001*	0.064	SH and TF > SM
Awareness that I am having the experience	Original	<0.001*	0.145	SH and TF > SM
Wakefulness	Reversed SQRT	<0.001*	0.153	SH and TF > SM
Drowsiness ^c	SQRT	<0.001*	0.104	SM > SH and TF
Bliss	Reversed log	<0.001*	0.065	TF and SM > SH
Joy	Reversed SQRT	0.009*	0.042	TF > SH and SM
Pure being with a complete absence of doing	Reversed log	<0.001*	0.064	SM > SH and TF
Losing normal ego/self via absorption ^c	Reversed log	<0.001*	0.085	SM > SH and TF
Reaching a ground state of the mind	Reversed log	<0.001*	0.099	SM > SH and TF
Vivid	Reversed log	0.039*	0.029	SH and TF > SM
Proportion of practice spent having experience	Original	<0.001*	0.176	SM > SH and TF
Confidence could achieve again in next session	Original	<0.001*	0.066	SM > SH and TF

η_p^2 , partial eta squared; *Original*, untransformed variable; *SQRT*, square-root

In all ANCOVAs, the covariate is the log transformation of lifetime hours spent practising some form of meditation (with truncation of univariate outliers). For each item, the *n* for each practice is as set out in Table S14 in the Supplementary Information

^aForm of the variable selected via the procedure set out in Section 5 of the Supplementary Information

^bThe “greater than” sign indicates that in the post hoc comparison values were significantly higher in one group than another ($p < 0.05$)

^cWith truncation of univariate outliers

* $p < 0.05$ and difference remains significant when correcting for multiple comparisons

stillness or silence, and it is a goal of many practices including Shamatha, Thai Forest, and Stillness Meditation (e.g., Brahm, 2014; McKinnon, 2011; Meares, 1986; Wallace, 2011b; for reviews see Woods et al., 2020, 2022a, 2022b). To our knowledge, the present study is the first to compare experiences reported in those three practices or any pairing of them. In each tradition, participants were committed practitioners with varying levels of past practice, practising in a naturalistic manner with leading teachers. Participants indicated the extent to which each of the 48 dimensional items was part of their deepest experience of stillness/silence during a particular retreat (Shamatha and Thai Forest) or during class and home practice over a 7-day period (Stillness Meditation). The study examined the subjective character of the typical experience reported in each tradition, and whether there were differences in the reports across the practices.

Participants provided their responses for each of the 48 dimensional items and the three foil items using a 7-point scale (1 = *No/none*, 2 = *Very low*, 3 = *Low*, 4 = *Lower-end-moderate*, 5 = *Higher-end-moderate*, 6 = *High*, 7 = *Very high*) or by answering “I don’t remember or can’t say.” In this “Discussion” section, the term “low” (with the word low in lower case and not hyphenated) refers to scores in the range No/none to Low, the term “moderate” refers to scores in the range Lower-end-moderate to Higher-end-moderate, and the term “high” refers to scores in the range High to Very high.

In each practice, the deepest experience of stillness/silence typically reported by participants involved low or very close to low awareness of thoughts, emotions, images, memories, things around them, their body, their breath, and mental activity, low drowsiness and effort, and was not at all negative. The reported experience involved a high degree of stillness, calm, peacefulness, ease, and mental relaxation, and was highly positive, pleasant, and good. Nine of the 10 items with the lowest scores in each practice were the same across the three traditions, although the precise rankings differed (Table 4). This was also the case for the items with the highest scores: 9 of the 10 items were the same (Table 4). These findings show a clear similarity in the experiential profiles across the practices. This similarity is also reflected in the finding that there were no significant differences for 27 of the 48 dimensional items (Fig. 5).

In each practice, there is a broad resemblance between the deepest experience of stillness/silence typically reported by participants and the goal-states described in the traditional texts (Brahm, 2014; Woods et al., 2022a). Participants on average gave low ratings for almost all items that the texts report/imply are absent in the goal-states and moderate or high ratings for almost all items the texts indicate are present.

The resemblance between the reports and the goal-states is not perfect. One example that stands out is that Shamatha and Thai Forest participants gave mean ratings for the

Table 6 Effect sizes for reasons and practice group comparisons

Item	Grouping variable and comparison	<i>r</i>
Wakefulness	ReasonPsychSymp – Yes vs. No	0.250
	Practice – SH vs. SM	0.431
	Practice – TF vs. SM	0.507
	ReasonSpiritual – Yes vs. No	0.324
	Practice – SH vs. SM	0.431
	Practice – TF vs. SM	0.507
Drowsiness	ReasonPsychSymp – Yes vs. No	0.205
	Practice – SH vs. SM	0.304
	Practice – TF vs. SM	0.440
	ReasonSpiritual – Yes vs. No	0.284
	Practice – SH vs. SM	0.304
	Practice – TF vs. SM	0.440
Breath	ReasonSpiritual – Yes vs. No	0.177
	Practice – SH vs. SM	0.273
	Practice – TF vs. SM	0.286
Awareness that I am having the experience	ReasonSpiritual – Yes vs. No	0.210
	Practice – SH vs. SM	0.396
	Practice – TF vs. SM	0.396
Joy	ReasonSpiritual – Yes vs. No	0.176
	Practice – SH vs. TF	0.237
	Practice – TF vs. SM	0.258
Vivid	ReasonSpiritual – Yes vs. No	0.293
	Practice – SH vs. SM	0.262
	Practice – TF vs. SM	0.285

SH, Shamatha Meditation; TF, Thai Forest Meditation; SM, Stillness Meditation

The effect sizes were calculated using non-truncated scores

item *awareness that I am having the experience* that are at the upper end of the moderate band. This item concerns participants' awareness *during* the experience of stillness/silence that they were having the experience. The traditional texts indicate that during the goal-states in all three practices meditators have *no* awareness that they are having the experience (Brahm, 2014; Meares, 1986; Wallace, 2010, 2011a, 2011b; for review see Woods et al., 2022a). The goal-states involve an experience of stillness/silence with mental content such as stillness, silence, wakefulness, naturalness, and calm, but meditators only become aware that they have had this experience upon emerging from it.

Another notable discrepancy between the participant reports and the goal-states is that Stillness Meditation participants gave a mean rating for the item *wakefulness* that is at the lower end of the moderate band. The traditional

texts indicate that in the goal-states in each practice there is a heightened level of wakefulness (Brahm, 2014; Meares, 1968; Wallace, 2011a, 2014a, 2014b; for review see Woods et al., 2022a).

Significant differences across the practice groups were found for 21 of the 48 dimensional items (Fig. 4). The most robust differences were found for nine items: *bliss, joy, losing normal ego/self via absorption, pure being with a complete absence of doing, reaching a ground state of the mind, breath, awareness that I am having the experience, wakefulness, and drowsiness*. These differences remained significant after the correction for multiple comparisons, and our additional analyses provided confidence that they were most likely not due to differences in past practice or reasons for practising.

For two of the nine items with the most robust differences (*bliss* and *joy*), there was a difference between Shamatha and Thai Forest: Thai Forest scores were significantly higher than Shamatha scores. Bliss and joy tend to be emphasized more in Thai Forest teachings than in Shamatha (compare, e.g., Brahm, 2014 and Wallace, 2006). It could be that there is something about the Thai Forest technique that leads to greater experiences of bliss and joy. For example, arguably the Thai Forest teachings accentuate the need for the meditator to “let go” more than in Shamatha (see Brahm, 2014; but see also, e.g., Wallace, 2011a, pp. 179–184). A further possibility is that the Thai Forest technique does not lead to a greater experience of bliss and joy, but that the greater emphasis on those qualities in the teachings influences participant reports. Thai Forest participants might report greater bliss and joy simply because they are more familiar with those terms, or have a stronger sense that those qualities are considered desirable within the tradition (see further the comments about theory contamination below).

Another plausible explanation for the findings is that Thai Forest participants experienced more bliss and joy than Shamatha participants because they did significantly more practice in the target period. We did not attempt statistical analyses controlling for hours of practice in the target period because those hours very clearly differentiate the two practice groups, and controlling for them would therefore have distorted the independent variable (practice group) (Field, 2018; Miller & Chapman, 2001).

For the other seven of the nine items with the most robust differences, the differences were between Shamatha and Thai Forest on the one hand and Stillness Meditation on the other. Stillness Meditation scores were significantly higher than Shamatha and Thai Forest scores for the items *losing normal ego/self via absorption, pure being with a complete absence of doing, and reaching a ground state of the mind*. Stillness Meditation scores were significantly lower for the items *breath* and *awareness that I am having the experience*.

Meditators' progression towards and into the goal-states is said to involve a dissolution of their normal sense of self, or ego, and as this dissolution occurs meditators are said to become absorbed in the stillness/silence (Brahm, 2014; Woods et al., 2022a, 2022b). Meditators are fully absorbed in the stillness/silence if they are experiencing that alone, and if they have no sense of themselves as being separate from it (Brahm, 2014; Woods et al., 2022a). Based on these understandings, Stillness Meditation participants' higher scores for the item *losing normal ego/self via absorption* provide an indication that their reported experience involved greater absorption in the stillness/silence. Their lower scores for the items *breath* and *awareness that I am having the experience* provide additional indications. If meditators are aware of their breath, they are not experiencing stillness/silence alone, and if they are aware of the stillness/silence as it occurs, they are in some sense standing apart from it (Brahm, 2014; Woods et al., 2022a).

A further difference across the practices concerns arousal. Stillness Meditation scores were significantly lower than Shamatha and Thai Forest scores for the item *wakefulness*. On average, Stillness Meditation participants reported low *drowsiness*, but scores for that item were still significantly higher than in the other two practices. In summary, Stillness Meditation participants reported stillness/silence that was less wakeful, but more absorptive, with more the quality of pure being and reaching a ground state of the mind.

Stillness Meditation participants reported having the experience for a significantly greater proportion of their total practice, and being significantly more confident that they could have the experience again in their next session (Fig. 6). In all three practices, it has been traditionally understood that—in general—with more practice meditators experience stillness/silence more frequently and easily, and their experiences of stillness/silence become deeper and more absorptive (Brahm, 2014; McKinnon, 2011, 2016; Meares, 1986; Wallace, 2006). In the present study, however, Stillness Meditation participants reported the more absorptive experience, and had the higher scores for pure being, reaching a ground state, proportion, and confidence, despite reporting significantly fewer lifetime hours practice and doing significantly fewer hours of practice in the period targeted in the research. While retreats are generally regarded as especially conducive to deep experiences (King et al., 2019), only Shamatha and Thai Forest participants attended retreats in the relevant period: Stillness Meditation participants reported the more absorptive experience and had the higher scores on the other items despite having done only class and home practice.

The findings in the paragraph above may seem surprising. How does one make sense of them? Does Stillness Meditation provide a shortcut to the deep and absorptive stillness/silence that is aimed for in the other two practices? Two

possible explanations for the findings stand out: one, that Stillness Meditation does provide a form of shortcut, and two, that the differences in the reported experiences do not reflect differences in the actual experiences.

The first of the two possible explanations is that Stillness Meditation does provide a shortcut to deep and absorptive stillness/silence, but that the attentional quality in that experience is different to that aimed for in Shamatha and Thai Forest. Shamatha and Thai Forest involve systematic training of attention before reaching the goal-states, and this requires considerable time and effort. According to the traditional texts, the goal-states in those practices involve deep calm and relaxation and exceptionally focused attention (Brahm, 2014; Wallace, 2006, 2014a; Wallace & Hodel, 2008; for review see Woods et al., 2022a). The goal-states in Stillness Meditation are also said to involve deep calm and relaxation, but that practice does not require systematic training of attention (Woods et al., 2022a, 2022b). Analysis of the traditional texts has indicated that reaching the goal-states is quicker and easier in Stillness Meditation, but that in that practice attention is less focused and therefore less stable and vivid (e.g., Woods et al., 2022a, 2022b).

The finding of greater wakefulness in Shamatha and Thai Forest also fits with this explanation. Unlike Stillness Meditation, those practices involve systematic training of attention, and that entails arousal of attention, which is likely associated with greater wakefulness (Britton et al., 2014; Woods et al., 2022a, 2022b).

The second possible explanation for the findings is that, although Stillness Meditation participants *reported* an experience that was deeper in some respects, more absorptive, and less wakeful, their *actual* experience was not deeper, more absorptive, or less wakeful. This could occur because a participant's experience, their meditation background, and a range of other variables might affect their understanding of the items in the questionnaire, and the meaning that they give the scale points (low, moderate, high, etc.). For example, the present sample of Stillness Meditation participants reported significantly fewer lifetime hours practice than the retreat participants and a significantly greater proportion said they were practising to reduce psychological symptoms. A Stillness Meditation participant might give the rating high for the item *reaching a ground state of the mind* because their experience seems deep in the context of their limited past practice and transcends any psychological distress. A retreat participant might have the same experience (or one that is even deeper) but assign the item a lower score because the participant's greater practice has provided experiential or conceptual insight into how much deeper it would be possible to go, and because distress is not their baseline. Consistent with this, Wallace (2006, pp. 109–110) notes that beginners and advanced practitioners can have quite

different understandings of terms used to describe the goal-states (see also Grossman, 2011).

As a further example, a retreat participant might give the rating high for the item *wakefulness* in part because, although thoughts and mental images have dropped away, they still have awareness of the breath. A Stillness Meditation participant might have an equally wakeful experience without awareness of the breath, but give a lower rating because being awake is ordinarily associated with having sense or body perceptions.

A concern in this type of research is that meditators' reports might be contaminated by their background knowledge and assumptions derived from sources such as the traditional texts (Metzinger, 2020a, 2020b; Sedlmeier et al., 2016). We used preambles to reduce the risk of gross forms of this contamination. For instance, we explained to participants that we were interested in how the experience felt to them, rather than how others might describe it.

As with any study of meditators practising within an established tradition, there will be contamination to some degree. However, it is not the case that participants were simply echoing all of the language and concepts emphasized in the descriptions of the goal-states in the meditation traditions. Had they been doing this, we would have found an even closer resemblance between the reported experiences and the descriptions in the traditional texts.

The Stillness Meditation texts indicate there is heightened wakefulness in the goal-states, but careful comparison of the traditional texts across the practices has indicated that this heightened wakefulness could still be lower than in Shamatha and Thai Forest (see, e.g., Woods et al., 2022a). If a Stillness Meditation participant was simply echoing the descriptions in that tradition, they would have reported a high degree of wakefulness, rather than wakefulness at the lower end of the moderate band as was actually reported. Similarly, if participants in any of the three practices were merely echoing the descriptions in the traditional texts, they would have reported having no awareness of the stillness/silence as it occurred.

Thai Forest participants reported greater bliss and joy than in Shamatha. Earlier, we noted that a possible explanation for this is that those qualities are emphasized more in the Thai Forest teachings. Emphasis on particular qualities in the Stillness Meditation teachings could provide a similar explanation for the differences with respect to that practice, however this possibility is not as clear-cut as in the case of bliss and joy in the Thai Forest / Shamatha comparison.

By way of example, the Stillness Meditation teachings emphasize pure being and a complete absence of doing more than in Shamatha and Thai Forest because the complete absence of doing is part of the Stillness Meditation technique from the outset of that practice. Stillness Meditation

participants could have given higher ratings for the item *pure being with a complete absence of doing* simply because they were more familiar with those terms or viewed that quality as more desirable. "Pure being" sounds like a very basic state, so Stillness Meditation participants' greater familiarity with that term, or their seeing that quality as more desirable, could have also led them to give higher ratings for the item *reaching a ground state of the mind*. The Stillness Meditation teachings, however, do not use the term "ground state of the mind." That makes this different to the Thai Forest case, where the relevant terms—bliss and joy—are used frequently in the teachings.

The term stillness is used commonly in all three practices, but it is used most in Stillness Meditation because it is part of the name of that practice. Stillness Meditation scores were significantly higher than Shamatha and Thai Forest scores for the item *stillness*, but this was not one of the most robust differences across the practices.

As a separate matter, the questionnaire included three foil items designed to identify participants who might simply be endorsing all items that sound positive or like advanced experiences. In each practice, mean scores for the foil items were low or very close to low. They were much closer to the mean for dimensional items that the traditional texts indicate are absent in the goal-states than to the mean for items that the texts indicate are present (Fig. 3). These findings provide a measure of confidence that participants were making a genuine effort to reflect and report on their actual experience.

For the third foil item, *progressing into more and more complex states*, Stillness Meditation scores were significantly higher than Shamatha scores, and it is therefore possible that Stillness Meditation participants were inclined to over-endorse the positive and advanced sounding items. Notably, however, the difference was only between Stillness Meditation and Shamatha, and only on one of the three foil items.

Implications

The findings have implications for consciousness and neuroscientific research, and for clinical research and practice. In the main strand of academic literature on contentless states, goal-states like those in Shamatha, Thai Forest, and Stillness Meditation have been classed as contentless experiences, and those experiences have been described as having no content (e.g., Fasching, 2008; Forman, 2011; Shear, 1999; Stace, 1961; see further Woods et al., 2022a) and as therefore identical (Almond, 1982; Bernhardt, 1990; Bucknell, 1989a, 1989b; Forman, 1990a; Shear, 1990b). The deepest experiences of stillness/silence typically reported in the present study are contentless or low-content in the limited sense that participants gave low ratings for well-recognized

forms of content such as thoughts, perceptions, and images. The experiences are not contentless in the more complete sense referred to in the academic literature: Participants gave moderate or high ratings for numerous forms of abstract content, including wakefulness, naturalness, calm, bliss, joy, and freedom. The study also found robust differences in the reported experiences across the practices, contrasting with the academic understanding that contentless experiences are identical.

The finding that the reported experiences are neither truly contentless nor identical is supported by analysis of the goal-states described in the traditional texts (e.g., Woods et al., 2022a). That analysis has indicated that the goal-states also involve numerous forms of abstract content and has identified various features of the goal-states that may differ across the practices. As explained above, there is a broad resemblance between participants' reported experiences and the goal-states detailed in the traditional texts.

One way that contentless experience has been described in the academic literature is as a “barest being conscious” (Forman, 1999, p. 132) and a virtual or complete blankness (Forman, 1986, p. 49, 1998, p. 7). The quality of blankness is also referred to in an independent stream of academic research which has identified *mind-blanking* as a form of attentional lapse that occurs in everyday life (Ward & Wegner, 2013; Watts & Sharrock, 1985). There is not yet a precise, consensus definition of mind-blanking (Fell, 2022), but elements that have been put forward include being off-task, and experiencing a blank or empty mind, an absence of thought and perception, and minimal or no other content (Andrillon et al., 2019, 2021; Mortaheb et al., 2022; Ward & Wegner, 2013).

The findings in the present study can inform future work aimed at determining the similarities and differences between contentless experiences in meditation and mind-blanking. The exact content (if any) that is present in mind-blanking has not yet been scientifically examined. One potential difference concerns wakefulness versus sleepiness. In the present study, participants in each practice typically reported low drowsiness and a moderate degree of wakefulness. Mind-blanking in certain types of laboratory experiment has been associated with sleepiness (Andrillon et al., 2019, 2021), but it is not yet known whether that association also exists for mind-blanking in other contexts.

Our finding that there are significant differences in the reported experiences across the practices should be considered in neuroscientific studies of so-called contentless or low-content states. For example, in brain-imaging studies where meditators report successfully following an instruction to enter a state of “contentless stillness,” “content-minimized awareness,” “thoughtless emptiness,” or similar (e.g., Hinterberger et al., 2014; Winter et al., 2020), researchers should bear in mind that there may be

considerable diversity in the experiences attained. Detailed self-reporting of meditation states, like that in the present study (see also, e.g., Costines et al., 2021; Gamma & Metzinger, 2021; Nave et al., 2021), may in cases be required to avoid inappropriately conflating imaging data from quite different experiences.

In each of the three traditions, the goal-states are said to produce major benefits in terms of mental health and well-being (e.g., Meares, 1986; Wallace, 2006). One of the key benefits is said to be that meditators retain some of the calm and relaxation from the meditation, with the effect that anxiety is reduced in daily life (e.g., Meares, 1986; Wallace, 2007). In the present study, participants in each practice reported that their experience was highly calm, peaceful, relaxing, positive, pleasant, and good. These findings suggest the need for clinical research in this area, investigating the benefits of experiencing stillness/silence in these and other practices, including any impact on anxiety.

Our findings can contribute to recommendations by clinicians that are personalized to individual clients, matching a particular practice to the client's needs and preferences (Kok & Singer, 2017). Further work is required, but if it does turn out that Stillness Meditation achieves a deep and absorptive experience reasonably quickly and easily, that is one factor that should be taken into account in making such recommendations. If it turns out that Shamatha and Thai Forest lead to a more vivid and wakeful experience due to active training of attention, that should also be taken into account. Another line of research will be required to examine clinical benefits associated with these or other differences in experience.

Limitations and Future Research Directions

The study has a high degree of ecological validity, but a corollary of this is that there are differences between the practice groups besides the different techniques. We have already mentioned the differences with respect to lifetime hours practice, hours of practice in the target period, reasons for practising, and practice environment (i.e., retreat vs. classes/home). Differences on such variables could contribute to the differences on the dimensional, proportion, and confidence items, although our analyses accounting for differences in lifetime hours and reasons for practising provide a level of comfort.

Use of active control groups was designed to reduce differences between the groups on other non-specific factors such as social desirability, investment, and aspirational biases, but in each practice such factors were likely present to some degree, and the groups could still differ on some or all of them. It could be, for example, that the way a practice is taught in a particular tradition leads to more pronounced pressures to report a certain type of experience than in the other traditions. Cultural and linguistic differences across

the groups could also have influenced the findings. Nearly a third of the Thai Forest participants (27.5%) reported that English was not the primary language that they spoke at home, as compared to 2.4% for Shamatha and 1.1% for Stillness Meditation. However, the Thai Forest retreats were conducted in Australia, the teaching was all in English, and none of the participants expressed any difficulty in understanding the questionnaire.

To eliminate group differences such as those above, the ideal approach would be a longitudinal study with randomization of participants to the practice groups and matching of the practices on key aspects extrinsic to the techniques themselves (e.g., having all participants attend classes rather than retreats) (Davidson & Kaszniak, 2015; Lindahl et al., 2017; Slagter et al., 2011; Tang et al., 2015). However, for practical reasons, continuing such a study until participants achieve advanced levels is unlikely to be feasible.

Another consideration is the delay between participants' experience of stillness/silence and their completion of the questionnaire. Shamatha and Thai Forest participants were asked about their deepest experience on the relevant retreat and on average completed the questionnaire 3 days after the retreat concluded. Stillness Meditation participants were asked about their deepest experience in the previous 7 days of class and home practice. On average, only a small proportion of all participants across the three practices responded "I don't remember or can't say" for the dimensional items, and those answers were excluded from analyses. However, any delay between experience and report provides scope for failures of memory and associated biases and distortions (Hurlburt & Schwitzgebel, 2007). Future studies could further minimize the delay. Researchers could even interrupt a meditation session to obtain reports, using experience sampling or other methods (see, e.g., Petitmengin et al., 2017; Rodriguez-Larios & Alaerts, 2021).

Seventeen of the 88 Stillness Meditation participants (19.3%) completed the questionnaire 8 days or more after their most recent class, and therefore could not have undertaken a class during the target period. Some of those participants did only a small amount of practice in the target period, and it is possible that they reported on previous experiences in Stillness Meditation rather than on their experience in the target period. Participants were, however, asked to focus on the target period, and they could still provide legitimate reports where they had done only modest practice in that period. There was no significant correlation between the time it took Stillness Meditation participants to complete the questionnaire after their most recent class, and their ratings on any of the seven dimensional items for which we found the most robust differences vis-à-vis Shamatha and Thai Forest (range $\rho = 0.00$ – 0.21).

In the present study, we covered a large number of dimensions, but there were some that we left out. For example,

attentional stability and luminosity are referred to frequently in the texts on Shamatha but not the other two practices. We did not cover those dimensions as we thought they might be meaningless or confusing for large numbers of meditators without further explanation. Future studies could analyze the dimensions that we omitted.

The study was not pre-registered. While this represents a limitation, the study was exploratory in nature and therefore pre-specification of outcomes is not only challenging but may not be necessary from an open science perspective (see e.g., Scheel et al., 2021).

In this "Discussion" section, we have identified a number of areas where future research would be valuable. A further candidate for such research is the possible explanations that we have put forward for the differences in the reported experiences across the three practices. Such research could investigate which of the explanations is correct, whether they each apply to some degree, or whether some other explanation is needed.

Future research could also investigate the basis on which participants give ratings for the dimensional items. For example, where a participant reports little awareness of thoughts, is this because any thoughts are subtle, because they are infrequent, because the meditator is not engaging with them, or is there some other reason? Would the participant report greater awareness of thoughts if their mindfulness/attentional skills were more developed? Where a participant reports a high degree of calm, is this because the calm was intense, deep, profound, all three, and/or had some other experiential quality?

Scientific research on meditation has tended to focus on a narrow range of practices, and there are many other traditions that have not yet been explored (Dahl et al., 2015; Goleman & Davidson, 2017; Matko et al., 2021). Future research should examine Shamatha, Thai Forest, and Stillness Meditation, as well as other practices. A range of methods should be used, since all methods for investigating experience have unique strengths and serious limitations (Berkovich-Ohana et al., 2020; Hurlburt & Schwitzgebel, 2007, 2011). Methods could include approaches that target experience directly, such as microphenomenology (e.g., Nave et al., 2021; Petitmengin et al., 2019; Przyrembel & Singer, 2018), and techniques such as brain-imaging (e.g., Hernández et al., 2018; Mahone et al., 2018; Winter et al., 2020; Zanesco et al., 2021), physiological measurement using wearable devices (e.g., Steinhubl et al., 2015), and attentional testing (e.g., Lutz et al., 2015; Shields et al., 2020) that may indirectly tell us about the experience.

Future research could also compare broader aspects of the practices. These include theoretical, metaphysical, teleological, soteriological, therapeutic, and cultural understandings and contexts. Comparative work of this kind could help to understand whether and how such factors influence participant reports of experiences.

Practices like Shamatha, Thai Forest, and Stillness Meditation, which aim for calm, tranquility, or quiescence, are frequently contrasted with other practices that are explicitly concerned with developing insight (e.g., Goleman, 1988; Rapgay & Bystrisky, 2009; Sharf, 1995; Wallace, 2011a, 2018). Calm practices can also lead to forms of insight though—for example, insight into the nature of the mind and into one's place and purpose in the world (e.g., Brahm, 2014; Meares, 1986). Such insights can arise both during and after practice, and would be an interesting subject for future research.

Conclusion

The present study used a scientific approach to examine the deepest experience of stillness/silence reported by meditators in three practices that aim for contentless states. We found that in each practice participants typically reported a highly positive experience, involving low awareness of thoughts, perceptions, images, and various other forms of content, and a high degree of stillness, calm, peacefulness, ease, and mental relaxation. While this finding showed a clear similarity in the reported experiences across the practices, we also found robust differences. The experience reported in Thai Forest involved significantly greater bliss and joy than in Shamatha. The experience reported in Stillness Meditation was less wakeful than in the other two practices, but more absorptive, and had more the quality of pure being and reaching a ground state of the mind.

A key conclusion from the study is that the deepest experiences of stillness/silence typically reported in the practices are not the identical states devoid of all content that have been classically referred to in the academic literature. Participants reported a high degree of various forms of abstract content, but the experiences are still contentless in the sense that participants reported little awareness of well-recognized forms of content such as thoughts, perceptions, and images. These findings are supported by analysis of traditional texts, which indicates that it is broadly this type of contentless experience that is aimed for in the practices.

The study contributes to a small but important body of empirical work examining contentless experience. It has particular value in that it involved a head-to-head comparison of three meditation practices (which is rare in meditation research), and focused on committed meditators with varying levels of experience, practising in a naturalistic manner and receiving high-quality instruction, guidance, and support.

The study took a fine-grained approach in that it examined 48 dimensions of contentless experience rather than focusing only on obvious dimensions such as the absence of thoughts and perceptions. It was this detailed approach that enabled us to discriminate between the experiences reported in different practices and the experience classically

described in the academic literature. The study demonstrates the importance of examining contentless experiences in a fine-grained manner that takes into account abstract forms of content and assesses differences as well as similarities.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s12671-023-02145-0>.

Acknowledgements We would like to acknowledge and thank the meditation teachers, and the organizers of the retreats and classes. Without their contribution, the study would not have been possible.

Author Contribution TW wrote the first draft of the manuscript. All authors contributed to the conception and design of the project, and to manuscript revision.

Funding Open Access funding enabled and organized by CAUL and its Member Institutions. TW was supported by an Australian Government Research Training Program scholarship, JW by an Australian Research Council Discovery Early Career Researcher Award (DE170101254) and a National Health and Medical Research Council Ideas Grant (APP2002454), OC by an Australian Research Council Future Fellowship (FT140100807), and NVD as part of a philanthropic donation by the Three Springs Foundation Pty Ltd to establish the Contemplative Studies Centre at the University of Melbourne.

Data Availability The questionnaire, dataset, and data-cleaning rules are available in a public repository (<https://osf.io/kse3j/>).

Declarations

Ethics Approval The study was approved by the Human Research Ethics Committee of The University of Melbourne (ID 1852277.1) and was performed in accordance with the ethical standards in the 1964 Declaration of Helsinki and its later amendments.

Informed Consent Informed consent was obtained from all participants.

Conflict of Interest The authors declare no competing interests.

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