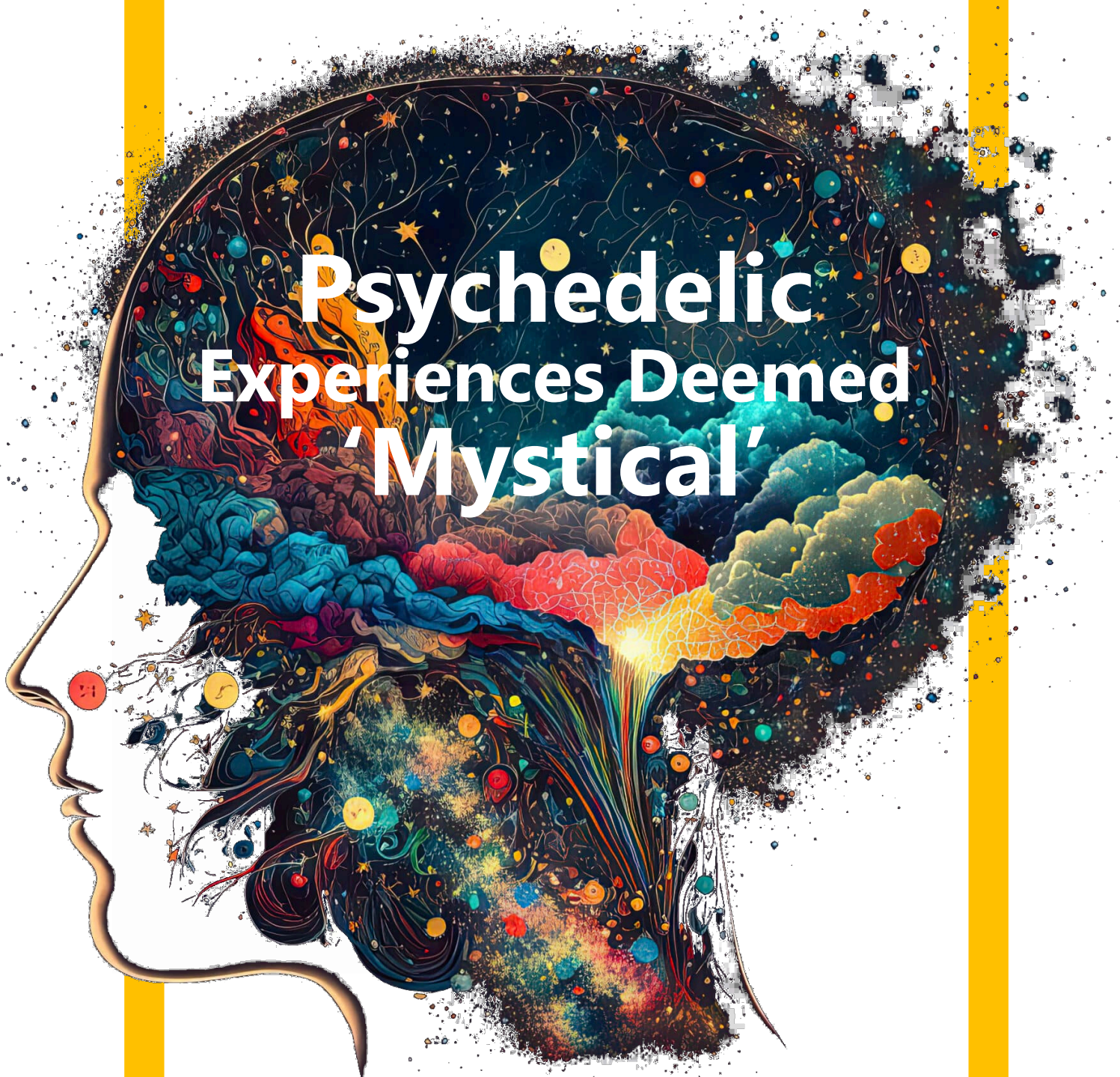




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# Psychedelic Experiences Deemed 'Mystical'





July 1, 2024



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# Psychedelic-Induced Experiences Deemed 'Mystical' in Psychedelic Science and the Academic Study of Religion: Critical Review, Analysis, and Advice

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I, Herman H. Douma, declare and assure that I have independently composed this thesis. I confirm that I have solely utilised the sources and methods explicitly referenced and have diligently acknowledged and cited any passages derived from other works, including electronic media.

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## ABSTRACT

Research on the subjective effects of psychedelics is making a comeback, particularly concerning 'mystical(-type) experiences.' However, psychedelic science still relies on limited models and biased sources from the 1960s to measure these experiences. Furthermore, it lacks sufficient engagement with other relevant disciplines. This thesis seeks to improve the measurement of psychedelic-induced experiences deemed 'mystical' (PEMs) in contemporary psychedelic science (2015-'24) by drawing on insights from the academic study of religion. It does this by using discourse analysis and systematic reviews. **REVIEW.** The researcher-based mystical-constructs of psychedelic science focus mainly on Western Educated Industrialised Rich Democratic (WEIRD) contexts, exclude many non-WEIRD experiences, and hegemonically use Euro-American Christian-Protestant and perennialist (EACP) terms and assumptions. The academic study of religion adds that experiences and settings are highly diverse, and imposing WEIRD constructs on the non-WEIRD can amount to neo-colonial acts. However, it also suggests that theorising about PEMs can assist psychedelic science. **ANALYSIS.** The contextualisation and criticisms highlight the unreliability of the underlying sources, the entanglement of WEIRD and EACP assumptions in the constructs and research community, the many factors that produce PEMs, and the necessity for a novel methodology. **ADVICE.** The Building Block Approach is a more suitable methodology for measuring and theorising PEMs in psychedelic science and the academic study of religion. It eliminates researcher-based constructs, prioritises participant categorisations and appraisals, and facilitates theoretical research. Tools like the Inventory of Non-ordinary Experiences, Event Model Analysis, and Appraisal Charts can enhance future research, eliminating many current limitations and biases.

**Keywords:** psychedelic science; academic study of religion; experiences deemed 'mystical'; discourse analysis; building block approach.

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### *Frequent Abbreviations*

ASR	–	Academic Study of Religion
BBA	–	Building Block Approach
CCM	–	Common Core Mysticism
EACP	–	Euro-American Christian-Protestant/Perennialist
EMs	–	Experiences Deemed 'Mystical(-type)'
MEQ30	–	Mystical Experience Questionnaire (30 items)
PEMs	–	Psychedelic-induced Experiences deemed 'Mystical'
PEs	–	Psychedelic Experiences
PRSMEs	–	Psychedelic Religious Spiritual Mystical Experiences
PS	–	Psychedelic Science
WEIRD	–	Western Educated Industrialised Rich Democratic

## Introduction

“All of our perceptions and experiences, whether of the self or of the world, all are inside-out controlled and controlling hallucinations that are rooted in the flesh-and-blood predictive machinery that evolved, develops, and operates from moment to moment always in light of a fundamental biological drive to stay alive.”<sup>1</sup>

– ANIL SETH

Throughout history, individuals have utilised psychoactive substances for a range of purposes, including those appraised as religious. Regardless of their intended use, it is evident that these substances have held a fundamental place in human culture for centuries.<sup>2</sup> The contemporary term ‘psychedelic,’ which means ‘mind-manifesting,’ implies that these substances have the potential to reveal or manifest elements of the mind or consciousness. Psychedelics can heighten, accentuate, or reduce mental content such as perception, cognition, and mood.<sup>3</sup> Whether naturally occurring or synthetic, psychedelics like psilocybin and lysergic acid diethylamide (LSD) – which act as partial agonists of 5-HT<sub>2A</sub> serotonin receptors – are commonly known as classic hallucinogens due to the similar perceptual distortions they typically induce.<sup>4</sup> Some researchers classify them as ‘psychoplastogens’ because of their ability to rapidly increase neuronal plasticity, prompting new neural pathways, which may contribute to their efficacy in the treatment of psychiatric conditions.<sup>5</sup>

In recent times, there has been a surge in interest in psychedelics within the scientific and medical community, as well as among the general public.<sup>6</sup> Initial clinical trials involving classic psychedelics have shown potential for treating a wide range of conditions, including depression, end-of-life distress, tobacco addiction, alcoholism, and obsessive-compulsive disorder.<sup>7</sup> The increasing commercial interest in psychedelic therapies, the resurgence of psychedelic science, and the contemporary re-sacralisation of psychedelics all point to this growing attention.<sup>8</sup> For example, Robin Carhart-Harris et al. are conducting clinical trials, Rick Doblin is advocating for psychedelic-assisted psychotherapy, Vox is reporting on how LSD and shrooms could potentially help alleviate anxiety, addiction, and depression, Michael Pollan has authored a popular science book on psychedelics, and the Essence Institute in the Netherlands is providing safe and legal psychedelic retreats.<sup>9</sup>

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<sup>1</sup> Seth, *Being*, 2021:220; cf. Bronkhorst, *Mystical*, 2022:2–3.

<sup>2</sup> Schultes et al., *Plants*, 2001; El-Seedi et al., *Prehistoric*, 2005:238–42; Halpern et al., *Peyote*, 2005:624–31; Guzmán, *Mushrooms*, 2008:404–12; DuBois, *Shamanism*, 2009; Rudgley, *Substances*, 2014; Jay, *Mescaline*, 2019; cf. Uniao do Vegetal and Santo Daime, see Tupper, *Ayahuasca*, 2008:297–303.

<sup>3</sup> Huxley, *Doors*, 1954:14; Osmond, *Psychotomimetic*, 1957:418–34; Hartogsohn, *Psychedelics*, 2018:1–5.

<sup>4</sup> González-Maeso et al., *5-HT<sub>2A</sub>*, 2007:439–52; Johnson et al., *Classic*, 2019:83–99; Stenbæk et al., *2A*, 2021.

<sup>5</sup> See, e.g., Ly et al., *Plasticity*, 2018:3170–82; Olson, *Psychoplastogens*, 2018:1–4, *Subjective*, 2020:563–7.

<sup>6</sup> Langlitz, *Neuropsychodelia*, 2012; Nutt, *Psychedelic*, 2019:139–47; Mosurinjohn et al., *Mystical*, 2023; Maps, 2023; Psychedelic Spotlight, 2023; Mastinu et al., *Neuropharmacology*, 2023:1329; Nutt, *Psychedelics*, 2023.

<sup>7</sup> See, e.g., Johnson et al., *Addiction*, 2014:983–92; Griffiths et al., *Depression*, 2016:1181–97; Carhart-Harris et al., *Depression*, 2021:1402–11; Andersen et al., *Therapeutic*, 2021:101–18; Bogenschutz et al., *Alcohol*, 2022:953–62; van Elk & Fried, *Guidelines*, 2023:1–20; Acevedo, *Beneficial*, 2024:1–10.

<sup>8</sup> Dyck & Elcock, *Expanding*, 2023; Mosurinjohn et al., *Mystical*, 2023:4–5; Elf et al., *Pharmacy*, 2023:33–62.

<sup>9</sup> Carhart-Harris et al., *Depression*, 2021:1402–11; Doblin, *Psychotherapy*, 2019; Vox, *LSD*, 2016; Pollan, *Change*, 2018; *Essence*, 2024.

Psychedelics can induce a wide array of profound acute subjective experiences, which appear to play a crucial role in their lasting psychological effects. For instance, they can trigger profound shifts in consciousness, cognition, perception, emotions, sense of self, and feelings of connectedness.<sup>10</sup> Naturally occurring psychedelics like peyote and mushrooms engender acute subjective effects sometimes appraised as visionary and sacred, both in WEIRD (Western, Educated, Industrialised, Rich, and Democratic) and non-WEIRD contexts, and referred to as 'entheogens,' meaning 'to generate God within.'<sup>11</sup> Because of similarities, some of these subjective effects and their categorisations and appraisals became entangled with Eurocentric research on the history of 'mysticism' and so-called 'mystical(-type) experiences'. As a result, this has become part of survey, experimental, and clinical studies in psychedelic science.<sup>12</sup> Many of these studies employ validated and tested quantitative psychometric scales to assess an operationalised mystical-construct following the cessation of acute subjective effects induced by psychedelics. Nevertheless, qualitative self-reports, open-ended interviews, and content analysis are also part of its repertoire.<sup>13</sup>

These studies measuring the subjective effects, for instance, published in journals on psychology, current drug abuse, therapeutics, and religious studies, are part of the broader multidisciplinary discourse of psychedelic science. Mosurinjoh et al. (2023) argue that the part of psychedelic science that measures human subjective effects reemerged in the 21st century in an "arrested state of development."<sup>14</sup> Bartlett et al. (2023) suggest that the reason for this 'arrested state' is the 'Controlled Substance Act' of the late 1960s, which languished human trials and various other parts of psychedelic science into "social and academic purgatory."<sup>15</sup> Regarding the measurement of 'mystical(-type) experiences,' they argue that psychedelic science uses limiting and biased pre-1960 models and lacks sufficient engagement with other relevant disciplines, such as religious studies and anthropology.<sup>16</sup> These limitations and biases, identified as Euro-American Christian-Protestant perennialist biases stemming from the original authors and embedded in these pre-1960 models, are further perpetuated by some entanglement with religionist discourses, as argued by Strassman (2018).<sup>17</sup> This has resulted in a limiting and biased discourse where, e.g., categorisations, appraisals, phenomenology, and (implicit) metaphysical assumptions of researchers and participants are mixed-up. For this reason, this thesis will use the term 'psychedelic-induced experiences deemed 'mystical' (abbreviated: PEMs), i.e., categorised and appraised by researchers or participants as 'mystical.'<sup>18</sup>

<sup>10</sup> Aday et al., *Effects*, 2020:179–89, for a review; cf., e.g., Yaden & Griffiths, *Subjective*, 2021:568–72.

<sup>11</sup> Ruck et al., *Entheogens*, 1979:145–6; Nichols, *Psychedelics*, 2016:264–355.

<sup>12</sup> See, e.g., Griffiths et al., *Mystical-type*, 2006:268–83, *Mystical-type*, 2008:621–32; Carhart-Harris & Nutt, *Benefits*, 2010:283–300; Yaden et al., *Mystical*, 2017:338–53; Carbonaro et al., *Subjective*, 2020:2293–304; Yaden & Griffiths, *Subjective*, 2021:568–72.

<sup>13</sup> See n.13; cf. Schwartz et al., *Open-Vocabulary*, 2013:1–16; Yaden et al., *Linguistic*, 2016:244–52; cf. my Douma, *Neuropsychopharmacology*, 2024: [ResearchGate dx.doi.org/10.13140/academia.edu/114688726](https://doi.org/10.13140/academia.edu/114688726).

<sup>14</sup> Mosurinjoh et al., *Mystical*, 2023:1–12.

<sup>15</sup> Bartlett et al., *Interdisciplinary*, 2023:415.

<sup>16</sup> Mosurinjoh et al., *Mystical*, 2023:3; cf. Dyck & Elcock, *Expanding*, 2023.

<sup>17</sup> Strassman, *Mystical*, 2018:1–4.

<sup>18</sup> See, e.g., Taves, *Reconsidered*, 2009, *Nonordinary*, 2020:669–90; *INOE*, 2023:1–37.

## Research Design

This research master's thesis aims to contribute to developing the measurement of psychedelic-induced experiences deemed 'mystical' by [1] critically reviewing their current measurement in psychedelic science and the academic study of religion from 2015 to 2024, [2] analysing them via contextualisation and criticism, and [3] giving advice for future research.

### *Research Questions*

How can contemporary psychedelic science, aided by insights from the academic study of religion, improve its measurement of psychedelic-induced experiences deemed 'mystical'?

1. How is the current measurement of psychedelic-induced experiences deemed 'mystical' constructed in psychedelic science?
2. What contributions does the academic study of religion make to the measurement of psychedelic-induced experiences deemed 'mystical'?
3. How do contextualisation and criticisms affect the measurement of psychedelic-induced experiences deemed 'mystical'?
4. What advice can be given for the future measurement of psychedelic-induced experiences deemed 'mystical' in psychedelic science (and the academic study of religion)?

### *Suitability*

Are these research questions the most effective, above other potential ones, for addressing the issues at hand and for developing a compelling solution? While the primary focus could have been on examining the historical-discursive formations leading up to the current use of pre-1960 models of experiences deemed 'mystical' or on the biases and limitations of the original authors embedded in these pre-1960 models, these exciting and feasible approaches would not have provided practical advice for future research or questioned the use of models per se. The current approach will review and analyse the contemporary application of these models, which may differ from previous formations. Moreover, it will facilitate the integration of existing studies and approaches from the academic study of religion into psychedelic science, bridging interdisciplinary gaps. It will also analyse the broader measurement methods rather than solely focusing on the use of pre-1960 models. Therefore, the current research questions are appropriate and will lead to a compelling solution that will benefit psychedelic science by addressing some of the limitations and biases currently affecting the measurement of human subjective effects.

### *Methodology*

The first research-based assumption that this thesis, like most scholars of religion, takes on is that experiences deemed 'religious' or 'mystical' do not constitute a common core of systems deemed 'religions.' Instead, they depend highly on the interpretive framework of individuals, groups, or

systems (i.e., social formations).<sup>19</sup> Accordingly, it removes any notion of 'mystical' or psychedelic exceptionalism, i.e., a *sui generis* approach. A second assumption is its adherence to methodological 'naturalism' and 'secularism.' Hence, no appeals to something deemed 'the mystical' or 'ultimate reality' are made, and religious, theological, or philosophical inquiries will not be part of this thesis.<sup>20</sup> Thirdly, it centres on the research perspective of the 'discursive study of religion' (DSR) and considers psychedelic science (hereafter PS, see Appendix 1 for the inclusion of fields) and the academic study of religion (hereafter ASR) discourses and psychedelic-induced experiences deemed 'mystical' (hereafter PEMs) as a discursive construct.<sup>21</sup> Therefore, the focus will be on (hegemonic) ensembles of statements, utterances, and opinions about PEMs, which are systematically organised and repeatedly observable within the two discourses.<sup>22</sup>

Subsequently, the author of this thesis tries to contribute intelligently to the conversations concerning PEMs and advance ways to construct these ensembles. This methodology has the form it has because [1] it aligns with the scientific approach to the study of religion, and [2] as stated in the introduction, the ensembles are fraught with hegemonic assumptions, terms, and models. Thus, this methodology facilitates the identification and scrutiny of these elements, thereby ensuring a thorough evaluation within the context of the thesis. The potential other approaches mentioned in the previous paragraph would most likely have led to the same methodology because it allows for a critical analysis of the hegemonic assumptions, terms, and models (of the original authors).

### Methods

For this thesis, document analysis will be the primary method due to its focus on academic fields that predominantly publish their findings in academic journals. The analysis will involve systematic literature reviews of contemporary (2015–2024) and officially published scientific peer-reviewed journal articles, which are electronically available in English. The emphasis will be on expert-to-expert documents, that is, documents created for the scientific community. The systematic reviews will follow parts of the 'Preferred Reporting Items for Systematic Reviews and Meta-analyses' (PRISMA 2020) checklist (Appendix 2).<sup>23</sup> It follows *parts* of PRISMA because the focus will be on what these studies measure, define, or consider as PEMs, not the statistical methods or results of these studies.

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<sup>19</sup> See, e.g., Proudfoot, *Religious*, 1985; Taves, *Reconsidered*, 2009; Martin, *Experience*, 2016:525–40.

<sup>20</sup> Shults, *Cognitive*, 2023:301: "MN: preference for academic arguments that optimize the use of theories, hypotheses, methods, evidence, and interpretations that do not appeal to supernatural agents; MS: preference for academic practices that optimise the use of scholarly strategies that are not tied to the idiosyncratic interests of a supernatural coalition." Cf. Chen et al., *Daoist*, 2023:412.

<sup>21</sup> von Stuckrad & Wijsen, *Introduction*, 2016:1–11; Johnston & von Stuckrad, *Discourse*, 2021:1–6; McCutcheon, *Discourse*, 2021:7–21; cf. Hjelm, *Discourse*, 2022:229–44.

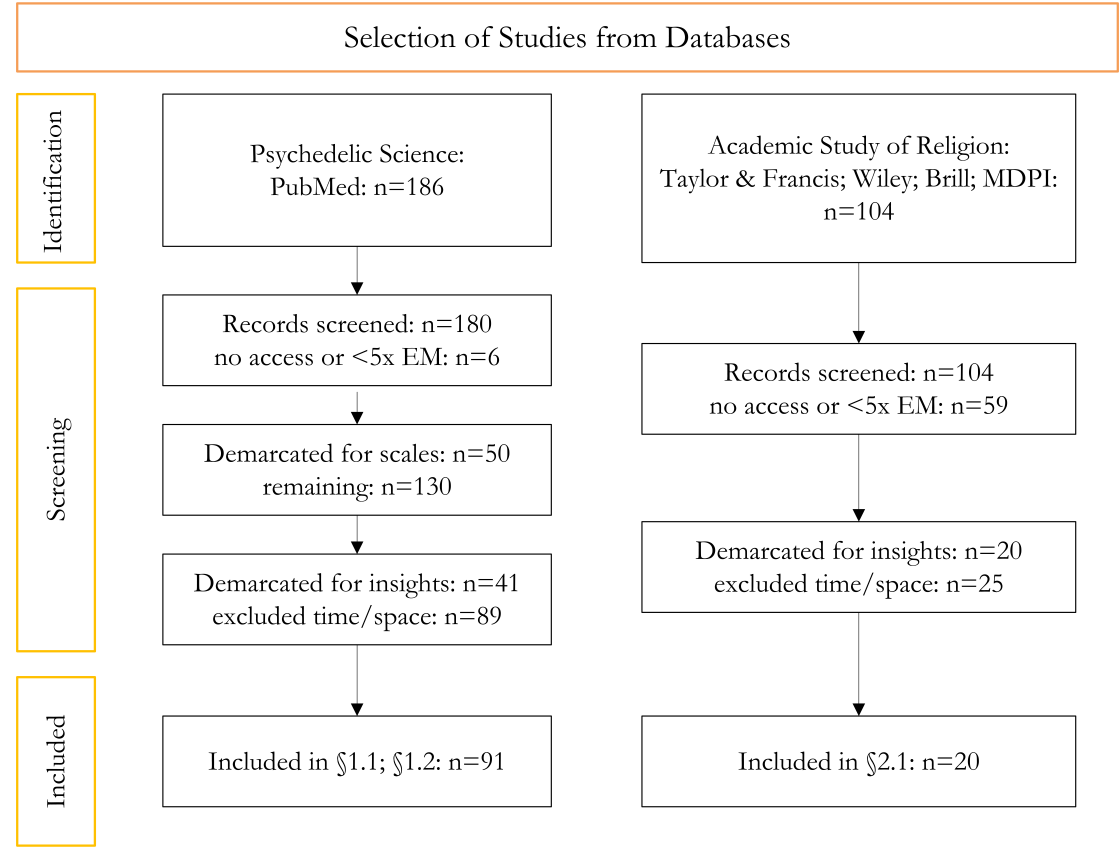
<sup>22</sup> von Stuckrad, *Scientification*, 2014:11; *Discourse*, 2015:429–38; discourses are "communicative structures that organise knowledge in a given community; they establish, stabilise, and legitimise systems of meaning and provide collectively shared orders of knowledge in an institutionalised social ensemble. Statements, utterances, and opinions about a specific topic, systematically organised and repeatedly observable, form a discourse." Cf. Eder, *Diskurse*, 2006:13; von Stuckrad, *Introduction*, 2016:2; Johnston & von Stuckrad, *Discourse*, 2021:2.

<sup>23</sup> Davie & Wyatt, *Document*, 2022:245–55; Prisma, 2023.

Therefore, only the theoretical and conceptual parts of the studies are important. The focus of the ASR will be broader because it will include spontaneous and practice-induced EM. Other possible methods could have been content analysis or, in light of the other possible approaches, the historical method, but document analysis is more suited because of its focus on written documents. The sources for the documents of PS and ASR will be general and publisher databases. The on February 29 (2024) selected databases, search terms, and selected studies are the following:

**1. Psychedelic Science:** PubMed: search terms: [(['psychedelics' [All Fields]) AND ('mystical' [All Fields])] AND ((english[Filter]) AND (2015:2024 [pdat])): 186 items; see Figure 1 for the selection and demarcation; see Tabel 1 for the use of scales and the influence of the landmark studies of Barrett and Griffiths. PubMed includes a wide range of journals and will be a clean search for PEMs because it does not include research with another focus from other fields.

**2. Academic Study of Religion:** Taylor & Francis Online: [All: 'mystical experience'] AND [In: 'The International Journal for the Psychology of Religion'] AND [(01/01/2015 TO 12/31/2024)]; 41 items; Wiley Online Library: ['mystical experience' anywhere; In: 'Journal for the Scientific Study of Religion']: 24 items; Brill: 'Method & Theory in the Study of Religion:' [All: 'mystical experience'; Search level: All; 2015-2024]: 38 items. The snowball effect resulted in 1 item from MDPI: *Religions* because of its essential critique. These specific journals were chosen because they focus on (pi)EM (aligning with PS studies) and include less historical, descriptive, or thought deemed mystical studies.



**FIGURE 1**  
Selection of studies from databases for PS and ASR

TABLE 1 Studies that define, use, or mention scales for PEMs (full version in Appendix 1)

#	Studies	Scales					Mentions <sup>24</sup>	
		MEQ30 <sup>25</sup>	EDI <sup>26</sup>	ASC <sup>27</sup>	HMS <sup>28</sup>	Other <sup>29</sup>	Barrett	Griffiths
1	Schmid & Bershad, 2024:490–9	x		5d				
2	Kervadec et al., 2024:1–9	x					x	x
3	Stocker et al., 2024:80–100	x +43		11d		PES	x	x
4	Barbut Siva et al., 2024:145–55	x					x	x
5	Hovmand et al., 2024:1–10	x +43			x	SOCQ	x	x
1	Graziosi et al., 2023:558–69	x		5d		E/GEE	x	x
2	Breeksema et al., 2023:1547–60	x	x	x			x	x
3	Hirschfeld et al., 2023:1602–11	x		11d			x	x
4	Søgaard Juul et al., 2023:367–78	x					x	x
5	Sleight et al., 2023:1–17		x		x	EDS		
1	Ko et al., 2022:1–12	x		11d	x		x	x
2	Daldegan-Bueno et al., 2022:1–16	x				SOCQ	x	x
3	Fischman, 2022:1–16	x			x		x	x
4	Friesen, 2022:592–609		x	5d	x			x
5	Uthaug et al., 2022:309–20	x	x				x	x
1	Corneille & Luke, 2021:1–19	x		11d			x	x
2	Breeksema & van Elk, 2021:1471–4	x	x	x	x	INOE	x	x
3	Agin-Liebes et al., 2021:543–52	x	x				x	x
4	Hirschfeld & Schmidt, 2021:384–97	x		11d			x	x
5	Davis et al., 2021:437–46	x +43		x	x	SOCQ	x	x
1	Olson, 2020:563–67	±						x
2	Schmidt et al., 2020:1–11	x		11d			x	x
3	DiVito & Leger, 2020:9791–99	±					x	x
4	Netzband et al., 2020:3161–71	x					x	x
5	James et al., 2020:1–8	x				SOCQ	x	x
1	Russ et al., 2019:3221–30	x	x	5d			x	x
2	Roseman et al., 2019:1076–87	x					x	x
3	Garcia-Romeu et al., 2019:1–14	x					x	x
4	Johnson et al., 2019:83–102	x +43	x	11d	x		x	x
5	Griffiths et al., 2019:1–26	x			x	GEE	x	x
1	Barsuglia et al., 2018:1–6	x				SOCQ	x	x
2	Haijen et al., 2018:1–20	x		11d			x	x
3	Ezquerro-Romano et al., 2018:1–11	±						x
4	Roseman et al., 2018:1–10	x		5d	±	11d	x	x
5	Timmermann et al., 2018:1–12	x	x				x	x
1	Liechti, 2017:2114–27	x		5d			x	x
2	Winkelman, 2017:1–17	x		5d	x		x	x
3	Barrett et al., 2017:1–12	x					x	x
4	Johnson et al., 2017:841–50	x				TAS	x	x
5	Carbonaro et al., 2017:521–34	x		5d	x	SOCQ	x	x
1	Griffiths et al., 2016:1181–97	x		5d	x	SOCQ	x	x
2	Ross et al., 2016:1165–80	x					x	x
3	Sweat et al., 2016:344–50				x			x
4	Bouso et al., 2016:356–72	x		5d			x	x
5	Nour et al., 2016:1–13	x	x	5d		11d	x	x
1	Barrett et al., 2015:1182–90	x +43			x	SOCQ	x	x
2	Majić et al., 2015:241–53	±43		5d		SOCQ		x
3	Halberstadt, 2015:99–120			5d		APZ		x
4	Garcia-Romeu et al., 2015:633–54	±				STE		x
5	Lebedev et al., 2015:3137–53	±	±	5d	x			x

<sup>24</sup> Mentions the landmark studies of Barrett et al. (e.g., 2015) and Griffiths et al. (e.g., 2006).

<sup>25</sup> ± = does not mention MEQ30 but mentions the precise elements of MEQ30; MEQ30 = Mystical Experience Questionnaire 30 items; +43 = MEQ43 = Mystical Experience Questionnaire 43 items.

<sup>26</sup> EDI = Ego-Dissolution Inventory; EDS = Ego-Dissolution Scale: see Sleight et al., *Ego-Dissolution*, 2023:1–17.

<sup>27</sup> ASC = Altered State of Consciousness Questionnaire; 5D-ASC = 5 dimensions; 11D-ASC = 11 dimensions.

<sup>28</sup> HMS = Hood Mysticism Scale, or M-scale: **Hood**, *Mystical*, 1975.

<sup>29</sup> PES = Psychedelic Experience Questionnaire; SOCQ = States of Consciousness Questionnaire, 100 items; EEE = Survey of Entity Encounter Experiences; GEE = Survey of God Encounter Experiences; INOE = Inventory of Non-Ordinary Experiences; TAS = Tellegen Absorption Scale; APZ = Abnormer Psychischer Zustaende; STE = Self-Transcendent Experience; see for all these scales Appendix 4.

# 1. REVIEW

## 1.1 Psychedelic Science

Many studies in the field of psychedelic science (PS) make use of a variety of scales to measure PEMs. Table 1 illustrates the prevalence of different scales and questionnaires in these studies, with the MEQ30/43 being used most frequently (46/50, 92%), HMS (16/50, 32%), 5D-ASC (14/50, 28%), EDI (11/50, 22%), 11D-ASC (8/50, 16%), ASC (4/50, 8%). The MEQ30/43 and HMS solely assess 'mystical(-type) experiences' and have demonstrated overall validity, reliability, and reproducibility.<sup>30</sup> For example, the MEQ30 has been translated and validated in multiple languages and countries. Moreover, researchers use it in both retrospective and prospective experimental laboratory studies.<sup>31</sup> Table 2 delves into the various factors of these psychometric scales, including the SOQC / PES, because the items of this scale return in MEQ30/43, 5D-ASC, and 11D-ASC.<sup>32</sup> The sources and authors that lie at the basis of these scales are highlighted in the footnotes.

TABLE 2 Factors of the psychometric scales.

Stace (cf. HMS)		SOCQ / PES		HMS (cf. Stace)	
A1	Introvertive mysticism	B1	Internal and external unity	C1	Ego quality
a	Time- and spacelessness	B2	Objectivity and reality (noetic)	C2	Unifying quality
b	Ego loss	B3	Transcendence of time-space	C3	Inner subjective quality
c	Ineffability	B4	Sense of sacredness	C4	Temporal/spatial quality
A2	Extrovertive mysticism	B5	Deeply-felt positive mood	C5	Noetic quality
a	Inner subjectivity	B6	Paradoxicality	C6	Ineffability
b	External unity	B7	Alleged ineffability	C7	Positive affect
A3	(Religious) Interpretation	B8	Transiency	C8	Religious quality
a	Positive affect	B9	Positive changes in attitude and/or behaviour		
b	Sacredness				
c	Noetic quality				
5D-ASC		MEQ43		11D-ASC	
D1	Oceanic boundlessness	E1	Internal unity	G1	Experience of unity
a	Positive derealisation	E2	External unity	G2	Spiritual experience
b	Positive depersonalisation	E3	Transcendence of time-space	G3	Blissful state
c	Altered sense of time	E4	Ineffability and paradoxicality	G4	Insightfulness
d	Positive mood	E5	Sense of sacredness	G5	Disembodiment
e	Unity	E6	Noetic quality	G6	Impaired control and cognition
D2	Dread of ego-dissolution	E7	Deeply-felt positive mood	G7	Anxiety
D3	Visionary restructuralisation			G8	Complex imagery
D4	Auditory alterations			G9	Elementary imagery
D5	Vigilance reduction	F1	EDI & EDS	G10	Audio-visual synesthesiae
		F2	Ego-loss	G11	Changed meaning of percepts
			Unity		
MEQ30 & [new MEQ40]		Σ CUMULATIVE (see Figure 3)			
H1	Mystical	PS1	Selfless Unity	A1b;B1;C1;C2;D1b;D1e;E1;F1;G1;H1;G5;	
H2	Positive mood	PS2	World Unity	A2a,b;B1;C2;C3;D1a;D1e;E2;F2;G1;H1;H6;	
H3	Transcendence of time-space	PS3	Insightfulness	A3c;B2;C5;E6;G4;H1;	
H4	Ineffability	PS4	Spiritualness	A3b;B4;C8;E5;G2;H1;H6;	
+5	Paradoxality	PS5	Elevated Emotions	A3a;B5;B8;B9;D1d;E7;G3;H2;	
+6	Connectedness	PS6	Time- & Spacelessness	A1a;B3;C4;D1c;E3;H3;	
		PS7	Perplexity	A1c;B7;C6;E4;H5;	

<sup>30</sup> For HMS or M-scale: e.g., Hood et al., *Mysticism*, 2001:691–705; Chen et al., *Chinese*, 2011:654–70; Chen et al., *Tibetan*, 2011:328–38; Chen et al., *Christians*, 2012:155–68.

<sup>31</sup> See e.g., *English*: MacLean et al., 2012:721–37; validation and confirmation: see Barrett et al., 2015:1182–90; *Japanese*: Yonezawa et al., 2024:280–84; *Spanish*: Davis et al., 2023:1–11; *Finnish*: Kangaslampi et al., 2020:309–18; *German*: see Schmid & Liechti, 2018:535–45; *Brazilian Portuguese*: Schenberg et al., 2017:1–5; *Dutch*: Wirsching et al., 2023:1–11; *French*: Fauvel et al., 2022:170–9; *Danish*: Hovmand et al., 2024:2.

<sup>32</sup> Stace: Stace, 1960; SOCQ/PES: Pahnke, 1963, 1966; Richards, 1975; 5D-ASC: Ditttrich, 1975, 1985, 1998; MEQ43: Richards, 1978; Griffiths, 2006; 11D-ASC: Studerus et al., 2010; MEQ30/40: Maclean et al., 2012; Barrett et al., 2015; cf. Stocker et al., 2024; EDI: Nour et al., 2016; EDS: cf. Sleight et al., 2023:1–17.

### 1.1.1 Mystical-Construct

The following is a presentation of the cumulative factors and MEQ30 items, along with their corresponding items from SOCQ, Stace, HMS, 5D-ASC, EDI/S, and 11D-ASC (these all correlate). These components largely represent what PS considers 'mystical(-type) experiences,' and their descriptions are based on the accounts of the original authors. Scoring 60% or higher on these combined elements is deemed a 'complete mystical experience.'

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#### [H1] MEQ30 – MYSTICAL (Internal Unity – Selfless Unity)

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MEQ30#1 "Freedom from the limitations of your personal self and feeling a unity or bond with what was felt to be greater than your personal self."

└ cf. ▲ "Everything seemed to unify into an oneness." ► "(...) something greater than myself seemed to absorb me." ▼ "(...) I felt myself to be absorbed as one with all things." ◀ "(...) dissolution of my 'self' or ego." "(...) a decrease in my sense of self-importance." "(...) disintegration of my 'self' or ego." "I felt far less absorbed in my own issues and concerns."<sup>33</sup>

MEQ30#2 "Experience of pure being and pure awareness (beyond the world of sense impressions)."

└ cf. ▲ "I felt that I was in a wonderful other world." ► "It seemed to me as though I did not have a body anymore." "I had the feeling of being outside of my body." "I felt as though I were floating." ▼ "I experience being out of my body." "I feel I do not exist."<sup>34</sup>

MEQ30#3 "Experience of oneness in relation to an 'inner world' within."

└ cf. ▲ "I felt I was being transformed forever in a miraculous way." ► "(...) everything seemed to disappear from my mind until I was conscious only of a void." ▼ "(...) I felt myself to be absorbed as one with all things." ◀ "My 'self' or ego dissolves into nothingness." "All notion of self and identity dissolved away." "My sense of self moves from one part of my body to another (...)."<sup>35</sup>

MEQ30#4 "Experience of the fusion of your personal self into a larger whole."

└ cf. ▲ "Loss of your usual identity." ► "Conflicts and contradictions seemed to dissolve." ▼ "(...) I felt everything in the world to be part of the same whole." "(...) all things seemed to be unified into a single whole." ◀ "I felt at one with the universe." "I feel I merge with others/the world." "My 'self' disappears and no 'me' or 'I' is present any longer." "I lost all sense of ego."<sup>36</sup>

MEQ30#5 "Experience of unity with ultimate reality."

└ cf. ▲ "I had the feeling of being connected to a superior power." ► "(...) I realized the oneness of myself with all things." "(...) experienced anything that I could call ultimate reality."<sup>37</sup>

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Internal unity–selfless unity–describes a state in which one loses their ordinary sense impressions and sense of self without losing consciousness. The multiplicity of external and internal sense impressions, including time and space, and the ego or usual sense of individuality fade and melt away while

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<sup>33</sup> SOCQ#35; MEQ43#2 [internal unity]. ▲ 5D-ASC#18 [oceanic boundlessness; positive derealisation]; 11-ASC#1 [experience of unity]. ► Stace#3 [introvertive mysticism; ego loss]; HMS#3 [ego quality]. ▼ Stace#6 [extrovertive mysticism; unity]; HMS#6 [ego quality]. ◀ EDI#1, 4, 5, 6 [ego-dissolution]; EDS#5 [ego-loss].

<sup>34</sup> SOCQ#41 [internal unity]; MEQ43#3 [internal unity]. ▲ 5D-ASC#1 [oceanic boundlessness; positive derealisation]. ► 5D-ASC#26, 5D-ASC#62, 5D-ASC#63 [oceanic boundlessness; positive depersonalisation]; 11-ASC#15, 11-ASC#16, 11-ASC#17 [disembodiment]. ▼ EDS#4, EDS#3 [ego-loss].

<sup>35</sup> SOCQ#54 [internal unity]; MEQ43#4 [internal unity]. ▲ 5D-ASC#16 [oceanic boundlessness; positive depersonalisation]. ► Stace#4 [introvertive mysticism; ego loss]; HMS#4 [ego quality]. ▼ Stace#24 [extrovertive mysticism; unity]; HMS#24 [ego quality]. ◀ EDS#1, [ego-loss]; EDI#8, [ego-dissolution]; EDS#6 [ego-loss].

<sup>36</sup> SOCQ#77 [internal unity]; MEQ43#5 [internal unity]. ▲ MEQ43#1 [internal unity]; SOCQ#26 [paradoxality]. ► 5D-ASC#42 [oceanic boundlessness; positive derealisation]; 11D-ASC#4 [experience of unity]. ▼ Stace#19, Stace#30 [extrovertive mysticism; unity]; HMS#19, HMS#30 [unifying quality]. ◀ EDI#2; [ego-dissolution] EDS#7, EDS#10, EDS#2 [ego-loss]; EDI#7 [ego-dissolution].

<sup>37</sup> SOCQ#83 [internal unity]; MEQ43#6 [internal unity]. ▲ 5D-ASC#9 [oceanic boundlessness; positive derealisation]; 11-ASC#6 [spiritual experience]. ► Stace#12 [extrovertive mysticism; unity]; HMS#12 [unifying quality]; Stace#16 [religious interpretation; sacredness]; HMS#16 [noetic quality].

consciousness remains. In a complete (depth-)experience, one feels to be only aware of an 'undifferentiated unity' with a 'pure awareness' beyond sensuous, conceptual, and empirical content (i.e., the discursive mind). Nevertheless, in this state of selfless unity, the awareness of this unity remains and is remembered as a profound feeling. One can experience this unity as an absorption into something more extensive but also as a felt nothingness, a void or empty unity within oneself.<sup>38</sup>

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### [H1] MEQ30 – MYSTICAL (External Unity – World Unity)

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MEQ30#6 "Feeling that you experienced eternity or infinity."

↳ cf. ▲ "Sense of the limitations and smallness of your everyday personality in contrast to the Infinite." ► "I experienced a touch of eternity."<sup>39</sup>

MEQ30#7 "Experience of oneness or unity with objects and/or persons perceived in your surroundings."

↳ cf. ▲ "(...) seeing something in your surroundings more and more intensely and then feeling as though you and it become one." "Loss of feelings of difference between yourself and objects or persons in your surroundings." "Increased awareness of the importance of interpersonal relationships." ► "(...) my environment and I were one." "(...) I became aware of a unity to all things." "The boundaries between myself and my surroundings seemed to blur." ▼ "I feel one with everything around me." "I feel a sense of union with others."<sup>40</sup>

MEQ30#8 "Experience of the insight that 'all is One.'"

↳ cf. ▲ "The world seemed to me beyond good and evil." ► "(...) a new view of reality was revealed to me." "(...) ultimate reality was revealed to me."<sup>41</sup>

MEQ30#9 "Awareness of the life or living presence in all things."

↳ cf. ▲ "Everything around me seemed to be animated with life." ► "(...) I felt as if all things were alive." "(...) all things seemed to be aware." "(...) I felt nothing is ever really dead." "(...) all things seemed to be conscious."<sup>42</sup>

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Another way in which this 'undifferentiated unity' is felt is by looking outward and finding unity in the external world. Ordinary sense impressions are active, but they extend to 'non-ordinary' impressions like a sense of underlying oneness behind the empirical multiplicity. One feels a sense of oneness with all that is animate and inanimate and intuitively experiences their essence to be the same at the deepest level. This way of experiencing the world or universe gives someone the feeling that they have faced a new or different reality. In the most complete (depth-)experience, one feels a cosmic dimension, a feeling of deep connection to everything. The universe lights up with an incredible aliveness, awareness, eternity and infinity. Moreover, this sense of 'world unity' is accompanied by a shift in one's (relational) perspective and an intensely felt connection to everyone and everything.<sup>43</sup>

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<sup>38</sup> **Stace**, *Mysticism*, 1960:110; **Pahnke**, *Mysticism*, 1966:295–313; 1970:148–9; **Hood**, *Mystical*, 1975:31.

<sup>39</sup> SOCQ#12 [transcendence of time and space]; MEQ43#14 [ibid.]. ▲ MEQ43#27 [sense of sacredness]; SOCQ#8. [b] 5D-ASC#41[oceanic boundlessness; altered sense of time]; 11-ASC#3 [experience of unity].

<sup>40</sup> SOCQ#14 [external unity]; MEQ43#7 [ibid.]. ▲ MEQ43#8 [external unity; paradoxality]; SOCQ#27, MEQ43#10, SOCQ#51, SOCQ#99 [connectedness]. ► 5D-ASC#34, 11-ASC#2 [experience of unity]; Stace#28 [extrovertive mysticism; unity]; HMS#28 [unifying quality]; 5D-ASC#71 [oceanic boundlessness; positive derealisation]. ▼ EDS#8, EDS#9 [unity]; EDI#3 [ego-dissolution].

<sup>41</sup> SOCQ#47 [external unity]; MEQ43#9 [external unity]. ▲ 5D-ASC#45 [oceanic boundlessness; unity]. ► Stace#13, Stace#17 [religious interpretation; noetic quality]; HMS#13, HMS#17 [noetic quality].

<sup>42</sup> SOCQ#74 [external unity]; MEQ43#12 [external unity]. ▲ 5D-ASC#87 [oceanic boundlessness; positive derealisation]. ► Stace#8, Stace#10, Stace#31, Stace#29 [extrovertive mysticism; inner subjectivity]; HMS#8, HMS#10, HMS#31, HMS#29, [noetic quality].

<sup>43</sup> **Stace**, *Mysticism*, 1960:79; **Pahnke**, *Mysticism*, 1966:295–313, 1970:148–9; cf. **Hood**, *Mystical*, 1975:31.

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### [1] MEQ30 – MYSTICAL (Noetic Quality – Insightfulness)

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MEQ30#10 "Gain of insightful knowledge experienced at an intuitive level."

└ cf. ▲ "Intuitive insight into the inner nature of objects and/or persons in your surroundings." ► "I gained clarity into connections that puzzled me before." "I had very original thoughts." ▼ "(...) deeper aspects of reality were revealed to me."<sup>44</sup>

MEQ30#11 "Certainty of encounter with ultimate reality (in the sense of being able to 'know' and 'see' what is really real) (...)."<sup>45</sup>

MEQ30#12 "You are convinced now, as you look back (...), that in it you encountered ultimate reality (...you 'knew' and 'saw' what was really real)."

└ cf. ▲ "(...) the consciousness experienced was more real than normal awareness of everyday reality."<sup>46</sup>

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The one who experiences insightfulness or the noetic quality (*noētikós* or *noéō* 'I see, understand') seems to feel that they gained a profound sense of understanding, wisdom, and insightful knowledge at an intuitive non-rational level. They feel that these 'states of insight' go into the depths of truth unreached by the discursive intellect. People often describe this as illuminations and revelations full of insight and importance. Even if these truths are difficult to articulate, they possess an undeniable sense of authority for the one who experiences them (not being a subjective delusion).<sup>47</sup> They are interconnected because the experiencer feels that obtaining this knowledge is mediated by the experience of 'ultimate reality' or the 'really real.' This experience is unlike the reality of 'everyday' consciousness, but the knowledge is felt to be genuine. Insightful knowledge is not necessarily an increase in factual information but rather a sense of intuitive illumination (requiring no rational proof). It produces an inward feeling of objective truth about the nature of reality—ultimate reality.<sup>48</sup>

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### [1] MEQ30 – MYSTICAL (Sacredness – Spiritualness)

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MEQ30#13 "Sense of being at a spiritual height."

└ cf. ▲ "Feelings of exaltation." ► "I felt extraordinary powers within myself." "Worries and anxieties of everyday life felt unimportant." "I felt totally free and released from all obligations."<sup>49</sup>

MEQ30#14 "Sense of reverence."

└ cf. ▲ "Many things appeared to me as breathtakingly beautiful." ► "(...) I felt that all was perfection at that time." ▼ "Experience of increased awareness of beauty."<sup>50</sup>

MEQ30#15 "(...) you experienced something profoundly sacred and holy."

└ cf. ▲ "Sense of profound humility before the majesty of what was felt to be sacred or holy." ► "My experience had religious aspects to it." ▼ "(...) an experience which seemed holy to me." "(...) an experience which I knew to be sacred." "(...) experienced anything to be divine."<sup>51</sup>

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<sup>44</sup> SOCQ#9; MEQ43#34 [noetic quality]. ▲ MEQ43#11 [external unity]; SOCQ#62 [connectedness]. ► 5D-ASC#69 [oceanic boundlessness; unity]; 11D-ASC#13, 11D-ASC#14 [insightfulness]. ▼ Stace#26 [religious interpretation; noetic quality]; HMS#26 [noetic quality].

<sup>45</sup> SOCQ#22 [objectivity and reality]; MEQ43#35 [noetic quality].

<sup>46</sup> SOCQ#69 [objectivity and reality]; MEQ43#36 [noetic quality]. ▲ MEQ43#33 [ibid.]; SOCQ#3 [ibid.]; MEQ30#12 is already retrospective and interpretative.

<sup>47</sup> James, *Varieties*, 2009[1902]:380; Fischman, *Knowing*, 2022:2.

<sup>48</sup> Stace, *Mysticism*, 1960a; Pahnke, *Mysticism*, 1966:295–313, *Mysticism*, 1970:150; Hood, *Mystical*, 1975:32; McCulloch et al., *Positive*, 2022; Hovmand et al., *Danish*, 2024:1.

<sup>49</sup> SOCQ#36 [sense of sacredness]; MEQ43#29 [sense of sacredness]. ▲ MEQ43#41, SOCQ#50 [deeply-felt positive mood]. ► 5D-ASC#40, 5D-ASC#35, 5D-ASC#73 [oceanic boundlessness; unity].

<sup>50</sup> SOCQ#55; MEQ43#30 [sense of sacredness]. ▲ 5D-ASC#57 [oceanic boundlessness; positive derealisation]. ► Stace#18 [religious interpretation; positive affect]; HMS#18. ▼ SOCQ#95 [connectedness].

<sup>51</sup> SOCQ#73 [sense of sacredness]; MEQ43#31 [sense of sacredness]. ▲ MEQ43#28; SOCQ#31 [sense of sacredness]. ► 5D-ASC#94 [oceanic boundlessness; unity]; 11D-ASC#8 [spiritual experience]. ▼ Stace#9, Stace#20, Stace#14 [religious interpretation; sacredness]; HMS#9, HMS#20, HMS#14 [religious quality].

An acute subjective experience of felt sacredness and spiritualness can arise. This gives the feeling of being in the presence of something extremely valuable and worthy of respect. The most notable characteristic of this sacredness is an intuitive and reverent response of awe and wonder in the presence of inspiring realities. Religio-spiritual beliefs or traditional theological terminology do not need to be involved, although there may be a feeling of reverence or a sense of holiness or divinity associated with the experience. This may include feelings of mystery, beauty, awe, and reverence that can be but are not necessarily expressed in (traditional) religious language.<sup>52</sup> A participant in a study referred to this spiritualness as follows: "I'm sort of discovering that God in yourself, so to speak (...) So I think that also opened up to me tremendously—a spiritual piece. And I've never been religious; I'm not religious particularly at all. And I feel like I've really connected with a spiritual side in myself as well (...) that adds another level of contentment and happiness."<sup>53</sup>

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## [2] MEQ30 – POSITIVE MOOD (Elevated Emotions)

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MEQ30#16 "Experience of amazement."

↳ cf. ▲ "I felt very profound." ► "(...) an experience which left me with a feeling of wonder." ▼ "Increase in the beauty and significance of music."<sup>54</sup>

MEQ30#17 "Feelings of tenderness and gentleness."

↳ cf. ▲ "Feelings of universal or infinite love." ► "I experienced an all-embracing love."<sup>55</sup>

MEQ30#18 "Feelings of peace and tranquillity."

↳ cf. ▲ "I experienced a profound peace in myself." ► "(...) experienced a perfectly peaceful state."<sup>56</sup>

MEQ30#19 "Experience of ecstasy."

↳ cf. ▲ "I enjoyed boundless pleasure."<sup>57</sup>

MEQ30#20 "Sense of awe or awesomeness."

↳ cf. ▲ "I experienced a kind of awe." ► "(...) an experience which left me with a feeling of awe."<sup>58</sup>

MEQ30#21 "Feelings of joy."

↳ cf. ▲ "Experience of overflowing energy." ► "Bodily sensations were very enjoyable." ▼ "I have experienced profound joy."<sup>59</sup>

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The defining characteristics of this category are joy, blessedness, and peace. These emotions are unique in their intensity, elevated to the highest levels of human experience, and those who experience them hold them in high regard. It is not uncommon for tears to be associated with these emotions due to their overwhelming nature. These feelings can occur either at the peak of the experiences

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<sup>52</sup> Pahnke, *Mysticism*, 1966:295–313, *Mysticism*, 1970:150; Hood, *Mystical*, 1975:31.

<sup>53</sup> Swift et al., *Psychotherapy*, 2017:504; Graziosi et al., *Subjective Effects*, 2023:6.

<sup>54</sup> SOCQ#5 [sense of sacredness]; MEQ43#26 [sense of sacredness]. ▲ 5D-ASC#50 [oceanic boundlessness; positive mood]; 11D-ASC#12 [insightfulness]. ► Stace#25 [religious interpretation; positive affect]; HMS#25 [positive affect]. ▼ SOCQ#58 [connectedness].

<sup>55</sup> SOCQ#18 [positive mood]; MEQ43#38 [positive mood]. ▲ MEQ43#42 [deeply-felt positive mood]; SOCQ#60 [connectedness]. ► 5D-ASC#91 [oceanic boundlessness]; 11D-ASC#11 [blissful state].

<sup>56</sup> SOCQ#30 [positive mood]; MEQ43#39 [positive mood]. ▲ 5D-ASC#86 [oceanic boundlessness]; 11D-ASC#10 [blissful state]. ► Stace#7 [religious interpretation; positive affect]; HMS#7 [positive affect].

<sup>57</sup> SOCQ#43 [positive mood]; MEQ43#40 [positive mood]. ▲ 5D-ASC#12 [oceanic boundlessness; positive mood]; 11D-ASC#9 [blissful state].

<sup>58</sup> SOCQ#80 [sense of sacredness]; MEQ43#32 [ibid.]. ▲ 5D-ASC#81 [oceanic boundlessness]; 11D-ASC#7 [spiritual experience]. ► Stace#22 [religious interpretation; positive affect]; HMS#22 [religious quality].

<sup>59</sup> SOCQ#87 [positive mood]; MEQ43#43 [ibid.]. ▲ MEQ43#37, SOCQ#10 [deeply-felt positive mood]. ► 5D-ASC#3 [oceanic boundlessness]. ▼ Stace#5 [religious interpretation]; HMS#5 [positive affect].

or during the 'ecstatic afterglow,' when the effects and memory of the experiences are still vivid and intense. While love can also be a component of a deeply felt positive mood, it does not have the same strengths as joy, blessedness, and peace. Ultimately, it comes down to the 'positive affective quality' of the experiences.<sup>60</sup>

### [3] MEQ30 – TRANSCENDENCE OF TIME AND SPACE (Time- & Spacelessness)

MEQ30#22 "Loss of your usual sense of time."

↳ cf. ▲ "Time passed faster than usual." "Time passed more slowly than usual." "I could not remember what had happened two hours earlier."<sup>61</sup>

MEQ30#23 "Loss of your usual sense of space."

↳ cf. ▲ "I no longer knew where I actually was."<sup>62</sup>

MEQ30#24 "Loss of usual awareness of where you were."

↳ cf. ▲ "My sense of time and space was altered as if I was dreaming." ► "(...) no sense of time or space."<sup>63</sup>

MEQ30#25 "Sense of being 'outside of' time, beyond past and future."

↳ cf. ▲ "I experienced past, present and future as an oneness." ► "Feeling that you have been 'outside of' history in a realm where time does not exist."<sup>64</sup>

MEQ30#26 "Being in a realm with no space boundaries."

↳ cf. ▲ "(...) time, place, and distance were meaningless." "(...) time and space were non-existent."<sup>65</sup>

MEQ30#27 "Experience of timelessness."

↳ cf. ▲ "(...) an experience which was both timeless and spaceless."<sup>66</sup>

This factor encompasses losing an 'ordinary' perception of time and space. This includes one's awareness of clock time and personal sense of past, present, and future. Felt transcendence of space involves a person losing their 'usual' sense of orientation within their environment, as perceived in three dimensions. Felt timelessness and spacelessness may also include a feeling of 'eternity' or 'infinity.' Ultimately, time and space are felt to be altered, with the most extreme outcome being an experience that is both felt to be infinite and without physical boundaries (or body).<sup>67</sup> A participant in a study described it as follows: "I'm just really completely gone. (...) I don't perceive the outside world either. I'm not able to move. (...) I'm not here, on earth, anymore. I'm floating somewhere in that infinite world that doesn't end."<sup>68</sup> This sometimes results in a sense of vastness, continuity, dreaming, or being beyond/outside of time.<sup>69</sup>

<sup>60</sup> Pahnke, *Mysticism*, 1966:295–313, *Mysticism*, 1970:149; Hood, *Mystical*, 1975:32.

<sup>61</sup> SOCQ#2 [transcendence of time and space]; MEQ43#13 [ibid.] ▲ 5D-ASC#51, 5D-ASC#29, 5D-ASC#56 (1998 version) [altered state of consciousness; dread of ego-dissolution].

<sup>62</sup> SOCQ#15 [transcendence of time and space]; MEQ43#15 [ibid.] ▲ 5D-ASC#66 (1998 version) [altered state of consciousness].

<sup>63</sup> SOCQ#29 [transcendence of time and space]; MEQ43#16 [ibid.] ▲ 5D-ASC#36 [oceanic boundlessness; altered sense of time]. ► Stace#11 [extrovertive mysticism; unity]; HMS#11 [temporal/spatial quality].

<sup>64</sup> SOCQ#34 [transcendence of time and space]; MEQ43#17 [ibid.] ▲ 5D-ASC#52 [oceanic boundlessness]; 11D-ASC#5 [experience of unity]. ► MEQ43#18 [transcendence of time and space]; SOCQ#42 [paradoxality].

<sup>65</sup> SOCQ#48 [transcendence of time and space]; MEQ43#19 [ibid.] ▲ Stace#27, Stace#15 [extrovertive mysticism; unity]; HMS#27, HMS#15 [temporal/spatial quality].

<sup>66</sup> SOCQ#65 [transcendence of time and space]; MEQ43#20 [ibid.] ▲ Stace#1 [introvertive mysticism; time- and spacelessness]; HMS#1 [temporal/spatial quality].

<sup>67</sup> Pahnke, *Mysticism*, 1966:295–313, 1970:149; Hood, *Mystical*, 1975:32.

<sup>68</sup> Brekke et al., *Phenomenology*, 2023:1547–60.

<sup>69</sup> Pahnke & Richards, *Mysticism*, 1970:92–108; Maclean et al., *Questionnaire*, 2012:721–37; Timmermann et al., *Near-Death*, 2018:8.

#### [4] MEQ30 – INEFFABILITY (Perplexity)

MEQ30#28 "(...) the experience cannot be described adequately in words."

↳ cf. ▲ "Experience of a paradoxical awareness that two apparently opposite principles or situations are both true." ► "(...) an experience that cannot be expressed in words." "(...) I was unable to express adequately through language." "(...) incapable of being expressed in words."<sup>70</sup>

MEQ30#29 "Feeling that you could not do justice to your experience by describing it in words."

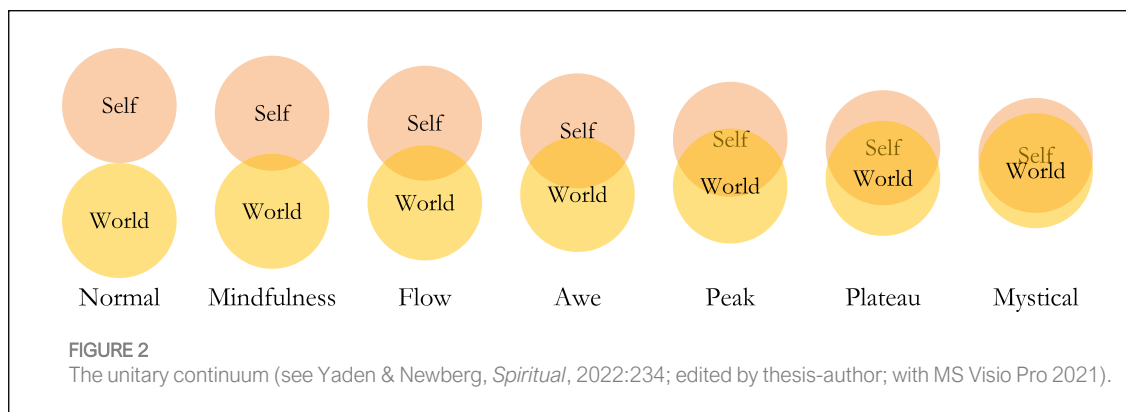
↳ cf. ▲ "Sense that in order to describe parts of your experience you would have to use statements that appear to be illogical, involving contradictions and paradoxes."<sup>71</sup>

MEQ30#30 "Feeling that it would be difficult to communicate your own experience to others who have not had similar experiences."

↳ cf. ▲ "(...) an experience that is impossible to communicate."<sup>72</sup>

When examining descriptions of PEMs, they often appear to be logically contradictory. For instance, during the experience of internal unity (selfless unity), there is a felt loss of all empirical content in an empty unity that is simultaneously felt as full and complete. This felt loss includes the sense of self and the dissolution of individuality, yet something of the individual remains to experience unity. The 'I' both exists and does not exist. Another example is the experience of external unity (world unity), where a paradoxical felt transcendence of space involves both a felt separateness from and simultaneous unity with all animate and inanimate things. Despite attempts to capture these experiences in language, participants maintain that words do not adequately describe the experience or are beyond words. This ineffability refers to the impossibility of expressing the experience in conventional language. Supposedly, the experience cannot be put into words due to the nature of the experience itself rather than the linguistic ability of the subject.<sup>73</sup>

All these elements have various Euro-centric WEIRD assumptions, just like the cultural contingent self-world assumptions in Figure 2 (i.e., 'normal' shifts in non-WEIRD contexts). This 'unitary continuum' and its effects on 'self' and 'world' is a foretaste for the additional insights (§1.2). The next page presents the overall model of PEMs in PS (Figure 3), made with MS Visio Pro 2021.



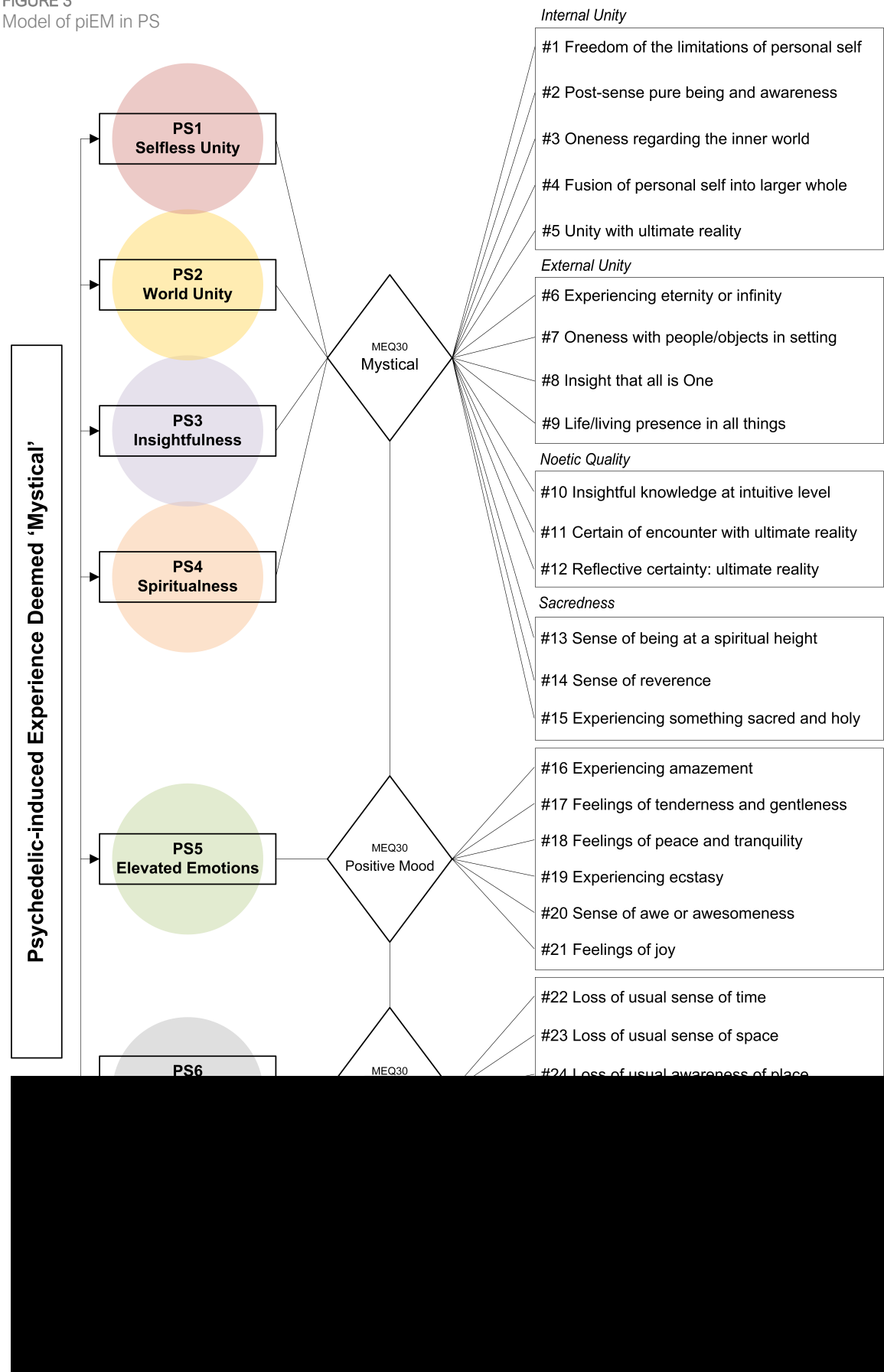
<sup>70</sup> SOCQ#6 [alleged ineffability]; MEQ43#21 [ineffability and paradoxicality]. ▲ MEQ43#22, SOCQ#19 [ineffability and paradoxicality]. ► Stace#32, Stace#21, Stace#2 [introvertive mysticism; ineffability]; HMS#32, HMS#21, HMS#2 [ineffability].

<sup>71</sup> SOCQ#23 [alleged ineffability]; MEQ43#23 [ineffability and paradoxicality]. ▲ MEQ43#24; SOCQ#59 [ineffability and paradoxicality].

<sup>72</sup> SOCQ#86 [alleged ineffability]; MEQ43#25 [ineffability and paradoxicality]. ▲ Stace#23 [introvertive mysticism; ineffability]; HMS#23 [ineffability].

<sup>73</sup> Pahnke, *Mysticism*, 1966:295–313, 1970:150–1; Hood, *Mystical*, 1975:32; Yaden et al., *Ineffability*, 2016.

FIGURE 3  
 Model of piEM in PS



## 1.1.2 Additional Insights

This paragraph focuses on additional insights regarding the conceptualisation of PEMs and the measurement of additional elements and themes (based on 40+ studies; see Appendix 1).

**Paradoxicality–Connectedness–Familiarity.** The concept of paradoxicality involves the transcending of opposites, such as eternal-temporal, personal-nonpersonal, or personal-transpersonal.<sup>74</sup> This concept reflects items of the SOCQ/PES (#19, 16, 42, 51, 59), and some view it as independent of the ineffability factor (see §1.1). On the other hand, the connectedness factor, reflecting SOCQ/PES (#58, 60, 62, 95, 99) and measured by the Watts Connectedness Scale (WCS), focuses on themes like love, music, interrelatedness, intuitive insight, and beauty.<sup>75</sup> Stocker et al. (2024) propose further research on a MEQ40 (MEQ30 +paradoxicality +connectedness) as detailed in Table 2.<sup>76</sup> Additionally, Lawrence et al. (2023) have identified a 'non-referential sense of familiarity' in qualitative reports of psychedelic experiences (hereafter PEs; e.g., feeling that you have been here or felt this before), categorising them into five thematic groups related to 'Familiarity.' These elements strongly connect and correlate with the MEQ30 and EDI, leading to the development of a new Sense of Familiarity Questionnaire (SOF-Q).<sup>77</sup> Reflecting on these factors, they would probably attain higher scores in WEIRD contexts where dualistic thinking, individualism, and placelessness reign strong. In some sense, these factors mirror the deep cultural desires brought forth by PEs.

**Spirits–Entities–Rituals.** Although these experiences are already measured through surveys on Entity Encounter Experiences (EEE) and God Encounter Experiences (GEE) (see Table 1), some deem them 'mystical,' referring to 'mystical encounters with non-natural or supernatural entities.' These 'entities' or 'cosmic energies' are felt to be conscious, intelligent, benevolent, sacred, possess agency, and sometimes exhibit harmful attributes.<sup>78</sup> The sense of unity and connectedness may also encompass notions of eternity, ultimate reality, divinity, God, gods, angels, or spirits, with varying degrees of entity-ness. Individuals may internally feel the divine within themselves or identify with an external entity. The concept of 'unity with all that exists' may encompass the entirety of existence and an entity, illustrating the frequent overlap between these experiential categories. Nevertheless, some consider them as visions or visuals distinct from PEMs.<sup>79</sup> The psychedelic DMT, for instance, produces high levels of PEMs and EEEs, which overlap and can be challenging to differentiate.<sup>80</sup>

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<sup>74</sup> Otto, *Holy*, 1926:63; Stace, *Mysticism*, 1960:25; Pahnke, *Mystical*, 1969:155; Richards, *Sacred*, 2015:26.

<sup>75</sup> Richards, *Sacred*, 2015: "absoluteness of beauty" 52; "humans are indeed all relatives" 50; "Love" 54; "the energy that makes up the world" 51; "Love as the primary and fundamental cosmic force." cf. Huxley, *Letter*, 1955:139; Rodríguez Arce & Winkelman, *Sociality*, 2021:12; Holas & Kamińska, *Synergies*, 2023:1398–409.

<sup>76</sup> Stocker et al., *Extended*, 2024:80–100; cf. Richards, *Sacred*, 2015:26.

<sup>77</sup> Familiarity (1) with the feeling, emotion, or knowledge gained; (2) with the place, space, state, or environment; (3) with the act of going through the experience; (4) with transcendent features; and (5) imparted by an entity encounter; Lawrence et al., *Familiarity*, 2023:1–13; cf. dream, past life, reincarnation, and déjà-vu experiences.

<sup>78</sup> Gray, *Arakmbut*, 1996:76; Griffiths et al., *God*, 2019:1–26; Davis et al., *Entity*, 2020:1008–20; McNamara, *Religion*, 2023:374–79; Davis, *Psychedelic*, 2023:1–14; Graziosi et al., *Beyond*, 2023:7.

<sup>79</sup> Winkelman, *Visionary*, 2017:3; Stocker et al., *Extended*, 2024:81; Canby et al., *Dissolution*, 2024:15.

<sup>80</sup> Lawrence et al., *DMT*, 2022:1–22; Friedman & Ballentine, *Sentiment*, 2023:1–16.

In non-WEIRD contexts, such as among Indigenous and mestizo populations, psychoactives have been and continue to be used for divination, engaging with spirits, attacking enemies, healing (diagnosis and treatment), harnessing special powers, for collective ritual efficacy, communicating with plant or animal spirits, becoming more human, and more.<sup>81</sup> Among the Barasana, for example, ayahuasca experiences may involve encounters with 'preternatural entities of Creation' and witnessing the 'original creation.' Whether these EEEs belong to the broader PEs or PEMs is up for debate. Graziosi et al. (2023) conclude that, although some factors correlate with MEQ30, they are part of the broader PEs.<sup>82</sup> Reflecting on this, even though these encounters under psychedelics happen in non-WEIRD and WEIRD contexts, the uneasiness in the latter possibly increases with higher levels of entity-ness and the uses and ontological statements in non-WEIRD contexts.

**Flying-Dimensions-Knowledge.** Several studies have identified additional elements beyond the existing measures. Examples include experiences of extra-sensory perception (ESP), encounters with relatives and ancestors, purification, initiation, and violence. The Inventory of Nonordinary Experiences (INOE) of Taves et al. (2023) is mentioned in these studies and encompasses, e.g., lucid dreaming, déjà vu, past life experiences, and ESP. Moreover, reports from diverse non-WEIRD contexts also describe entering different realms, the sensation of flying, communicating with relatives, ancestors, (jungle) spirits and guides, as well as activities like cleaning the physical and psychic body, retrieving souls captured by malevolent spirits, and engaging in battles with sorcerers, among other things.<sup>83</sup> These experiences appear to deviate from the abstractions outlined in the mystical-construct. Reports representing a hyper-dimensional world or cosmos are somewhat closer to these abstractions (e.g., 'spacelessness' or 'ultimate reality'). For instance, individuals may report flying into deeper realities, infinite spaces, realms, or dimensions.<sup>84</sup> The Desana people occasionally experience transitioning from one cosmic plane to another, accessing the fourth temporal dimension, enabling them to establish divine contact.<sup>85</sup> Other related experiences may include healing through emotional and spiritual 'resonance,' out-of-body experiences, encounters with transcendent light (white or golden), or gaining knowledge. All these experiences are felt to carry a special significance, conveying distinct meanings, messages, and knowledge.<sup>86</sup>

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<sup>81</sup> Slotkin, *Peyote*, 1956; Reichel-Dolmatoff, *Amazonian*, 1971:174; Kensinger & Harner, *Cashinahua*, 1973:9–14; Reichel-Dolmatoff, *Tukano*, 1978:13; de Mori, *Peruvian*, 2011:23–47; Kopenawa & Albert, *Yanomami*, 2013; Hartogsohn, *American*, 2020; Davis et al., *Spanish*, 2023:1–11; Graziosi et al., *Beyond*, 2023:1–12; cf. my Douma, *Entheogenic*, 2023: [ResearchGate doi.org/10.13140/academia.edu/103754529](https://doi.org/10.13140/academia.edu/103754529).

<sup>82</sup> Reichel-Dolmatoff, *Tukano*, 1978:13; Graziosi et al., *Beyond*, 2023:4, 10.

<sup>83</sup> Tessmann, *Indianer*, 1930:285; Harner, *Shamanism*, 1979; Rodd, *Piaroa*, 2006:49; Schaefer, *Shamans*, 2006:153; Belser et al., *Phenomenological*, 2017:13; Michael et al., *Encounter*, 2021:8; Barone et al., *Death*, 2022:9; Taves, *INOE*, 2023:1–37; Graziosi et al., *Beyond*, 2023:9.

<sup>84</sup> McNamara, *Religion*, 2023:374–79; Breeksema et al., *Esketamine*, 2023:1552; Ragnhildstveit et al., *5-MeO-DMT*, 2023:1–10; Lawrence et al., *DMT*, 2023:1–13; cf. 'broader variety of flying dreams' (Picard-Deland et al., *Flying*, 2020); see Garel et al., *Imprinting*, 2023:1–13 and §3.2.

<sup>85</sup> Reichel-Dolmatoff, *Amazonian*, 1971:174; *Tukano*, 1978:13.

<sup>86</sup> Levin et al., *Therapeutic*, 2024:8; cf. Tafur & Maté, *Amazonian*, 2017:290; Graziosi et al., *Indian*, 2021; cf. King & Trimble, *Natives*, 2013:569; Ragnhildstveit et al., *5-MeO-DMT*, 2023:1–10; McNamara, *Religion*, 2023:374–79; cf. Shanon, *Antipodes*, 2002.

Some studies suggest that the experiences of flying, dimensions, and knowledge should be treated separately from PEMs.<sup>87</sup> Reflecting on this, even though researchers do measure some of these experiences via other categorisations, appraisals, and scales, the exclusion from PEMs could indicate a WEIRD hegemonic standard that finds it hard to take these experiences, ontologies, and epistemologies seriously. For instance, some of these experiences happened to classical mystics but were frowned upon even in their times and social formations (and thus excluded by, e.g., Stace).<sup>88</sup>

**Self-loss–Unity–Egoswitching.** The Ego-Dissolution Inventory (EDI) and the extended Ego-Dissolution Scale (EDS, see Table 2) measure self-loss (cf. 'selfless unity' of the mystical-construct). The emergence of a distinct 'unity' factor in the EDS supports the correlation between ego-dissolution/self-loss and PEMs, with some arguing that alterations in the sense of self are the central components of PEMs (more on this in §2.2).<sup>89</sup> Various PS studies are well aware of the current vagueness and latent complexity of the conceptualisation of 'selfhood.' Individuals can undergo ego-death, discover their true selves, experience a reduction in self-other distinctions, self-referential processing, the embodied self, and self-salience, among other aspects of (decreasing) selfhood (see §2.2).<sup>90</sup> Some researchers categorise these under the 'annihilational component' of self-loss. It is worth noting that these experiences can also have negative manifestations, such as associations with depersonalisation, derealisation, psychotic episodes, and schizophrenia.<sup>91</sup> The other side of self-loss is the 'relational component' (i.e., a sense of connectedness, unity beyond the self, positive experiences of undifferentiated unity as a type of ego-dissolution, and positive, neutral, or negative valenced), which can also extend to building relations with plants and the living world.<sup>92</sup> Accordingly, these studies call for measuring a multilevel construct of selfhood and self-loss.

Moreover, there is a need for precise categorisation of these experiences. Some researchers place self-loss and PEMs alongside other (vague) constructs such as 'non-dual awareness,' where the sense of self and the external world merge into a unified whole, or the boundaries of the self dissolve into an empty vacuity. Other constructs are 'oneness experiences,' 'ecstatic experiences,' 'selflessness,' or 'self-transcendent experiences.'<sup>93</sup> This also spawns more scales, like the Non-Dual

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<sup>87</sup> See, e.g., Stocker et al., *Extended*, 2024:93–4.

<sup>88</sup> Stace, *Mysticism*, 1960:51; Jones, *Mysticism*, 2021:7; even Jones uses WEIRD hegemonic categorisations.

<sup>89</sup> Nour et al., *Ego-Dissolution*, 2016; Taves, *Nonordinary*, 2020:669–90; Sleight et al., *Dissolution*, 2023:13.

<sup>90</sup> E.g., Lindström et al., *Dissolution*, 2022:75–101; Sleight et al., *Dissolution*, 2023:1–17; e.g., the 'minimal self' (sense of agency, ownership, bodily awareness/boundaries, i.e., first-person experience) and the 'narrative self' (metacognitive: recognise themselves as objects of the experience); cf. Greyson, *Dissociation*, 2000:460–3; Simeon et al., *Depersonalization*, 2003:63–76; Yaden et al., *Self-transcendent*, 2017:143–60.

<sup>91</sup> Schmid & Bershad, *Social*, 2024:6; cf. James, *Varieties*, 2009[1902]:233; Haidt, *Happiness*, 2006:236; Yaden et al., *Self-transcendent*, 2017:143–60; Milliére et al., *Self-Consciousness*, 2018:1–29; Yaden et al., *Awe*, 2019:474–88; Yaden & Newberg, *Spiritual*, 2022:234; Sleight et al., *Dissolution*, 2023:1–17.

<sup>92</sup> Graziosi et al., *Beyond*, 2023:4; cf. Yaden et al., *Self-transcendent*, 2017:143–60; Taves, *Nonordinary*, 2020:678; Yaden & Griffiths, *Therapeutic*, 2021:568–72; Sleight et al., *Dissolution*, 2023:1–17.

<sup>93</sup> [self-transcendent]: "decreased self-salience (dissolution of bodily sense of self and reduced self-world boundaries) and increased connectedness with something beyond the self (including experiences of oneness at their extreme); termed the relational and annihilational components of self-transcendence; [selflessness]: perception of selfhood as "a dynamic network of transitory relations" that is impermanent, interdependent, and lacks solidity; It has at times been used interchangeably with self-transcendence, though it was originally defined as referring

Awareness Dimensional Assessment (NADA), Spatial Frame of Reference Continuum (SfoRC), or Perceived Body Boundary Scale (PBBS; see §2.2 for further discussion).<sup>94</sup> The categorisation of 'selfless' and 'world' unity is also limited and part of multilevel constructs, with elements of an experienced relateness, absoluteness of beauty, nature-relatedness, and many more.<sup>95</sup>

Furthermore, the concept of self or ego varies across cultures. In specific Indigenous knowledge systems, the idea of self-loss loses its footing. For example, the Muscogee Creek Nation talk about "all my relations—male, female, human and nonhuman, known and unknown, all part of a continuum of energy at the heart of the universe."<sup>96</sup> Subsequently, the extensive anthropological literature on ayahuasca and other psychedelic substances used by Indigenous peoples *does not mention* 'ego-dissolution' or 'becoming one with Nature, God, or the All.' Instead, the focus lies on switching ego positions, like becoming an animal, plant, or entity that embodies an alternate (moral) perspective or capacity for actions.<sup>97</sup> Reflecting on this, they upset the WEIRD hegemonic self-world assumptions that appraise anything 'non-ordinary' that differs from what they call 'normal.' Therefore, non-WEIRD individuals would score low on 'selfless unity,' but their 'normal' would equal a high score of WEIRD individuals on this factor or nothing that WEIRD individuals identify as self or world.

**Caution-Like/Type-Critique.** Numerous studies prefer to talk about mystical-type or religious-like experiences, aiming to differentiate between the phenomenological and interpretational levels. Phenomenologically, they resemble traditional experiences deemed religious, spiritual, or mystical (hereafter RSME), but their meanings, messages, and interpretations differ. They differ because even though individuals can interpret them via an RSM framework, they can, with equal validity, interpret them via a materialistic or agnostic framework. Interestingly, participants from diverse backgrounds report having RSM-like or -type experiences and describe them using language deemed religious, regardless of their individual beliefs.<sup>98</sup> This could be part of the culturally hegemonic influence of language deemed RSM, language that originates from and is deeply entangled with Euro-American Christian-Protestant perennialist (hereafter EACP) biases.

In line with W.A. Richards (2015), some researchers propose adding subscales incorporating more EACP language with religious connotations. Examples include terms like 'primal source/ground of all existence' concerning the experience of the 'Ground of Being,' 'sacred dimension of consciousness,' and the 'indestructibility of consciousness' (see §2.2 for a critical analysis).

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to a trait rather than a state; Dworatzky et al., *Phenomenological*, 2022; Lindström et al., *Dissolution*, 2022:75–101; Sleight et al., *Dissolution*, 2023; Canby et al., *Dissolution*, 2024:2.

<sup>94</sup> Canby et al., *Dissolution*, 2024:1; cf. Dambrun & Ricard, *Selflessness*, 2011:138–57; Studerus et al., *Subjective*, 2011:1434–52; Nour et al., *Ego-Dissolution*, 2016; Dambrun, *Dissolution*, 2016:89–98; Yaden et al., *Self-transcendent*, 2017:143–60; Barrett & Griffiths, *Hallucinogens*, 2018:393–430; Hanley et al., *Nondual*, 2018:1625–39; Hanley & Garland, *Self-transcendence*, 2019:329–45; Van Lente & Hogan, *Oneness*, 2020:4; Holas & Kamińska, *Synergies*, 2023:1398–409; for ecstatic experiences see, Laski, *Ecstasy*, 1961.

<sup>95</sup> Brekxema et al., *Esketamine*, 2023:1547–60.

<sup>96</sup> Graziosi et al., *Indian*, 2021; cf. King & Trimble, *Natives*, 2013:569.

<sup>97</sup> Shanon, *Antipodes*, 2002; Gearin & Devenot, *Dissolution*, 2021:917–35.

<sup>98</sup> Brekxema et al., *Esketamine*, 2023:1553; Stocker et al., *Extended*, 2024:95.

They, while using the -like or -type typology, also suggest that psychedelics can generate EMs entirely akin to those of meditators or mystics.<sup>99</sup> Contrary to this, several studies caution against solely focusing on the 'mystical' aspect of PEs, as it could divert researchers from exploring other vital elements of such experiences.<sup>100</sup> Others criticise and add caution to the mystical-construct per se, as it mainly measures PEMs in WEIRD countries and lacks much cross-cultural validation.<sup>101</sup> They, furthermore, recognise the constraints of Stace's (1960) definitions of EMs, emphasising their cultural contingency.<sup>102</sup> They have a harder time recognising perennialist elements and see them as something to overcome. Thus, limited samples and biased constructions impede the understanding of how these experiences impact individuals and communities with diverse backgrounds deemed cultural.<sup>103</sup> These critiques already highlight certain issues with the pre-defined mystical construct (see §2.2 for a comprehensive analysis). Reflecting on this, PS seems to have difficulty shedding the yoke of WEIRD countries' greatest trick, masking contingent EACP terms as hegemonic universals.

**Ineffability–Overlap–Diversity.** Some researchers suggest that future research should ponder whether the factors of 'transcendence of time and space' and 'ineffability' are inherent to PEMs or experiences on their own. For instance, there are very few, if any, accounts of 'ineffability' in anthropological descriptions or direct testimonies from individuals who regularly use psychedelics, such as Amazonian shamans or adults consuming ayahuasca in communal settings. Additionally, 'positive mood' is not exclusive to PEMs, as there is no fundamental reason for its inclusion. These seem part of the mystical-construct for underlying practical or theological reasons. However, the researchers do not explicitly recognise this (cf. §2.2).<sup>104</sup> These and other factors seem to overlap with other researcher-based constructions and appraisals of experiences deemed 'self-transcendence,' 'mindfulness,' 'flow,' 'awe,' 'peak,' and 'mystical.'<sup>105</sup> Due to the intensity fluctuations and various phases of the experiences, it is hard to pinpoint the factors in the constructions and appraisals.

Furthermore, mainly qualitative studies acknowledge the diversity and heterogeneity in the intensity, content, and valence of these acute subjective effects, pointing to non-pharmacological factors that strongly influence their occurrences (see §2.2 for more details on this topic).<sup>106</sup>

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<sup>99</sup> Pahnke, *Mysticism*, 1963:1–302; Griffiths et al., *Mystical-type*, 2006:268–83; *Mystical-type*, 2011:649–65; Richards, *Sacred*, 2015:41; ref. to Paul Tillich's notion of the Ground of Being; Richards, *Sacred*, 2015:46–8; "immortality" is what Richards calls it; Wirsching et al., *Psychometric*, 2023:1; Stocker et al., *Extended*, 2024:93.

<sup>100</sup> Roseman et al., *Emotional*, 2019:1076–87; Herrmann et al., *Experiential*, 2023:501–17.

<sup>101</sup> See, e.g., Taves, *Nonordinary*, 2020:669–90; Sanders & Zijlmans, *Mysticism*, 2021:1253–5; Wirsching et al., *Psychometric*, 2023:1; "findings should be interpreted carefully" see Nayak et al., *Naturalistic*, 2023:1–19.

<sup>102</sup> Henrich et al., *Weirdest*, 2010:61–83; Žuljević et al., *Mystical*, 2023:8; Graziosi et al., *Beyond*, 2023:1–12.

<sup>103</sup> Nour et al., *Ego-Dissolution*, 2016; Friedman & Ballentine, *Sentiment*, 2023:1–16; Ragnhildstveit et al., *5-MeO-DMT*, 2023:1–10; Sleight et al., *Dissolution*, 2023; McMillan & Fernandez, *Psychotherapy*, 2023:784.

<sup>104</sup> See, e.g., Graziosi et al., *Beyond*, 2023:4; McNamara, *Religion*, 2023:374–79; Stocker et al., *Extended*, 2024:93–5; "The 'transcendence' cluster seems to point to a more generic notion of transcendence—one that includes transcendence of time and space but goes beyond that including transcending notions of self, body, and possibly also thought." To drive this home they make a suprising reference to Eckhart and Huxley.

<sup>105</sup> Yaden & Newberg, *Spiritual*, 2022:234; Johansen et al., *Therapy*, 2023:9; Corso et al., *Mind-Body*, 2023:166–76; Ragnhildstveit et al., *5-MeO-DMT*, 2023:1–10; Brekke et al., *Esketamine*, 2023:1547–60.

<sup>106</sup> See, e.g., Carhart-Harris & Nutt, *Context*, 2017:1–7; Graziosi et al., *Beyond*, 2023:1–12; Baker et al., *Psilocybin*, 2023:1265; Brekke et al., *Esketamine*, 2023; Hirschfeld et al., *Dose-Response*, 2023:1602–11.

**Positive–Neutral–Negative.** Various studies indicate that the valence and meaning attributed to PEMs vary widely, ranging from highly positive to frightening, stressful, or anxious, and they are dose- and substance-dependent.<sup>107</sup> With increased intensity, negative sentiment/valence increased alongside a decreasing positive sentiment/valence. References to 'highly positive peak experiences' often denote an overarching sense of well-being, a general feeling that 'all is ok,' including emotions such as self-compassion, compassion, love, and gratitude. However, even in the presence of these emotions, individuals may experience psychotomimetic and dissociative feelings, which can be negative, neutral, or positive.<sup>108</sup> The wide range of felt emotions hints at a multiplicity of reasons that lie underneath these valences, not only the pharmacological reactions or the subjective effects (§2.2).

### 1.1.3 Subconclusion I

How is the current measurement of psychedelic-induced experiences deemed 'mystical' constructed in psychedelic science? The current discourse on PEMs in PS primarily involves measurement and conceptualisation using psychometric scales and questionnaires. Researchers mainly assess them with MEQ30, which has its roots in and correlates with Stace, SOCQ/PES, 5D-ASC, MEQ43, 11D-ASC, the new MEQ40, EDI, and the new EDS. This leads to a mystical-construct with the following factors: [1] selfless unity, [2] world unity, [3] insightfulness, [4] spirituality, [5] elevated emotions, [6] time- and spacelessness, and [7] perplexity. However, this is not the whole story. The additional insights show that the current mystical-construct is too narrow, highly influenced by EACP biases, mainly attuned to WEIRD contexts, even suggested new elements, uneasy with non-WEIRD conceptualisations and practices, and hegemonic in its construction of PEMs.

Moreover, this pre-defined mystical-construct has a hard time with non-WEIRD experiences, ontologies, and epistemologies, including the multilevel dimensions or complete lack of its (vague, contingent, and overlapping) categorisations and constructs. Some of the limitations and biases, as identified in the introduction, are now likewise identified by this critical review. Various PS studies and researchers have already acknowledged these limitations and biases and are seeking ways to address them, a goal shared by the present thesis. Reference to the Inventory of Nonordinary Experiences (INOE), extra-pharmacological factors, and the appeals for more qualitative cross-cultural research hints at novel ways of measuring PEMs in future studies.

#### Hypotheses

- [1] PS' mystical-construct is so WEIRD (+EACP) that imposing it on the non-WEIRD would be a neo-colonial act.
- [2] Pre-defined researcher-based mystical-constructs are too imposing to capture participant-deemed PEMs.
- [3] The broader INOE, qualitative, and cross-cultural research will better capture the participant-deemed PEMs.
- [4] The diversity of valences and extra-pharmacological factors will reveal many troubles with measuring PEMs.

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<sup>107</sup> Brekxema et al., *Esketamine*, 2023:1554–5; Friedman & Ballentine, *Sentiment*, 2023:1–16.

<sup>108</sup> Barrett & Griffiths, *Hallucinogens*, 2018:393–430; Roseman et al., *Emotional*, 2018:974; Taves, *Nonordinary*, 2020:669–90; Michael et al., *Encounter*, 2021:7; Žuljević et al., *Mystical*, 2023:1–13; Hashimoto, *Mystical*, 2024:3; Davis et al., *Entity*, 2020:1008–20; Graziosi et al., *Beyond*, 2023:8; Zeifman et al., *Co-Use*, 2023:1–11.

## 1.2 Academic Study of Religion

This chapter supplies additional measurement insights and theorising from the academic study of religion (ASR) regarding the assessment and conceptualisation of EMs and PEMs. This review examines 20+ studies with additional context and critique present in Chapter 2.

### 1.2.1 Additional Insights

**Measuring (P)EMs.** Chen et al. (2023)<sup>109</sup> seek to enrich the 'common core' of mysticism (CCM, cf. §1.1) with qualitative research on Daoist practitioners ( $n=19$ ).<sup>110</sup> They broaden their scope to 'psychedelic, religious, spiritual, and mystical' (PRSM) experiences and regard spontaneous, practice-triggered and psychedelic-induced RSMEs as remarkably similar.<sup>111</sup> Nevertheless, they acknowledge that subjective experiences during psychedelic states are *variegated* and can include journeying to different realms, encountering spirits, or undergoing death-rebirth, among others (cf. §1.1.2).<sup>112</sup>

Additional factors from Daoist RSMEs are [1] heightened 'bodily sensations,' [2] 'egress of spirit,' out-of-body journeys, [3] receiving power from and having 'resonance with divinities and spirits,' [4] 'union with *wanwu*,' with the 10,000 things in this world, [5] 'multiplicity in unity,' [6] 'blissful enlightenment,' an emotional and intellectual breakthrough, [7] 'round luminosity,' *yuantong*, mental illumination of the unified spirit that pervades the whole universe, [8] 'clarity in quiescence,' valence-neutral calm feelings, and [9] 'secrecy,' keeping the experiences from the uninitiated, or because of temptations of the devil. They also brought negative and dark experiences into their research (i.e., uncontrollable movement of qi, fear of going into a hostile space, or the presence of evil spirits).

These additional factors are quite diverse, but Chen et al. (2023) place them under various 'abstract' CCM elements. For instance, under 'dissolution of self' one can find "all of a sudden, I forgot myself (HS2)," or "my spirit traveled into the Great Emptiness [*taixu*], feeling brightness in front of me (LM8)." Chen et al. (2023) also identify a categorisation of Daoist RSMEs: 'enstatic' and 'ecstatic.' The [1] enstatic mode combines quietistic practices of the mind with an emphasis on physical exercises, resulting in an experience of absorption and serenity, dissolution of personal entity, a

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<sup>109</sup> van Elk & Yaden (2023) open and introduce the special issue on 'Psychedelics and Mystical-type Experiences' in *The International Journal for the Psychology of Religion*: van Elk & Yaden, *De-Siloing*, 2023:255–8; ref. to: **James**, *Varieties*, 1902; **Stace**, *Mysticism*, 1960:179–82; **Katz**, *Mysticism*, 1978:22–74; **Griffiths** et al., *Mystical-type*, 2006:268–83; **Griffiths** et al., *Mystical-type*, 2011:649–65; **Griffiths** et al., *Depression*, 2016:1181–97; **Griffiths** et al., *Mystical-type*, 2018:49–69.

<sup>110</sup> Chen et al., *Daoist*, 2023:397–414; ref. to: **Stace**, *Mysticism*, 1960; **Hood**, *Mystical*, 1975:29–41; **Barrett** et al., *Questionnaire*, 2015:1182–90.

<sup>111</sup> They overlap in neurophysiological and phenomenological: "Most people who encounter God or ultimate reality, whether induced through a psychoactive substance or experienced spontaneously, describe an ego dissolution and communion with something having the attributes of being conscious, intelligent, sacred, eternal, and all-knowing (...)." cf. Milliere et al., *Psychedelics*, 2018; Griffiths et al., *Encounter*, 2019.

<sup>112</sup> Davis et al., *Entity*, 2020; Campos, *Shaman*, 2011; Narby, *Cosmic*, 1999; Tafur, *Amazonian*, 2017; Winkelman, *Inferences*, 2021; Strassman, *Handbook*, 2022; they add that although people widely report these experiences in psychedelics, research suggests that they tend to be relatively infrequent of experiences interpreted within a religious framework; see Chen et al., *Buddhist*, 2011.

consciousness devoid of objects, alignment of the body with cosmic rhythm, and a sense of oneness with the Dao.<sup>113</sup> The [2] ecstatic mode finds expression in shamanic excursions of the spirit, being in touch with the spiritual realm, and eventually finding union with the axis of the cosmos.<sup>114</sup> Practitioners and researchers base these categorisations on Daoist teachings. However, as mentioned by Chen et al. (2023), contemporary Daoism, “much like Buddhism and many other non-Western religious traditions,” does not regard RSMs as cardinal or stress their ‘extraordinariness,’ and bases their expressions deemed ‘mysticism’ mainly on teachings.<sup>115</sup>

Reflecting on this, focusing on CCM and RSMs may be imposing on Daoism. Moreover, separating teachings and underlying experiences (without assuming that they are always there) seems to be tricky, if not impossible, and actually categorising and appraising these expressions of Daoism within a framework of CCM and RSMs could be interpreted as a hegemonic act. However, not including them also, and so one should question the frameworks of CCM and RSMs. The current and next two studies show that ASR also measures with the mystical-construct, being cautious of results and aware of the cultural contingency of the constructs.

Savoldi et al. (2023) studied PEMs and ‘ego-dissolution’ in ayahuasca and jurema holistic rituals within a non-WEIRD setting.<sup>116</sup> They utilised the HMS and EDI scales ( $n=26$ ; Brazilian) and supplemented this with semi-structured interviews ( $n=7$ ).<sup>117</sup> The study revealed a wide range of acute subjective effects, which differed in certain aspects from other psychedelics (incl., e.g., intense hallucinations). The measurements mainly noted alterations in the subjective experience of self, which sometimes but not always include a feeling of unity or the emergence of a ‘pure self.’<sup>118</sup> They mention effects such as the suppression of personal memories and prejudices or the removal of the sense of being the agent of one’s mental processes.<sup>119</sup> Savoldi et al. (2023) mention, but less so show, that measuring with the HMS and EDI will result in a small sliver of the phenomenological experiences.

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<sup>113</sup> Kohn, *Chinese*, 1992: based on Daoist writings (e.g., *Dao de jing*, *Zhuangzi*); Roth, *Chinese*, 1995 further argued that these two types may be mapped onto Stace’s introvertive and extrovertive factors; Chen et al., *Daoist*, 2023:409–10: gives also a historical/tradition context: Enstatic: *Xing* (形): form or body and *shen* (神): the formless aspect of life, the mind and spirit; Ge Hong (283–343 CE); Inner Chapters of *Baopu zi* (DZ 1185); *Zhuangzi* 4; *Zhuangzi* 6; *Zhuangzi* 2 (“Discussion on Making All Things Equal”); *Xuangang lun* (“Essay on the Outlines of Mystery,” DZ 1052); *Dao de jing* 2; *Xingming guizhi* (“Principles of Balanced Cultivation of Inner Nature and Vital Force”). *Xing* (性) is original suchness completed in radiance; *ming* (命) is that which is born to be and formed in qi; *Dadan Zhizhi* (“Straightforward Directions on the Great Elixir,” DZ 244). See ctext.org.

<sup>114</sup> Ecstatic: *Shenyou* and *Ganying*; *Zhuangzi* 1; *Yunji qiqian* (“Cloudy Bookcase with Seven Labels”; DZ 1032); Despeux, *Jing*, 2008:562–65; *Baopu zi neipian*; *Duren jing* (“Scripture on Salvation,” DZ 1); *Yinfu jing* (“Scripture of the Hidden Accordance,” DZ 31); *Lingbao bifa* (“Complete Methods of the Numinous Treasure,” DZ 1191); *Wuyue zhenxing tu* (“Charts of the Real Forms of the Five Peaks”). See ctext.org.

<sup>115</sup> Chen et al., *Daoist*, 2023:411; cf. Creel, *Taoism*, 1982; Gyatso, *Healing*, 1999; Kohn, *Daoism*, 2000; Strassman, *Handbook*, 2022.

<sup>116</sup> Savoldi et al., *Ayahuasca*, 2023:332–60: ref. to: James, *Varieties*, 1902; Stace, *Mysticism*, 1960; Pahnke & Richards, *Mysticism*, 1966:175–208; Hood, *Mysticism*, 1975; Griffiths et al., *Mystical-type*, 2006:268–83.

<sup>117</sup> Focusing on set and setting, see ch.3; “additional questions about self-consciousness phenomenology were collected but are beyond the scope of this article,” not available due to ethical considerations.

<sup>118</sup> I.e., ‘unitary consciousness’; cf. Nour et al., *Ego-Dissolution*, 2016; Letheby & Gerrans, *Dissolution*, 2017; Milliere, *Dissolution*, 2017:245; Griffiths et al., *Encounter*, 2019.

<sup>119</sup> Cf. James, *Varieties*, 1985[1902]; Hood et al., *Psychology*, 2018; Milliere et al., *Psychedelics*, 2018:1475.

They also mention that the anthropological literature does not mention the factors of these scales and that they are sometimes differently conceptualised or completely lacking (see §1.1.2).<sup>120</sup> Their use of the 'integrative decolonial perspective' and critique of measurement in (non-)WEIRD contexts will return in §2.2. Hence, even though they measured with HMS and EDI, they are quite aware of the limitations and biases of measuring this way.

Bohn et al. (2023) focus on 'altered states of consciousness' during ceremonial San Pedro use ( $n=42$ ).<sup>121</sup> Ceremonial San Pedro use has spread to WEIRD countries, where local ceremony providers offer San Pedro to participants for its healing potential, among other reasons.<sup>122</sup> The study acknowledges that the use of San Pedro can induce negative emotional and physical experiences, known as 'bad trips,'<sup>123</sup> which may have a traumatic impact and lead to persistent symptoms of mental illness, leading individuals to seek professional help.<sup>124</sup> Their use of four instruments (11DASC, EDI, MEQ30, CEQ) makes the measurements somewhat more comprehensive and inclusive.

**Measuring Beliefs.** Exline et al. (2023) explore people's (WEIRD) 'beliefs' about psychedelic trips and messages from, e.g., god(s), spirits, their psyche, transcendent realities, or (inner) demons ( $n=800$ , U.S.).<sup>125</sup> Their work distinguishes between PEMs characterised by a sense of 'transcendence' or 'sacredness' and those that involve 'supernatural encounters with entities' and 'realms beyond' the 'natural' world.<sup>126</sup> They use the term 'entheogens,' meaning 'to generate God within,' to delineate the distinction further. Exline et al. (2023) explicitly say that while many individuals perceive PEs as 'spiritual' or 'mystical,' some go a step further by framing them as explicitly 'supernatural.' This concept of the 'supernatural' in the context of psychedelics involves entities that influence natural events and convey messages to individuals, provide access to existing supernatural domains, or offer insights into one's true self and broader consciousness. The latter is part of the idea that psychedelics can 'pull back the veil' temporarily (cf. H. Bergson, D.C. Broad, and A. Huxley), enabling people to experience the full scope of reality.<sup>127</sup> Surprisingly, this study concludes that participants predominantly view psychedelics as a conduit for psychological explorations, including delving into the darker aspects of the psyche rather than as a means to interact with the 'supernatural.'

<sup>120</sup> Shanon, *Antipodes*, 2002; Gearin & Devenot, *Dissolution*, 2021.

<sup>121</sup> Bohn, et al., *Pedro*, 2023:309–31; ref. to: Dittrich, ASCs, 1998:80–4; Griffiths et al., *Mystical-type*, 2006:268–83; Studerus et al., *OAV*, 2010:e12412; Griffiths et al., *Mystical-type*, 2011:649–65; MacLean et al., *Questionnaire*, 2012:721–37; Nour et al., *Ego-Dissolution*, 2016; Yaden & Griffiths, *Subjective*, 2021:568–72.

<sup>122</sup> Davis et al., *Psilocybin-assisted*, 2021:481–9; Uthaug et al., *Mescaline*, 2022.

<sup>123</sup> Barrett et al., *Challenging*, 2016:1279–95; Bienemann et al., *Negative*, 2020; Guthrie, *Challenging*, 2021.

<sup>124</sup> Carbonaro et al., *Challenging*, 2016:1268–78; Rubin-Kahana et al., *Posttraumatic*, 2021:248–51.

<sup>125</sup> Exline et al., *Messages*, 2023:361–79; ref. to: Huxley, *Heaven*, 1956; Hood et al., *Mysticism*, 2001:691–705; Griffiths et al., *Mystical-type*, 2006:268–83; Barrett et al., *Questionnaire*, 2015:1182–90.

<sup>126</sup> Cf. Hood et al., *Mysticism*, 2001:691–705; Griffiths et al., *Mystical-type*, 2006:268–83, *Mystical-type*, 2008:621–32, *Encounter*, 2019; Carhart-Harris & Nutt, *Hallucinogenic*, 2010:283–300; Pargament et al., *Integrative*, 2013:3–19; Barrett et al., *Mystical*, 2015:1182–90; Carhart-Harris et al., *Psilocybin*, 2016:619–27; Yaden et al., *Mystical*, 2017:338–53; Davis et al., *Entity*, 2020:1008–20; Carbonaro et al., *Subjective*, 2020:2293–304; Yaden & Griffiths, *Subjective*, 2021:568.

<sup>127</sup> The brain acts as a 'reducing valve,' and psychedelic lift this reduction to let more in, see Bergson, *Evolution*, 1907; Broad, *Psychical*, 1949:291–309; Huxley, *Doors*, 1954:14; Ruck et al., *Entheogens*, 1979:145; Nichols, *Psychedelics*, 2016:264–355; Aday et al., *Effects*, 2020:179; Exline et al., *Demonic*, 2021:215–28.

**Measuring Predictors.** Wilt et al. (2023) focus on beliefs and encounter experiences as social, motivational, and cognitive predictors (in a WEIRD U.S. undergraduate sample,  $n=765$ ).<sup>128</sup> They regard entity encounters and supernatural talk as attributions, which involve interpreting ambiguous events during PEs. The researchers suggest that individual differences in beliefs, personality traits, thinking styles, cognitive biases, and schizotypy can influence what individuals experience and attribute to their experiences.<sup>129</sup> They propose that socialising factors, such as being taught to believe in agents/forces,<sup>130</sup> anticipating positive responses from peers regarding beliefs,<sup>131</sup> desires to believe in agents/forces,<sup>132</sup> beliefs themselves, beliefs that agents/forces can affect the natural world, and perceived experiences with agents/forces,<sup>133</sup> influence and predict specific experiences and attributions. Therefore, beliefs, parental influence, religious-spiritual institutions, and one's cultural environment are all seen as positive predictors of perceived experiences because individuals tend to interpret these experiences within their preexisting (theoretical) frameworks (more on this in §2.2).<sup>134</sup>

Hui et al. (2015) delve into the predictors and outcomes of experiences deemed 'religious' (EDRs;  $n=909$ , Chinese Christians).<sup>135</sup> This and the former study use Ann Taves' ascriptive approach, meaning they focus on people's ascription of 'religious,' 'mystical,' or 'spiritual' characteristics to specific events. They differentiate these ascriptions from the phenomenology of the experiences, which opens up novel research (more on this in §3.2). The difference between 'religious' and 'mundane' experiences seems to lie in how humans ascribe the origin of the experience. Primarily, an EDR is defined based on the type of explanation offered for the experience rather than the content of the experience itself. Deeming an experience 'religious' is the first step of meaning-making.<sup>136</sup> Hui et al. (2015) identify gender, age, income, extraversion, conscientiousness, agreeableness, openness to experience, suggestibility, emotional stability, religiosity (i.e., faith maturity, personal religious behaviours, communal religious behaviours, missionary involvement, and more), quality of life (i.e., physical and psychological health, social relationship, or setting), as possible predictors of EDRs. They show

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<sup>128</sup> Wilt et al., *Beliefs*, 2023:19–35.

<sup>129</sup> Schizotypy is a theoretical concept that posits a continuum of personality characteristics and experiences, ranging from normal dissociative, imaginative states to extreme states of mind related to psychosis, especially schizophrenia; Lupfer et al., *Life-altering*, 1996:379–91; Hergovich et al., *Schizotypy*, 2008:119–25; Pennycook et al., *Cognitive*, 2012:335–46; Hood & Francis, *Mystical*, 2013:391–496; Ray et al., *Attributions*, 2015:60–9; Lindeman et al., *Confusions*, 2015:63–76; Wilt et al., *Struggles*, 2017:172–87, *Cognitive*, 2019, *Personality*, 2022:373–414; Chauvin & Mullet, *Personality*, 2018:1218–27; Luhrmann et al., *Sensing*, 2021:1–8.

<sup>130</sup> Hardy et al., *Socialization*, 2011:217–30; Braswell et al., *Parents*, 2012:99–106; Lane & Harris, *Counterintuitive*, 2014:144–60; Gervais & Najle, *Learned*, 2015:327–35; Lanman & Buhrmester, *Credibility*, 2017:3–16.

<sup>131</sup> Thomas & Cornwall, *Family*, 1990:983–92; Tratner et al., *Religious*, 2017:73–7.

<sup>132</sup> Hall & Edwards, *Spiritual*, 2002:341–57; Baker, *Evil*, 2008:206–20; Granqvist et al., *Attachment*, 2010:49–59; Inzlicht et al., *Motivated*, 2011:192–212; Norenzayan & Gervais, *Disbelief*, 2013:20–5; Sedikides & Gebauer, *Self*, 2013:46–70; Martinez, *Evil*, 2013:319–38; Lane & Harris, *Counterintuitive*, 2014:144–60; Routledge et al., *Evil*, 2016:681–8; Grubbs et al., *Entitlement*, 2017:356–7.

<sup>133</sup> Taves, *Attribution*, 2008:125–40; Rogers et al., *Misattribution*, 2016:710–51; Van Elk, *Self-attribution*, 2017:313–21; Luhrmann et al., *Sensing*, 2021:1–8.

<sup>134</sup> Willard & Norenzayan, *Cognitive*, 2013:379–91; Gervais & Najle, *Learned*, 2015:327–35; Lanman & Buhrmester, *Credibility*, 2017:3–16; Tratner et al., *Religious*, 2017:5–9.

<sup>135</sup> Hui et al., *Religious*, 2015:107–29; ref. to: Maslow, *Peak*, 1964.

<sup>136</sup> Proudfoot, *Religious*, 1985; Granqvist et al., *Suggestibility*, 2005:1–6; Taves, *Religious*, 2009.

that many factors are responsible for EDRs, are more diverse than currently measured, and that a more nuanced approach is needed to understand EDRs.

Reflecting on this, it becomes clear that many factors and formations influence the categorisation and appraisals of experiences. Nevertheless, these studies still use artificial distinctions, such as between 'mystical' and 'supernatural' beliefs or 'religious' and 'mundane' experiences. Moreover, their use of highly contingent and contested constructs such as 'mystical,' 'supernatural,' 'beliefs,' 'religious,' and 'mundane' is something to ponder. One could also question if a provided and participant-affirmed ascription is really their own ascription, certainly in a highly suggestible situation where the participant tries to make sense of what they experienced (see §2.2 for more).

**Measuring Entheogenic Experiences.** Johnstad (2023) examines 'entheogenic spirituality' and the characteristics of spiritually motivated psychedelics use ( $n=228$ , WEIRD).<sup>137</sup> Studies on entheogens outside the controlled experimental settings have also found that PEs correlate with 'spiritual' experiences and 'beliefs.'<sup>138</sup> This exploratory survey study examines and differentiates between users with 'spiritual' motivations and those without, with the former seeking personal growth and psychological self-exploration. Entheogenic spirituality appeared contemporaneous and aligns closely with 'New Age spirituality,' which emphasises spiritual growth and evolution, tends to psychologise spirituality, and endorses personal and psychological healing. The individual self and 'the Self' are central to these spiritualities.<sup>139</sup> Johnstad also highlights the role of 'awe' as a therapeutic mediator in relation to reduced brain activity in the 'default mode network' (DMN) and its impact on high-level psychological constructs such as the 'self' or 'ego.'<sup>140</sup> The characteristics of 'entheogenic experiences' include feelings of peace, joy, and love, insight into oneself, occasional visions, a dissolution of the sense of self, and a state of unity with a transcendent force.<sup>141</sup> Participants viewed the experiences as valuable learning opportunities even when encountering fear and sadness. Insights, positive emotions, and enhanced connections with nature and others are the most commonly reported aspects of a 'typical entheogenic experience.'<sup>142</sup>

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<sup>137</sup> Johnstad, *Entheogenic*, 2023:380–96; ref. to: Pahnke, *Mysticism*, 1966:295–320; Griffiths et al., *Mystical-type*, 2006:268–83, *Mystical-type*, 2008:621–32, *Mystical-type*, 2011:649–65, *Depression*, 2016:1181–97, *Encounter*, 2019; Maclean et al., *Questionnaire*, 2012:721–37; Barrett et al., *Questionnaire*, 2015:1182–90; Nour et al., *Ego-Dissolution*, 2016:269; "...such drugs has sometimes been found to induce or occasion spiritual-type experiences, and they have therefore also been referred to as entheogens, which is derived from ἔνθεος (*entheos*), meaning inspired or filled with God, and γενέσθαι (*genesthai*), which means to come into being." Most participants had a religious background and a present religious/spiritual affiliation.

<sup>138</sup> Carhart-Harris & Nutt, *Benefits*, 2010:283–300; Lyvers & Meester, *Illicit*, 2012:410–7; Yaden et al., *Roots*, 2017:338–53; Bouso et al., *Personality*, 2018; Johnstad, *Entheogenic*, 2018:244–60, *Cannabis*, 2020:1–17, *Entheogenic*, 2021:463–81, *Entheogenic*, 2022; Griffiths et al., *Encounter*, 2019.

<sup>139</sup> Heelas, *New-Age*, 1996; Hanegraaff, *New-Age*, 1996, *New-Age*, 1999:145–60; Sutcliffe, *New-Age*, 2003; Sutcliffe & Gilhus, *New-Age*, 2013; Taves & Kinsella, *Unorganized*, 2013:84–98; 'New Age' is more about self-aggrandising, located mainly in WEIRD societies, and is an entangled term.

<sup>140</sup> Carhart-Harris et al., *Mourning*, 2008; Carhart-Harris & Friston, *Default-mode*, 2010:1265–83; Hendricks, *Awe*, 2018:331–42; van Elk et al., *Neural*, 2019:3561–74.

<sup>141</sup> Cf. Griffiths et al., *Mystical-type*, 2006:268–83; Lyvers & Meester, *Illicit*, 2012:410–7; Yaden et al., *Mystical*, 2017:338–53; Timmermann et al., *DMT*, 2018:1424.

<sup>142</sup> Cf. Forstmann & Sagioglou, *Proenvironmental*, 2017:975–88; Lyons & Carhart-Harris, *Nature*, 2018:811–9.

Johnstad (2021) delves into the 'entheogenic experience' and its connection to spirituality, challenging the prevailing notion that such experiences are primarily associated with intense PEMs.<sup>143</sup> Through interviews, Johnstad found that most reported entheogenic experiences were not as intense as commonly believed. Instead, they often involved psychological insight and feelings of peace, joy, and love, appraised as 'spiritual' but quite 'ordinary'.<sup>144</sup> Drawing on Taves' (2009) ascriptive approach, they have a tenuous claim to 'specialness' because although they are 'anomalous,' they are less 'ideal,' a characteristic more associated with PEMs.<sup>145</sup> Whether people appraised the experiences as 'meaningful' or 'typical,' they were characterised by joy, peace, love, self-insight, improved connections with nature and others, and a sense of homecoming or returning to one's true essence. Conversely, the appraisal 'worst' was most commonly associated with fear, confusion, sadness, and a feeling of isolation from others. This typology provides valuable insights into the spectrum of entheogenic experiences and their diverse valences.

According to Johnstad, experiences with 'mystical-type' characteristics can elicit significant levels of fear. These experiences often involve a sense of ego-dissolution, leading individuals to fear the loss of their individuality or sanity.<sup>146</sup> However, heightened insight, interconnectedness, and positive emotions do not necessarily indicate PEMs. This study also identifies factors that predict entheogenic experiences and PEMs, in descending order of importance: spiritual motivation, openness, engagement in spiritual practices, religious or spiritual affiliation, gender (m), conscientiousness, age, education, emotional stability, agreeableness, and extraversion (§2.2 for details). Finally, Johnstad categorises PEMs as 'spiritual' (anomalous, ideal, and influenced by spirituality predictors)<sup>147</sup> and entheogenic experiences framed outside Taves' (2009) framework as 'secular spirituality' (centred on healing and personal growth and less influenced by spirituality predictors).<sup>148</sup>

Reflecting on this, it seems that certain subcultures do not fit the mystical-construct even within WEIRD contexts. Researchers should also be careful with appraisals like 'spiritual but quite ordinary,' certainly when participants do not mention them explicitly.

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<sup>143</sup> Johnstad, *Entheogenic*, 2021:463–81; ref. to: Huxley, *Doors*, 1954; **Stace**, *Mysticism*, 1960; **Pahnke**, *Mysticism*, 1966; **Griffiths**, *Mystical-type*, 2006, 2008; with inspiration from Ammerman (*Sacred*, 2014), this study left the term "spiritual" undefined in communications with interviewees in order to avoid imposing limits on its content and thereby allow for subsequent analysis of participants' usage of the term.

<sup>144</sup> I.e., not immediately transformative in and of themselves but seen as a part of a wider life-changing growth process, see Ammerman, *Sacred*, 2014; Johnstad, *Entheogenic*, 2018:244–60.

<sup>145</sup> Taves, *Religious*, 2009; connection to reli-spiritual traditions scored lower on this experience.

<sup>146</sup> The measurement was broader than with PEMs: anger or hate; confusion; contact with nonordinary beings; contact with transcendent forces; disgust; ego death or dissolution; fear; feeling of homecoming; feeling of isolation; improved connection with nature; improved connection with people; inner visions; insight into the world; insight into your relations; insight into yourself; joy; love; peace; regrettable behavior; sadness; surprise; unity with transcendent forces; words cannot describe.

<sup>147</sup> Taves, *Religious*, 2009; this says nothing about the nature or causal direction; prior interests in spirituality can shape expectations, the experience, and the description; the experience can also direct people to cultural traditions with subjects deemed spiritual or mystical.

<sup>148</sup> Taves, *Religious*, 2009; Johnstad, *Entheogenic*, 2018:244–60; there might be also a tendency in spiritual/religious motivated people to deem ordinary (deemed ordinary by non-spiritual/religious motivated people) events as special, e.g., an ordinary conversation can be deemed special because 'spirits were present.'

**Measuring Different Settings.** Chen and Patel (2021) delve into 'spiritual experiences' within soulmate relationships through a mixed-method approach of 'mystical bonds.'<sup>149</sup> Their study offers new insights by expanding the exploration of 'mysticism' to 'everyday' relational settings. The authors acknowledge the limitations of James' framework and the mystical-construct in this regard. Furthermore, Chen and Patel argue that social constructivism and CCM are not mutually exclusive, emphasising the value of integrating both perspectives through mixed-method studies.<sup>150</sup> Hence, they examined the content of 'mysticism' in soulmate relationships through interviews and theme coding, placing them afterwards in the M-scale structure. Notably, this framing failed because they were simply too diverse.<sup>151</sup> Likewise, they failed to acknowledge that 'mystical thought' might not equal 'mystical experiences' (cf. §1.2.2). Their further theoretical reflections continued, arguing that the categorisations of Stace and the M-scale are primarily methodological conveniences rather than indicative of significant differences. The role of interpretations also seems more central instead of being a 'contamination' or 'social construction' of experiences. Providing an interpretation sets the stage for profound experiences and motivates the search for them (i.e., it can work as a predictor).<sup>152</sup>

The data from this study supports the idea that EMs can be part of human relationships. This challenges many traditional classifications of 'mysticism' because specific traditions often influence them, and they do not consider human relationships as a viable path to achieving 'mystical unity.' Finally, without further explications, Chen and Patel say that EMs put one in immediate contact with 'reality,' but the moment one becomes conscious of the experience, one goes into the 'field of consciousness' and abandons 'the mystical.'<sup>153</sup>

Sears (2015) focuses on the construction, preliminary validation, and correlates of a dream-specific scale for EMs.<sup>154</sup> While complete EMs while dreaming may be rare, gradations of EMs, including aspects of the unitive state, appear relatively widespread in dreams. Some refer to these as 'transcendent' dreams characterised by ecstasy and awe. James only made a passing reference to

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<sup>149</sup> Chen & Patel, *Relationships*, 2021:176–88; ref. to: **James**, *Varieties*, 1902; Jung, *Types*, 1921; Otto, *Mysticism*, 1932; Buber, *Between*, 1947, *Thou*, 1953; Zaehner, *Mysticism*, 1957; **Stace**, *Mysticism*, 1960; Underhill, *Mysticism*, 1965; **Hood**, *Mystical*, 1975:29–41; McGinn, *Mysticism*, 1991:265–343.

<sup>150</sup> Katz, *Mysticism*, 1978; Belzen, *Psychology*, 2009; Chen et al., *Buddhist*, 2011:654–70; Kelkar & Chen, *Shamanic*, 2019; Chen & Hirsh, *Relational*, 2019; Chen & Guo, *Taoist*, 2020; Chen et al., *Daoist*, 2023:397–414.

<sup>151</sup> (TS) Unaware of time passing, (PA) Security, (EF) Cognitive, (NQ) Learn about self, (SA) Meaningful and unique, (NQ) Learn about the world, (UN) Greater connectivity, (PA) Happiness and love, (EL) Focused on the other person, (IS) Part of each other, (TS) Unaware of space, (EL) Focused conversation, (IS) Support and share, (IS) Unique bond, (IS) Everything feels alive, (EF) Affective, (IS) Expanded awareness, (TS) Two merging together, (EL) Barriers down, (IS) Sympathy, (UN) God/religion, (UN) Oneness of the two, (SA) God/religion.

<sup>152</sup> Otto, *Holy*, 1932; Jonas, *Mysticism*, 1966:315–29; Chen et al., *Chinese*, 2012:155–68; Hood & Chen, *Mystical*, 2013:422–40; Hanley et al., *Nondual*, 2018:1625–39; they argue that the M-scale is more comprehensive because it assesses both phenomenological and interpretive factors.

<sup>153</sup> **James**, *Varieties*, 1902; Zaehner, *Mysticism*, 1957; Taylor, *Varieties*, 2002; Panikkar, *Rhythm*, 2010:251.

<sup>154</sup> Sears, *Dream*, 2015:134–55; ref. to: **James**, *Varieties*, 1902; **Stace**, *Mysticism*, 1960; **Hood**, *Mystical*, 1975:29–41; the absence of any reference to dreaming in the M-scale items and the common practice of separating dreams from 'waking experiences,' especially in WEIRD cultures (Tedlock, *Dreams*, 2005), indicates that the M-scale mainly elicits responses based on 'waking experiences.' Furthermore, dreaming is not mentioned in several notable and recent studies, e.g., Chen et al., *Buddhists*, 2011; Chen et al., *Chinese*, 2011.

dreams in a footnote, and Stace described them as neither rational nor objective. Indeed, many scholars of mysticism exclude visions, hallucinations, dreams, and other phenomena from EMs.<sup>155</sup> However, Sears compared personal dream accounts and scholarly investigations of 'mystical' and 'spiritual' dreams and found support for the following 'mystical traits:' positive and religious affect, noesis, ego-loss, ineffability, timelessness/spacelessness, inner subjectivity or the sense of life in one's surroundings, and the sense of unity with one's surroundings.<sup>156</sup> These traits are measured using participants' accounts, the Spiritual Dreams Scale (SDS), and the modified Tellenen Absorption Scale (MODTAS). Additionally, 'lucid dreamers' occasionally report achieving 'contentless' or 'pure consciousness' while dreaming (similar to meditative practices during the dream state). With training, individuals can develop the ability to achieve lucid dreaming and improve dream recall, which may also apply to enhancing 'mystical state recall' in EMs.<sup>157</sup>

Reflecting on this, Chen and Patel put forth some excellent critiques but also use troublesome formulations about 'immediate contact with reality,' 'mystic unity,' or 'the mystical.' They are beginning to see the limitations and biases of CCM but still struggle with what they call 'social constructivism.' The exclusion of relational 'mystical bonds' and dreams from the researcher-based mystical-constructs, based on a WEIRD separation of dream and lived, 'normal' experience, seems again part of the WEIRD hegemonic stance.

**Measurement Categories.** Nielsen (2023) reviews Yaden and Newberg's (2022) *The Varieties of Spiritual Experience*.<sup>158</sup> Concerning EMs, they distinguish between becoming encompassed or overwhelmed by the world (i.e., self-loss mysticism) or connected with it (i.e., unity mysticism). They also place them in a *continuum of spiritual experiences*, including numinous, revelatory, synchronicity, mystical, aesthetic, and paranormal experiences. Under the heading EMs, they suggest using the category of 'self-transcendence' experiences, which include mindfulness, flow, awe, peak and mystical experiences (cf. Figure 2)<sup>159</sup>—building somehow yet more constructs.

**Measurement Itself.** Spilka and Ladd (2021) focus on the psychology of religion via thick phenomenology in thin places (such as EMs).<sup>160</sup> According to them, research on mysticism can focus on individual experiences, which are, in this case, 'comparatively ineffable.' The colourfulness, non-rigorous, emotionally charged concept lends itself more to devotional than research purposes. However, it was made operational through Stace, Hood, or Poloma. These operationalisations are all

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<sup>155</sup> James, *Varieties*, 1902; Stace, *Mysticism*, 1960:140–42: EMs were real and objective, i.e., Cartesian dualism and contradicted by the 'Maimonides dream experiments;' Hood, *Mystical*, 1975; Hood, *Mysticism*, 1976:183–84; Hall, *Dreams*, 1979:328; Tedlock, *Dreams*, 2005; Krippner, *Psychoneurological*, 2005:70–74; Kuiken et al., *Transformation*, 2006:258–79.

<sup>156</sup> Gebremedhin, *Dreams*, 1991a, *Dreams*, 1991b; Gillespie, *Dreams*, 1991; Casto, *Dream*, 1995; Adams, *Dreams*, 2003:105–14; Dwyer, *Ecstatic*, 2004:325–37; Bulkeley, *Mystical*, 2009:30–41.

<sup>157</sup> Spadafora & Hunt, *Dreaming*, 1990:627–44; Gillespie, *Dreams*, 1991; Kuiken & Nielsen, *Dreams*, 1996:201–17; Adams, *Dreams*, 2003:105–14; Bulkeley, *Sacred*, 2007:71–94, *Mystical*, 2009:30–41.

<sup>158</sup> Nielsen, *Varieties*, 2023:251–3; ref. to: Paloutzian & Park, *Psychology*, 2014.

<sup>159</sup> Yaden & Newberg, *Varieties*, 2022:222–3.

<sup>160</sup> Spilka & Ladd, *Phenomenology*, 2021:156–64; ref. to: James, *Varieties*, 1902; Eliade, *Eternal*, 1954; Stace, *Mysticism*, 1960; Hood, *Mystical*, 1975, *Mystical*, 2001.

based on the axiom that 'mystics are those who had mystical experiences.'<sup>161</sup> They note that Stace's introvertive mysticism has 'theoretical robustness' and that this attracted Hood. Hood turned toward objective numerical measurement and clarified this by saying, "(...) the simple caveat [is] that the Mysticism Scale measures *reports of mystical experience*, and not the experience itself (...)." Hood, Hill, and Spilka (2009) took a stance on empirical research into RSMEs in their handbook on the psychology of religion: they are *interpretations* of experiences, and definitions by their inherent characteristics are not fruitful. Moreover, the variety of RSMEs is much larger than James described in his classical *Varieties* when one includes RSMEs in various cultures and experiences of common people. One is encouraged by Spilka and Ladd to bridge disciplines and methodologies, to take on creativity and commitment, in order to move the field forward and encourage future generations of scholars to pursue new information in fresh, innovative research programs.<sup>162</sup>

Streib and Chen (2021) show evidence for the 'brief mysticism scale' and its psychometric properties, moderation and mediation effects in predicting spiritual self-identification.<sup>163</sup> They say that the three-factor M-scale (HMS), which has become the most widely used measure of mysticism over the decades, has emerged to yield "robust empirical confirmation of Stace's phenomenological model in both exploratory and confirmatory factor analytic studies" (in Iranian Muslims, Israeli Jews, Chinese Christians, Chinese Buddhist, Indian Hindus, Muslims, Christians, and self-rated spirituality).<sup>164</sup> Moreover, empirical research has documented that mysticism has a particular relation to 'spirituality' (not 'religion') and that the (short) M-scale may have the potential to predict self-rated spirituality.<sup>165</sup> However, Streib and Chen admit that these results are based on cross-sectional data and do not (yet) yield evidence for predictions.<sup>166</sup>

Reflecting on this, somehow in the spiral of researcher-based models, operationalisations, measuring interpretations-not-experiences, not questioning the EMs underlying Stace's model or the lack of them, entanglement with mystical thought, saying that definitions by inherent characteristics are not fruitful, or assuming that scale validation entails that the referent is a discrete, unified phenomenon, researchers lost track of how and what they are measuring. Their researcher-based mystical-construct finds verifications everywhere.

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<sup>161</sup> Stace, *Mysticism*, 1960; Hood, *Mystical*, 1975; Poloma, *Sociological*, 1995:161–82.

<sup>162</sup> James, *Varieties*, 1902; Hood, *Transcendence*, 1973:441–8; Hood, *Mystical*, 1975:29–41; Kirkpatrick & Hood, *Intrinsic/extrinsic*, 1990:442–62; Malony, *Psychology*, 1991; Hood et al., *Psychology*, 2009; Dein, *Psychopathology*, 2010:523–47; Ouwehand et al., *Extraordinary*, 2018:31; (italics are by the thesis-author).

<sup>163</sup> Streib & Chen, *Mysticism*, 2021:165–75; ref. to: James, *Varieties*, 1902; Stace, *Mysticism*, 1960; Hood, *Mystical*, 1975:29–41; Hood & Chen, *Mystical*, 2013:422–40; Williamson et al., *Mysticism*, 2019:345–56; Streib et al., *Mysticism*, 2020:467–91.

<sup>164</sup> James, *Varieties*, 1902; Stace, *Mysticism*, 1960; Hood, *Mystical*, 1975; Hood et al., *Mysticism*, 1993:1176–8; Hood et al., *Mysticism*, 2001:691–705; Lazar & Kravetz, *Jewish*, 2005:51–61; Anthony et al., *India*, 2010:264–77; Chen et al., *Buddhists*, 2011:328–38; Chen et al., *Buddhist*, 2011:654–70; Chen et al., *Chinese*, 2012:155–68; Klein et al., *Mysticism*, 2016:165–87; Hood et al., *Psychology*, 2018.

<sup>165</sup> Hood, *Mystical*, 1975; Zinnbauer et al., *Spirituality*, 1997:549–64; Hood, *Relationship*, 2003:241–65; Streib et al., *Mysticism*, 2020:467–91; Streib & Chen, *Mysticism*, 2021:165–75.

<sup>166</sup> Zinnbauer et al., *Spirituality*, 1997:549–64; Streib & Hood, *Semantics*, 2016; Klein et al., *Mysticism*, 2016:165–87; Streib et al., *Mysticism*, 2020:467–91.

## 1.2.2 Theorising

**Attachment.** Cherniak et al. (2023) explore attachment theory concerning a 'psychedelic science' of RSMs.<sup>167</sup> Attachment is one of multiple explanatory mechanisms underlying psychedelic subjective effects. It functions as a predictor of PEMs/RSMs, and these experiences can also revise attachment (security, anxiety, disorganisation, and more).<sup>168</sup> Attachment relationships can involve 'stronger and wiser' anthropomorphic spiritual beings, such as god(s), or non-corporeal, symbolic, or abstract entities, like the universe, all of humanity, or nature (cf. §1.1.2).<sup>169</sup> The former attachment relationships are easier to attain than the latter. Additionally, attachment disorganisation, trait absorption, and PEMs appear to interrelate.<sup>170</sup> A crucial aspect of these experiences involves feeling accepted, loved, and connected to an attachment figure, often following profound self-surrender or absorption.<sup>171</sup> Cherniak et al. also address the broader terms RSMs and psychedelic-induced RSMs, yet primarily conceptualise PEMs by the mystical-construct. In this mystical-construct, 'safety and security' could be added as elements of 'positive mood'.<sup>172</sup> They categorise various experiences as EMs, other religious/spiritual or transformative experiences, challenging experiences, emotional breakthroughs, and interpersonal and spiritual 'corrective' emotional experiences.

According to Cherniak et al., PRSMs, whether they contain core elements, are co-constructed via culturally accessible interpretations or are shaped by prior convictions, involve relational themes associated with attachment, such as connectedness.<sup>173</sup> Attachment anxiety and a longing for love and care can predict the occurrence of PEMs/RSMs and can impact the content of these experiences.<sup>174</sup> These experiences may involve a deep sense of connection and security, feeling embraced by a powerful and benevolent figure. This can also be a more general feeling of a unitive embrace with all. However, they can also transform into challenging and fearful experiences

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<sup>167</sup> Cherniak et al., *Attachment*, 2023:259–76; ref. to: Otto, *Holy*, 1925; Stace, *Mysticism*, 1960; Griffiths et al., *Mystical-type*, 2006:268–83; Hood et al., *Psychology*, 2018; Cherniak et al., *Attachment*, 2023:265.

<sup>168</sup> Harris & Gurel, *Ayahuasca*, 2012:209–15; Mikulincer et al., *Attachment*, 2013:606–16; Mikulincer & Shaver, *Attachment*, 2016; Pargament & Exline, *Psychotherapy*, 2022.

<sup>169</sup> Granqvist, *Attachment*, 2020; for WEIRD context: Paloutzian & Park, *Psychology*, 2014; for non-WEIRD context: Sahdra & Shaver, *Attachment*, 2013:282–93; cf. Schjoedt et al., *Religious*, 2009:199–207; Granqvist et al., *Attachment*, 2012:80–197; Ferguson et al., *Networks*, 2018:104–16.; Davis et al., *Meaning*, 2019:659–71; Cherniak et al., *Attachment*, 2021:126–130; Watts et al., *Connectedness*, 2022:1–23.

<sup>170</sup> Granqvist et al., *Attachment*, 2012:80–197; cf. Thomson & Jaque, *Mediation*, 2014:499–514.

<sup>171</sup> Revising negative 'Internal Working Models' (IWMs) and gaining attachment security; see Granqvist, *Attachment*, 2020; "however, the evidence is currently inconclusive in part because extant (mostly naturalistic, cross-sectional) research has yielded inconsistent findings, and in part because wellcontrolled (experimental and longitudinal) studies are absent."

<sup>172</sup> Yaden et al., *Self-transcendent*, 2017:143–60; Hood et al., *Psychology*, 2018; the article also mentions the possibility that psychedelic-induced RSMs are epiphenomenal byproducts of the neurobiological mechanisms, see Olson, *Subjective*, 2020:563–7; Mitchell et al., *MDMA*, 2021:1025–33.

<sup>173</sup> Watts et al., *Connectedness*, 2017:520–64; Yaden et al., *Self-transcendent*, 2017:143–60; Griffiths et al., *Mystical-type*, 2018:49–69; Granqvist, *Attachment*, 2020; Brouwer & Carhart-Harris, *Pivotal*, 2021:319–52; Timmermann et al., *Metaphysical*, 2021:1–13.

<sup>174</sup> Attachment anxiety is the urgent need for connection with a powerful source of protection and support, up-regulation of distress, and a generalised, uncontrollable flow of negative sensations, feelings, and cognitions. An experience of union with an 'external rescuer' can alleviate this; see Mikulincer & Shaver, *Attachment*, 2016; Granqvist, *Attachment*, 2020; Aday et al., *Reactions*, 2021:424–35; Stauffer et al., *Attachment*, 2021:526–32.

associated with dissociative and absorptive mental states, leading to feelings of cosmic isolation, spiritual struggles, or fearful reverence. An absence of attachments within this framework explains these challenging and fearful experiences. Despite this, these experiences may prepare an individual for the potential healing effects of, as they call it, 'non-ordinary states of consciousness.'<sup>175</sup>

The set and setting significantly influence these experiences and attachment relationships. In one scenario, it results in a personal unity with an entity, while in others, it involves unity with nature or a sense of losing one's mind. Hence, attachment changes are multifaceted and contingent on various mindsets and contexts (see §2.2 for more on 'set and setting').<sup>176</sup> Other constructs and their underlying mechanisms are also pertinent to the attachment-religion connection. For example, psychedelic-induced feelings of 'ego-dissolution,' 'oceanic boundlessness,' and 'awe' can alter self-other and world models, contributing to feelings of connectedness (as seen in ch.1, these are already part of the mystical-construct).<sup>177</sup> However, other experiential states, such as emotional breakthroughs and psychological insight, might also be influential factors, even in the absence of RSMs (e.g., with MDMA, which does not typically produce RSMs but does facilitate love and bonding).<sup>178</sup>

**Cognitive Science.** Shults (2023) employs the cognitive evolutionary science of religion (CESR)<sup>179</sup> to examine entity encounters of the psychedelic kind.<sup>180</sup> These entities encompass a wide range, from perceptions of 'ultimate reality' to 'ancestral spirits' to a vaguely sensed 'presence.' Shults notes that these encounters often take place in PEMs. Shults backs Michael Winkelman's proposal for a comprehensive cross-cultural and interdisciplinary examination of experiential reports of entity encounters.<sup>181</sup> Moreover, Shults says, CESR researchers can gain valuable insights from PS and PEMs and possibly develop (psychedelic) experimental designs to enrich their understanding of cognitive and evolutionary mechanisms linked to 'supernatural' or 'counterintuitive agents.'<sup>182</sup> This approach could draw upon, for example, evolutionary psychology and neurophenomenology, focusing on evolved traits that come to the fore in PRSMs.<sup>183</sup> Shults also advocates for more cross-cultural research and innovative computational modelling (more on this in §3.2).

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<sup>175</sup> Otto, *Holy*, 1925; Hilgard, *Consciousness*, 1986; Hesse & Van IJzendoorn, *Absorption*, 1999:67–91; Watts et al., *Connectedness*, 2017:520–64; Haijen et al., *Responses*, 2018:897; Stauffer et al., *Attachment*, 2021:529.

<sup>176</sup> Koenig et al., *Health*, 2012; Exline, *Struggles*, 2013:459–75; Hayward & Krause, *Social*, 2014:255–80; Badiner & Grey, *Zen*, 2015; Koenig, *Health*, 2018; Rosmarin, *Therapy*, 2018; Granqvist, *Attachment*, 2020; the sentence "since religions address areas of ultimate concern" (Cherniak et al., *Attachment*, 2023:269) seems somewhat out of order, as seeing 'ultimate concern' as the core of religion is an idea of the theologian Paul Tillich (1886–1965), see Tillich, *Theology*, 1964:6–7.

<sup>177</sup> Studerus et al., *OAV*, 2010:1–19; Nour et al., *Ego-Dissolution*, 2016; Carhart-Harris et al., *Connectedness*, 2018:547–50; Roseman et al., *Predicts*, 2018:974; Hendricks, *Awe*, 2018:331–42.

<sup>178</sup> Letheby, *Psychedelics*, 2021; Mitchell et al., *MDMA*, 2021:1025–33.

<sup>179</sup> Cf. my Douma, *Cognitive*, 2024: [ResearchGate dx.doi.org/10.13140/academia.academia.edu/115153878](https://doi.org/10.13140/academia.academia.edu/115153878).

<sup>180</sup> Shults, *Encounters*, 2023:294–308; ref. to: Griffiths et al., *Mystical-type*, 2006:268–83.

<sup>181</sup> He calls this 'entitology,' see Winkelman, *Entity*, 2018:5–23; Griffiths et al., *Encounter*, 2019:e0214377; Lujakitis, *Entity*, 2020:171–98; Davis et al., *Entity*, 2020:1008–20.

<sup>182</sup> Guthrie, *Faces*, 1993; Boyer, *Explained*, 2001; Tremblin, *Minds*, 2010; Luhrmann et al., *Presence*, 2021:1–8.

<sup>183</sup> Winkelman, *Shamanic*, 2002:63–76, *Visionary*, 2017:11, Griffiths et al., *Mystical-type*, 2018:49–69; Winkelman, *Supernatural*, 2019:89–106; Winkelman aims for a "materialist explanation" of such experiences, conceptualising the entities as reflections of "the modular structures of the brain" and the result of the "projective

Additionally, Shults cautions against the inappropriate inclusion of 'religious,' 'supernatural,' or 'spiritual' assumptions by psychedelic researchers or clinicians in their research environments or therapeutic practices. Shults also advises being mindful of 'psychedelic exceptionalism,' *sui generis* approaches, and the potential risks associated with blending 'mysticism' and 'science.'<sup>184</sup> Despite this, Shults acknowledges that research on PEMs is still rooted in methodological naturalism and secularism.<sup>185</sup> However, popular media does not play by these rules, leading to misunderstandings. Also, individuals who have undergone PEMs often allow these experiences to shape their 'worldview.'<sup>186</sup> This can potentially distort the image of PS and impede regulatory advancements. Shults, therefore, emphasises the need for a more balanced approach when using terms such as 'supernatural,' 'religious,' 'spiritual,' 'mystical,' or 'transcendent.'<sup>187</sup>

**Neuropsychology.** Johnstone et al. (2016) explore the concept of selflessness as a fundamental aspect of spiritual transcendence experiences (STEs), drawing insights from neuroscience and religious studies.<sup>188</sup> They propose a preliminary 'neuropsychological model of spiritual transcendence,' which centres on the neuropsychological process of decreased self-orientation as the cornerstone of the specific spiritual construct of transcendence.<sup>189</sup> The researchers define STEs as a heightened sense of cosmic unity and an increased emotional and cognitive connection with higher powers beyond the individual self. What is deemed 'higher' is based on an individual's worldview, which can be god(s), the universe, or an existential void. Selflessness as part of STEs<sup>190</sup> occurs within the context of these emotional or cognitive connections with the participant-deemed 'higher.' Nevertheless, Johnstone et al. still use terms like 'sacred,' 'divine,' or 'true reality,' as if these are etic terms.

With its neuropsychological mechanism of decreased self-orientation, the sense of 'spiritual' selflessness can define STEs, regardless of a 'theistic,' 'agnostic,' or 'atheistic' interpretation. Johnstone et al. are relatively modest in saying that STEs are complex and involve the interaction of multiple neural networks, neuropsychological abilities, neurotransmitters, cultural influences, and individual differences.<sup>191</sup> Nonetheless, they put forth their framework of STEs and selflessness to understand

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capacities of the human mind" see Winkelman, *Entity*, 2018:7, 21; David Lewis-Williams, argues that people who have ingested psychedelics experience a reversal of the relationship between the retina and the visual cortex; patterns in the latter are visual percepts. "In other words, people in this condition are seeing the structure of their own brains" (2002:127); Winkelman, *Entity*, 2018:5–23.

<sup>184</sup> See, e.g., Johnson, *Pitfalls*, 2020:578–81; Sanders & Zijlmans, *Mysticism*, 2021:1254.

<sup>185</sup> Yaden et al., *Psychedelic*, 2017:338–53; Brecksema & van Elk, *Weirdness*, 2021:1471–3.

<sup>186</sup> Griffiths et al., *Encounter*, 2019:22; Davis et al., *Entity*, 2020:1017; these misconceptions seem to be based partly on a failure to understand surveys' limitations and sampling techniques.

<sup>187</sup> Safron, *ALBUS*, 2020; Glausser, *Debunking*, 2021:614.

<sup>188</sup> Johnstone et al., *Selflessness*, 2016:287–303; ref. to: James, *Varieties*, 1902; Stace, *Mysticism*, 1960; Maslow, *Peak*, 1964; Pahnke, *Mystical*, 1969; Hood et al., *Mysticism*, 2001.

<sup>189</sup> Johnstone & Glass, *Neuropsychological*, 2008:861–74.

<sup>190</sup> The RH/RPL [right hemisphere/right parietal lobe] processes information related to the self (i.e., self-orientation); diminished activity of the RH/RPL (often achieved ritually through practices such as meditation or prayer, or inadvertently as the result of brain dysfunction) is associated with a decreased ability to focus on the self.

<sup>191</sup> Lezak et al., *Neuropsychological*, 2004; spiritual experiences appear to be modulated by the same regions of the brain that are involved in self-referential processing (e.g., physical, mental, and autobiographical self), see McNamara, *Neuroscience*, 2009; Schjoedt, *Neural*, 2011:91–5.

the potential mechanisms underlying these experiences. From a complementary phenomenological standpoint, individuals undergoing STEs often report feelings of awe, a heightened sense of unity with the universe, ineffability, an increased connection with ultimate truth, and a diminished sense of self (strong correlation with the mystical-construct).<sup>192</sup> Johnstone et al. consider STEs as a distinct, measurable, and unified construct that represents 'spiritual transcendence' as a personality trait.<sup>193</sup>

They also discuss the potential of STEs to diminish *and* enhance the sense of self, that some parts of the self must remain to capture and imprint these experiences in memory, and that unity and self-loss are closely connected.<sup>194</sup> The authors propose that the complete dissolution of the self or unity with something greater is a common thread across different cultures and human experiences, including that 'Buddhist' and 'Hindu' theological understandings have STEs as their foundation.<sup>195</sup> They make sweeping statements, such as that individuals from diverse 'faith traditions' throughout history have described STEs, (forcefully) framing diverse expressions as 'union with God' or 'oneness with the universe' under the same construct.<sup>196</sup> Johnstone et al. argue that the concept of selflessness, when examined from neurological, neuropsychological, and 'religious' perspectives, serves as a unifying factor in the study of STEs from both the sciences and the humanities.<sup>197</sup> Strangely, the study lacks any mention of the potential influence of drugs, psychedelics, or entheogens in facilitating such experiences.

**Absorption.** Bronkhorst (2021) presents a theory of deep mental absorption and criticises the current constructions of (P)EMs.<sup>198</sup> Absorption, the faculty of concentration or focused attention, allows "humans and many other animals to fix their minds on something specific" while downplaying or excluding associations and fleeting sense impressions. This process can occur on the personal

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<sup>192</sup> This can be measured via many scales, e.g., the Self-Transcendence Scale; Spiritual Transcendence Scale; Adult Self-Transcendence Scale; Self Transcendence Scale of the Temperament and Character Inventory; Self-Forgetfulness Scale; Transpersonal Identification Scale; Spiritual Acceptance Scale, and more, see Reed, *Self-transcendence*, 1991:5–11; Cloninger et al., *Temperament*, 1994; Piedmont, *Spirituality*, 1999:985–1013; Levenson et al., *Self-transcendence*, 2005:127–43; Garcia-Romeu, *Self-transcendence*, 2010:26–47.

<sup>193</sup> Brandstrom et al., *Personality*, 1998:122–8; Hansenne et al., *Temperament*, 2005:40–9; Garcia-Romeu, *Self-transcendence*, 2010:26–47.

<sup>194</sup> Pahnke, *Mystical*, 1969:1–21; Sullivan, *Contentless*, 1995:51–9; a weakness in the neuropsychological model of STEs relates to the inadequate discussion of how the 'self' may be both minimised and enhanced during STEs. cf. McNamara, *Neuroscience*, 2009; Schjoedt, *Neural*, 2011:91–5.

<sup>195</sup> I.e., 'self-as-all' or 'no-self' language; Sullivan, *Contentless*, 1995:51–9; Hood, *Mystical*, 2002:1–14; Simpson, *Self-loss*, 2014:461; Buddhist (anatta, i.e., realisation of 'no-self') versus Hindu (atman = Brahman, i.e., realisation of equivalence of one's true self with universal totality); Hood et al., *Mysticism*, 2001:704, 691–705; "a common phenomenology defines the core experience of mystical unity"; Simpson, *Self-loss*, 2014:464.

<sup>196</sup> Johnstone et al., *Selflessness*, 2016:287–303; "In the specific context of spiritual transcendence, allusions to loss of self are found in the literature of a wide variety of religious traditions from diverse and wide-ranging temporal and spatial domains, which suggests that this occurrence is more than coincidence" (assuming that these are acute STEs and not just teachings).

<sup>197</sup> Buddhism: Collins, *Theravada*, 1982; Hinduism: Jakubczak, *Samkhya*, 2008:235–53; Salagame, *Indian*, 2011:133–45; Christianity: Winqvist, *Person*, 1998:225–38; Ruel, *Christians*, 1982:9–31; Nygren, *Christian*, 1982; Judaism: Ducoff, *Judaism*, 1989; Wiederkehr-Pollack, *Self-effacement*, 2007:179–87; Newman, *Judaism*, 1990:13–31; Islam: Sviri, *Sufism*, 2002:195–215; (note: quite old sources).

<sup>198</sup> Bronkhorst, *Predisposition*, 2021:187–227; ref. to: James, *Varieties*, 1902; Underhill, *Mysticism*, 1911; Huxley, *Perennial*, 1947; Stace, *Mysticism*, 1960; 'mental or state absorption' connects with the studies of PS and EMs that 'trait absorption' is predictive of PEMs; not just something that a dysfunctional brain might produce.

and intentional level, as well as the subpersonal and mechanistic levels.<sup>199</sup> When a person reaches deeper and deeper levels of absorption, they may report [1] a different 'higher' reality, [2] a different sense of time, [3] a different sense of self, [4] a difficulty in expressing themselves. The deeper the absorption level, the more likely people appraise these experiences as RSMs. The state of absorption is commonly associated with hypnotic trance, flow state, mindfulness, meditation, intense prayer, psychedelic drugs, contemplation, music, and orgasms, although the degree of absorption may vary.<sup>200</sup> Appraising these absorption states as RSMs and PEMs is taken as a trait, meaning people with this trait are more likely to deem absorption states RSM. Bronkhorst says that EMs are based on a mystical-construct originating from interpretative claims, reports, and teachings of mystics adapted to religious, cultural, and life contexts.<sup>201</sup> This mystical-construct does point to deep mental absorption, but Bronkhorst does not take this route to arrive at the four elements mentioned above.

This route starts with scholars unjustifiably postulating EMs.<sup>202</sup> The abovementioned four elements can manifest in 'mystical' literature without evidence of experiences (EMs). For example, there is no evidence that Meister Eckhart ever claimed to have experienced such phenomena.<sup>203</sup> Similarly, the assertion that the authors of Vedanta ever underwent EMs is unfounded. Even the 'perennial philosophy' is not inherently rooted in EMs (more on this later). Therefore, researchers should not too readily attribute such experiences to individuals simply because they espouse 'mystical teachings.' Nonetheless, it is conceivable that there have been and still are individuals who have had EMs and articulated them using language found in 'mystical thought.'<sup>204</sup> This brings to light three intertwined and influential elements: a state of deep mental absorption, interpretations of those states as EMs, and 'mystical thought' that is not necessarily dependent upon actual experiences.

Secondly, deep mental absorption in EMs and the state of absorption experienced in early childhood are linked.<sup>205</sup> Individuals instinctively recognise the elements of this childhood state in

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<sup>199</sup> See e.g., Eysenck, *Attention*, 1982:28; Desimone & Duncan, *Visual*, 1995:193–222; Spiegel & Spiegel, *Hypnosis*, 2004:19; Chabris & Simons, *Intuition*, 2010; Vergauwe et al., *Mental*, 2010:384–90; Dehaene & Changeux, *Conscious*, 2011:200–27; Chou & Yeh, *Attention*, 2012:225–31; Watzl, *Representationism*, 2019:581–608; Bronkhorst starts from the perspective that 'ordinary awareness is interpreted awareness,' see Hoffman, *Visual*, 1998; *Construction*, 2012; *Reality*, 2019; Nisbett, *Thought*, 2003; Frith, *Mental*, 2007:132; Leech et al., *Priming*, 2008:357–414; Craig, *Awareness*, 2009:59–70, *Self*, 2015; Searle, *Social*, 2010; *Perception*, 2015; Berlin, *Neural*, 2011:5–31; Hofstadter & Sander, *Thinking*, 2013:171; Mordvintsev et al., *Inceptionism*, 2015; Feinberg & Mallatt, *Consciousness*, 2016; Barrett, *Emotions*, 2017; Antinori et al., *Experience*, 2017:15–22; Everett, *Making*, 2017; Lotto, *Perception*, 2017; Dennett, *Minds*, 2017:169.

<sup>200</sup> Hay, *Religious*, 1990; Taves, *Reconsidered*, 2009; Gopnik, *Children*, 2009; Ananthaswamy, *Trippy*, 2014.

<sup>201</sup> **Stace**, *Mysticism*, 1960:44, 79, 110–1, 131–2; Kimmel, *Mysticism*, 2008; cf. Tart's account of 'William' who reached extraordinary depths of hypnotic trance is of interest, see Tart, *Consciousness*, 1983:191–200.

<sup>202</sup> E.g., this mistake is made by the editor of *The Cambridge Handbook of Western Mysticism and Esotericism* (Magee, *Handbook*, 2016:xvi/16), who claims that "all that is typically categorised as "mystical," we find that in one way or another it alludes to such an experience, or flows from the standpoint of one who has had it (...)."

<sup>203</sup> Hackett, *Eckhart*, 2013:xxii–xxv; considered the founder of Rhineland mysticism.

<sup>204</sup> The existence of 'mystical thought' can be explained without invoking EMs, eliminating the necessity of EMs to account for 'mystical thought.' This also diminishes the credibility of the assertion that Indian philosophy originated from spiritual practices; see Franco, *Spiritual*, 2018:113–26; Sil, *Ramakrishna*, 1991.

<sup>205</sup> Individuals have encountered 'deep mental absorption' states in their early childhood. Consequently, when they encounter what are often deemed 'mystical teachings,' they recognise certain elements. They recollect experiencing the world without a fully developed sense of self, where it was either uninterpreted or minimally

mystical literature, and it encapsulates the elements of deep mental absorption. The 'lantern consciousness' of childhood, instead of the 'spotlight consciousness' of adult attention, represents a state *devoid* of a sense of self, a narrative linking past-present-future, language, and sophisticated interpretation of sensory experiences.<sup>206</sup> When adults undergo experiences akin to the 'lantern consciousness' through methods such as taking psychedelics, the memories of these experiences, including non-linear recollections of the different states of awareness, become particularly vivid and meaningful. The theory of deep mental absorption posits that adults are intuitively drawn to such absorptive childhood states, predisposing adults to 'beliefs' and 'practices' deemed RSM that seem to recapture them. The basis for these predispositions and proposed elements active in RSMs or PEMs lies not in historical (trait) reports of mystics, which might lack actual EMs. However, their basis lies in the neuropsychological data of (childhood) states of deep mental absorption. Following these arguments, if PS wants to capture the mental *state* under psychedelics, they should take on the theory and data of deep mental absorption.<sup>207</sup>

Thirdly, Bronkhorst agrees with Stace that EMs are not the core of all formations deemed 'religions.' However, the theory of deep mental absorption does support the notion that something akin to 'mystical consciousness' is potentially present within all humans beneath the threshold of consciousness, specifically in memory. This so-called 'mystical consciousness' equals the 'lantern consciousness,' the absorptive states of early childhood. Although people do not recollect these states the same way they recollect things in later childhood and adulthood, they are retained in a nonsequential and impersonal way. This accounts for people's somewhat vague 'recognition' of experiences, convictions, and practices that try to recapture these states. These experiences, convictions, and practices frequently but not necessarily become integral to formations deemed 'religions' and 'spiritualities' or are likely to be deemed as RSMs.

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interpreted. This may connect to neural entropy and attachment in real-life experiences, as well as to CSR and mechanisms in early childhood that may facilitate religious thinking. It also ties into a sense of 'familiarity' (see §1.1.2); cf. Gopnik, *Children*, 2009:124; Baier, *Spiritual*, 2019:59–110.

<sup>206</sup> It is commonly believed that all humans possess an innate understanding of a state of existence that differs significantly from our day-to-day experiences. This intuitive awareness forms the basis of nonsequential memories of an early childhood state of consciousness, which does not form part of our adult identity. Many practices and beliefs deemed 'religious,' or differently appraised, can be interpreted as efforts to rediscover this distinct state of existence, often achieved through mindfulness and absorption; Bronkhorst, *Predisposition*, 2021:204.

<sup>207</sup> As the basis for these two paragraphs see, e.g., Hoffman, *Visual*, 1998; *Construction*, 2012:7–15; *Reality*, 2019; Tulving, *Episodic*, 2001:17–34; Atran, *Evolutionary*, 2002:264; Rose, *Memory*, 2003:41; Luhrmann, *Absorption*, 2005:133–57; Gopnik, *Children*, 2009; Bronkhorst, *Buddhist*, 2009; *Mind*, 2010:159–202; *Mind*, 2012:9–69; *Absorption*, 2012; *Indian*, 2016:19–44; *Absorption*, 2017:1–30; Luhrmann et al., *Absorption*, 2010:66–78; Berlin, *Unconscious*, 2011:5–31; Boudry & Braeckman, *Self-validating*, 2012:341–64; Shenhav et al., *Cognitive*, 2012:423–8; Pennycook et al., *Cognitive*, 2012:335–46; Luhrmann & Morgain, *Sense*, 2012:359–89; Banerjee & Bloom, *Emergence*, 2013:7–8; Luhrmann et al., *Affects*, 2013:171–2; Ananthaswamy, *Trippy*, 2014:2983; Boudry et al., *Beliefs*, 2015:1177–98; Schaefer, *Affects*, 2015; Sweeny et al., *Perception*, 2015:556–68; Miley, *Mysticism*, 2016:107–8; Gorelik, *Transcendence*, 2016:287–307; Nielbo & Sørensen, *Attentional*, 2016:318–35; Gorelik & Shackelford, *Transcendence*, 2017:361–5; Barrett, *Emotions*, 2017; Dietrich & Haider, *Neurocognitive*, 2017:3–4; Alberini & Travaglia, *Infantile*, 2017:5783–95; Antinori, et al., *Seeing*, 2017:15–22; LeDoux, *Conscious*, 2019:296; Shi et al., *Attentional*, 2019; Baier, *Meditation*, 2019:59–110; Slone & McCorkle, *Cognitive*, 2019; the appearance of *intense* pleasure during deep absorption remains unexplained, although it may be attributed to profound relaxation; see Birbaumer & Zittlau, *Empty*, 2018.

Bronkhorst (2022) is the last entry that extends the previous by focusing more explicitly on EMs.<sup>208</sup> So, for example, once research on 'mysticism' shifted to the Anglo-Saxon world, the nature of the EMs itself became the central question.<sup>209</sup> Because of this shift, the presence of a demonstrable experience underlying EMs-literature became an issue. The Upanishads, Shankara, and Advaita Vedanta, part of formations deemed Hindu and Buddhist, are said to have their basis in EMs, with the following statement found in a psychedelics study: "Descriptions of spontaneously occurring mystical experiences date back millennia to the early Indian Upanishads."<sup>210</sup> However, they do not even attempt to justify such claims, which would be pretty challenging because none of the authors and early texts explicitly mention personal EMs. Presumably, they did not, but there is also no definitive evidence to confirm their absence.<sup>211</sup>

Furthermore, classical Buddhist authors never refer to any kind of personal EMs. Meditation, which can engender mental absorption, is also not universally practised in all Buddhist circles and may not have been historically widespread. Denys Turner (1995) also argues that 'medieval European mysticism' does not have its basis in EMs.<sup>212</sup> As mentioned in the previous entry, Meister Eckhart's writings also lack evidence of EMs.<sup>213</sup> Hence, the unjustifiably postulating of EMs by scholars is quite prevalent.<sup>214</sup> However, various researchers are unfazed by this and assert that they must have experienced EMs. Walter Stace (1960), for instance, says: "Anyone who reads these writers [i.e., Eckhart, Ruysbroeck, Sri Aurobindo] with insight soon sees that they must be writing of their own experiences. But this has to be gathered from the 'feel' of their writings. They do not themselves tell us in so many words."<sup>215</sup> Determining which reports have underlying 'authentic' EMs will be biased.<sup>216</sup> One approach might involve compiling lists of features believed to signify 'authentic' EMs or attempting to redefine the issue altogether. However, both methods involve imposing individual preferences. A more prudent approach would be to acknowledge the obvious: the reliability of many commonly cited sources for studying EMs is low.

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<sup>208</sup> Bronkhorst, *Mystical*, 2022:1–20; ref. to: James, *Varieties*, 1902; Zaehner, *Mysticism*, 1957; Stace, *Mysticism*, 1960; Hood, *Mystical*, 1975; Katz, *Mysticism*, 1978; Griffiths et al., *Mystical-type*, 2017:49–69.

<sup>209</sup> Wilke et al., *Mysticism*, 2021:5 points out "that not only in popular discourse, but even among most of early scholars of mysticism, union, unity, unification, i.e., immediate unitive experience (unio mystica, 'mystical union') was very prominent in characterising and defining universal mysticism (...) many of them, however, were not interested in defining mystical experience as such (...)."

<sup>210</sup> Johnson et al., *Psychedelics*, 2019:92.

<sup>211</sup> 'Presumably,' because there is also no way to prove that they (e.g., Eckhart, Upanishads, or Nagarjuna) had had no ME. Nevertheless, some (or even many) mystical teachings can, at least in part, be explained in terms of the intellectual and cultural surroundings of their authors. However, the appeal of 'mystical ideas' may have influenced the shape in which we find them in the relevant texts; see Bronkhorst, *Mystical*, 2022:15, n.39.

<sup>212</sup> Turner, *Negativity*, 1995; cf. Kügler, *Anti-mystical*, 2004:176–82.

<sup>213</sup> Wilke et al., *Mysticism*, 2021:2, with references to earlier literature.

<sup>214</sup> See, e.g., Sharf, *Buddhist*, 1995:228–83, *Experience*, 2000:267–87; Bronkhorst, *Indian*, 2011; Franco, *Arising*, 2018:113–26; Osto, *Mahayana*, 2019:177–205.

<sup>215</sup> Stace, *Mysticism*, 1960:58–64; Bronkhorst, *Mystical*, 2022:2; cf. Smart, *Mysticism*, 1965:75; 1967: speaks of a "timeless experience" of Eckhart, Teresa of Avila, Sankara, and Buddha which he claims, "involves an apprehension of the transcendent."

<sup>216</sup> Zaehner, *Mysticism*, 1957; Hood, *Mystical*, 1975:29–41, measure of *reported* EMs, Hood's M-scale (see also Streib et al., *Mysticism*, 2020:467–91) measures a personality *trait*, not the depth of a (mystical) state.

The research focus should not be on defining EMs by their inherent characteristics but rather on developing psychological theories that can explain certain, not just all, EMs.<sup>217</sup> The theory of deep mental absorption can predict and explain certain experiences, and people often appraise some of them as 'mystical.' This theory begins with the research-based assumption that 'ordinary awareness is interpreted awareness,' indicating that 'standard consciousness' is a construct ('ordinary' and 'standard' being contingent on cultural perceptions). Language plays a crucial role in this construct, as the fabric of the universe is accessible to humans primarily through symbolically mediated means, particularly language.<sup>218</sup>

The connections established by language between various mental representations are essential for human experiences to be comprehensible and expressible. Furthermore, reducing or eliminating these connections could lead to a form of consciousness in which critical elements of 'standard' consciousness are diminished or absent. Such consciousness might result in a mental state lacking [1] external referents, [2] a sense of time, [3] self, or [4] expressibility.<sup>219</sup> This mental state, possibly deemed non-ordinary, is less exceptional in cultures where 'standard' consciousness is already more absorptive. Deep concentration serves to reduce or eliminate mental connections, enabling individuals to avoid being disrupted by irrelevant sensory input and mental clutter. While such concentration is often limited in most individuals, with discipline and training, one can achieve deeper levels of concentration (e.g., through rituals/practices deemed 'religious'). These more profound levels of concentration, attainable by some, can be called '(deep) mental absorption.'<sup>220</sup> The four elements, or better, the lack of these elements in the state of 'deep mental absorption,' is often associated with experiences deemed 'mystical.'<sup>221</sup>

Bronkhorst's theory predicts that certain EMs and PEMs can occur due to a reduction or suppression of mental connections brought about by a state of deep mental absorption. Bronkhorst argues that the foundational component of 'standard' consciousness is 'feeling' because humans

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<sup>217</sup> Against essentialism, see Gelman, *Essentialism*, 2003; "it will be pointless to 'define' EMs in one way or another and then criticise the theory for not explaining all of it, or too much." Bronkhorst, *Mystical*, 2022:2.

<sup>218</sup> Jensen, *Framing*, 2011:41; aphasia, losing the ability to use language, doesn't return one to a pre-linguistic state: a reason may be that "[i]n 99 percent of aphasics the processing of language is damaged, but the memory for language is retained," see Hale, *Aphasia*, 2007:124.

<sup>219</sup> Seth, *Being*, 2021:218: "At the very deepest layers of the self, beneath even emotions and moods, there lies a cognitively subterranean, inchoate, difficult-to-describe experience of simply being a living organism. Here, experiences of selfhood emerge in the unstructured feeling of just 'being'." On 220 Seth says: "the very deepest levels of experienced selfhood—the inchoate feeling of 'just being'—seem to lack (...) external referents altogether. This, for me, is the true ground-state of conscious selfhood: a formless, shapeless, control-oriented perceptual prediction about the present and future physiological condition of the body itself." Elsewhere (Webb, *Consciousness*, 2022:96), Seth describes the most basic aspect of conscious selfhood as "at the deepest level without any describable content at all." Cf. e.g., Helen Keller; Donald, *Rare*, 2001:232–51.

<sup>220</sup> "Mystical experiences are absorbed states," see Granqvist, *Attachment*, 2020:219–20; Hood et al., *Psychology*, 2009:354–55: "the wide diversity of triggers or conditions facilitating mystical experiences (...) may have in common the fact that an individual fascinated by any given trigger experiences a momentary loss of sense of self, being 'absorbed' or 'fascinated' by his or her object of perception." Cf. Herbert, *Absorption*, 2019:237; brain injuries that affect such connections may result in similar experiences; Cristofori et al., *Neural*, 2016:212–20.

<sup>221</sup> Carhart-Harris & Friston, *REBUS*, 2019:319; James, *Varieties*, 1902:380, stated: " (...) mystical states are more like states of feeling than like states of intellect." Gäb, *Mysticism*, 2021:235.

cannot experience or remember it separately as an element of 'standard' consciousness.<sup>222</sup> Individuals who experienced EMs or PEMs remember the temporal state of deep absorption they felt. Moreover, all humans intuitively remember it because consciousness in early childhood did not yet possess the elements of 'standard' consciousness. Individuals who experienced EMs or PEMs may have episodic *and* autobiographical memories of the 'feeling state,' while memories from early childhood lack autobiographical features because of a lack of a 'narrative self' and are generally vague and imprecise.<sup>223</sup> Both sets of memories are rooted in episodic memory of 'feeling states,' unrelated to remembering concepts, people, objects, relationships, or locations (liable to infantile amnesia).<sup>224</sup> However, they are often associated with predispositions to practices and beliefs deemed 'religious.'<sup>225</sup>

To conclude this section, it is helpful to mention some pros and cons of this theory. For instance, there is still no neuropsychological way to measure the depth of absorption. The theory of 'deep mental absorption' (DMA) regarding 'states of feeling' deemed 'mystical' only identifies them as a lack of the elements that make 'standard' consciousness,<sup>226</sup> it does avoid the human tendency to confuse experience and the statements expressing them, and "there are reasons to think that psychedelics can help to attain" or be a method for measuring these 'states of feeling.'<sup>227</sup> Moreover, depth of absorption might explain the different appraisals (e.g., flow, mindfulness, or mystical) of these 'states of feeling,'<sup>228</sup> the theory clearly differentiates trait and state absorption,<sup>229</sup> and it could explain a broad range of methods or triggers that engender DMA.<sup>230</sup>

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<sup>222</sup> "In and of themselves, feelings are never memorised and thus cannot be recollected." Damasio does not deny access to pure feeling: "The ebb and flow of spontaneous homeostatic feelings provides for an ever-present background, a more or less pure sense of being of the sort that those who practice meditation aspire to experience." Damasio, *Order*, 2019:141.

<sup>223</sup> Some scholars, Morrison & Conway, *First*, 2010:23–32 "consider a version of episodic memory ('sensory-perceptive affective'), which appears very early in life, and another version ('conceptual episodic memory'), which appears later; (...) autobiographical is (...) considered by them to appear even later," Staniloiu et al., *Episodic*, 2020:5; Bronkhorst, *Mystical*, 2022:9.

<sup>224</sup> Alberini & Travaglia, *Amnesia*, 2017:5783–95; Peterson, *Remembering*, 2020:119–35.

<sup>225</sup> Cf. Slingerland, *Drunk*, 2021:97: "[A] common theme in cultures from across the world and throughout history is the idea of spiritual or moral perfection as somehow involving regaining the child's mind. The Gospel of Matthew declares, 'Truly I tell you, unless you change and become like little children, you will never enter the kingdom of heaven.' An early Chinese Daoist text, the Daodejing or Laozi, compares the perfected sage to an infant or small child, perfectly open and receptive to the world."

<sup>226</sup> Damasio, *Order*, 2019; Seth, *Being*, 2021.

<sup>227</sup> Bronkhorst, *Mystical*, 2022:16, n.54; cf. Dietrich, *Consciousness*, 2007:269.

<sup>228</sup> Bronkhorst, *Absorption*, 2017:1–30, *Predisposition*, 2021:187–227; Lifshitz et al., *Absorption*, 2019:102760; Luhmann, *Presence*, 2020; "EMs are relatively common in the general population," Hood et al., *Psychology*, 2009 estimates lifetime prevalence to be roughly 35%. Granqvist, *Attachment*, 2020:219 says these numbers may easily overlook that EMs may be more or less deep; cf. Siegel, *Intoxication*, 2005.

<sup>229</sup> Bronkhorst, *Absorption*, 2022; The originators of the Tellegen Absorption Scale, distinguish between the two; Tellegen & Atkinson, *Absorbing*, 1974:268–77; yet, "[i]n discussing imaginative involvement and absorption, for instance, (...) Tellegen (...) sometimes blurred together comments on trait and state notions of absorption." Roche & McConkey, *Absorbing*, 1990:92; cf. Mattes, *Positive*, 2022:6; "assuming that many scholars are 'normal' or 'average'" (lacking trait absorption), this may throw light on the fact that some of them find it difficult to take EMs and certainly PEMs seriously, see Wittmann, *Altered*, 2018:2769.

<sup>230</sup> Lewis-Williams, *Conceiving*, 2010:143, auditory driving (e.g., chanting, clapping, drumming); electrical stimulation; flickering light; fatigue; hunger; sensory deprivation; stress; and extreme pain; Maij & van Elk, *Absorbed*, 2018:1, sensory over-stimulation, deprivation, magic tricks, extreme rituals, meditation, trying to recall memories of past MEs, expectancy manipulations, and the so-called 'God Helmet.'

Nevertheless, the tension in this article between phenomenological descriptions and theorising is not made explicit, but their separation is a good starting point for further research (see §3.2). Moreover, by experiencing the weakening or disappearance of elements crucial to constructing 'standard' consciousness, one can become aware of the constructed and conditioned nature of 'ordinary' reality. This realisation may not offer insight into the EMs, PEMs or so-called 'mind-independent reality,' but it does shed light on 'standard' consciousness.<sup>231</sup>

### 1.2.3 Subconclusion II

What insights does the academic study of religion add to the measurement of psychedelic-induced experiences deemed 'mystical'? It shows that (P)EMs are more variegated and diverse than the abstract mystical-construct. The frameworks of CCM, RSMEs, or PEMs are too imposing on the heterogeneous reports, certainly those from non-WEIRD contexts. In the worst case, it would become a hegemonic or neo-colonial act. Moreover, although some studies focus on participant-based phenomenology, they still use researcher-based artificial distinctions and contingent and contested terms. (P)EMs in other settings, their former exclusion shows WEIRD's hegemonic bias, should be included but do not fit the mystical-construct, even within WEIRD contexts. These insights show that researcher-based constructs and their excess of terms or exclusion of negative valences impose, limit, and warp the heterogeneity of these experiences. Furthermore, this chapter shows the myriad factors that influence the reports of and experiences themselves, many of which are subpersonal, below the threshold of consciousness. The section on theorising laid out some of these subpersonal mechanisms that could explain the subjective effects appraised as 'mystical.' It also showed the low evidence of actual underlying EMs in historical reports of mystics, which are foundational for the mystical-construct. These insights demand no new researcher-based constructions but a novel methodological approach. This approach must capture the phenomenological heterogeneity, relegate these to their proper place, and open up new research regarding how and why (P)EMs emerge. Before introducing this approach, the following section will analyse the context and present criticisms.

#### Hypotheses

[-] This chapter affirms hypotheses 1-4 of subconclusion 1 (§1.1.3).

[5] The low evidence of underlying EMs in the pre-1960s models makes them unfit for measurement.

[6] A novel methodological approach will lessen the limitations and biases of the mystical-construct.

[7] A novel methodological approach should open up theoretical research regarding (P)EMs.

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<sup>231</sup> Annette Wilke says the mysticism debate (1970s-80s) i.e., universal vs socially constructed "was devastating, as it amounted to giving up mysticism research—at least in the Cultural Study of Religion." Moreover, "according to Steven Katz (...) as well as other 'constructivists' (...) pure, unmediated experience simply does not exist. Each and every experience went through complex epistemological processes by which it was organised and shaped, and which made it communicable. Mystical experience, according to these critics, will always be pre-figured and preconditioned by linguistic frameworks and the cultural context, the respective theologies and philosophies, the dogmas, social conditions, and pre-existing worldviews. What others had called interpretation was itself an ingredient of the experience." Wilke et al., *Mysticism*, 2021:7; Katz's claim (Katz, *Mysticism*, 1978:22–74) initially presented as an assumption became, over time, a working hypothesis and an epistemological generalisation, see Hammersholt, Katz, 2013:476. Katz does not present proof for this claim, which, given the theory of deep mental absorption, looks like an unwarranted assumption.

## 2. ANALYSIS

The material for this chapter originates from the 40+ studies of PS (§1.1.2) and the 20+ studies of ASR (§1.2), as well as other highly relevant ones obtained through the snowball effect of reading these studies. The contextualisation of James and Stace is novel (see Appendix 3).

### 2.1 Context

One can easily find that William James et al. are fundamental to the mystical-construct. In the early twentieth century, experiences deemed mystical regained some respectability through studies by William James (1902), William R. Inge (1899, 1918, 1947), Rufus Jones (1909), and F. Baron von Hügel (1908). Moreover, Evelyn Underhill (1911, 1915) and Richard M. Bucke (1901) popularised it further.<sup>232</sup> The specific mystical-construct of PS starts with the psychologising of EMs and the WEIRD meta-religious perennialist beliefs of William James in *The Varieties of Religious Experience* (1902),<sup>233</sup> specifically 'Lectures XVI And XVII. Mysticism.'<sup>234</sup> James identified transiency, passivity, ineffability, and a noetic quality as its elements<sup>235</sup> and believed one could identify a qualitatively identical, trans-cultural, perennial, common core.<sup>236</sup> Inspired by Benjamin P. Blood (1874), James believed that

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<sup>232</sup> Inge, *Mysticism*, 1899, *Mysticism*, 1918, *Mysticism*, 1947; Bucke, *Cosmic*, 1901; von Hügel, *Mystical*, 1908; Jones, *Mystical*, 1909; Underhill, *Mysticism*, 1911, *Mysticism*, 1915.

<sup>233</sup> James, *Varieties*, 1902:380–429, *Mysticism*, 1910:85–92; James was the catalyst for the academic interest in EMs, see Inge, *Mysticism*, 1938:387; Hegel and Bergson also influenced James; the whole Greek-Christian history of EMs lies behind this, from the Eleusinian Mysteries to Plotinus to the Christian mystical interpretations of the Bible; see, e.g., Leuba, *Mysticism*, 1925:305; O'Brien, *Plotinus*, 1964:87; Kerényi, *Eleusis*, 1967; Katz, *Mysticism*, 1978:41; Spilka et al., *Psychology*, 2003; Gertz, *Plotinus*, 2022:299.

<sup>234</sup> This chapter stars: [German] Martin Luther (1483-1546); [British] Alfred Tennyson (1809-92); [Scottish] James Crichton-Browne (1840-1938); [British] Charles Kingsley (1819-75); [British] John A. Symonds Jr. (1840-94); [American] Benjamin P. Blood (1832-1919); [American] Edwin D. Starbuck (1866-1947); [American] Ethel D. Puffer Howes (1872-1950); [Swiss] Henri F. Amiel (1821-88); [German] Malwida von Meysenbug (1816-1903); [American] Walt Whitman (1819-92); [Canadian] Richard M. Bucke (1837-1902); [Indian] Swami Vivekananda (1863-1902); [Austria] Carl Kellner (1851-1905); [German] Carl F. Koeppen (1808-63); [American] Duncan B. MacDonald (1863-1943); [German] Franz A. Schmölders (1809-80); [German] Joseph Görres (1776-1848); [French] Jérôme Ribet (1837-1909); [Spanish Dominican] Thomas de Vallgornera (1595-1665); [Spanish] Ignatius of Loyola (1491-1556); Edouard Récéjac (1853-unclear); [Spanish] John of the Cross (1542-91); [Spanish] Teresa of Ávila (1515-82); [Italian] Daniello Bartoli (1608-85); [German] Jakob Böhme (1575-1624); [American] Edward Taylor (1642-1729); [English] George Fox (1624-91); [American] Andrew Jackson Davis (1826-1910); Henry T. Butterworth (1809-93); [French] Margaret M. Alacoque (1647-90); [French] Paul Lejeune (1850-1932); Friedrich Max Müller (1823-1900); [Scottish-American] Thomas Davidson (1840-1900); [Greek] Pseudo-Dionysius the Areopagite (5th–6th century CE); [Irish] Johannes Scotus Erigena (c.800-c.877); [Scottish] Andrew S. Pringle-Pattison (1856-1931); [German] Angelus Silesius (c.1624-1677); [German] Meister Eckhart (c.1260-c.1328); [American] Josiah Royce (1855-1916); [French] William F. Monod (1867-1943); [Belgian] Maurice Maeterlinck (1862-1949); [Belgian] John van Ruysbroeck (1293/4-1381); [Persian] Mahmoud Shabestari (1288–1340); [Greek] Plotinus (c.204/5-270); [German] Henry Suso (1295-1366); [German-Russian] H.P. Blavatsky (1831-91); [English] Algernon C. Swinburne (1837-1909); [German-British] F.C.S. Schiller (1864-1937); [British] John Nelson (1707-74); [French] Henri Delacroix (1873-1937); [French] Auguste Jundt (1848-90); [French] Paul Rousselot (1833-1914); [English] Edward Carpenter (1844-1929); [English] John R. Jefferies (1848-87); [Hungarian] Max S. Nordau (1849-1923); [German] Karl Wernicke (1848-1905).

<sup>235</sup> Cf. Underhill: 1. Activity and Practicality; 2. Transcendent intentionality; 3. Love of The One; 4. Unitive State; Russell: 1. Intuitive (not Rational); 2. Unitive (not Plural); 3. The Unreality of Time; 4. Beyond Good and Evil; Otto: 1. Awfulness; 2. Overpoweringness; 3. Energy; 4. The wholly other; Otto's description is sometimes called numinous; see Spilka et al., *Psychology*, 2003:292; Zaehner: 1. Transcendence of Space (thus Unity); 2. Transcendence of Time (thus Unity); 3. Contraction into The One (Being not Becoming); Peaceful, Joyful / Beyond Good and Evil; 4. The Love of God (Beyond The One); Zaehner also distinguished Nature, Soul, and Theistic Mysticism; see Sjöstedt-Hughes, *Metaphysics*, 2023:8.

<sup>236</sup> Perennialism; *prisca theologia* and *philosophia perennis*; Agostino Steuco (1540), see von Stuckrad, *Esoteric*, 2010:25–6, 29–33, 37, 40–7, 58, 84, 107, 110, 175; For Renaissance treatise on 'perennial philosophy,' see

chemical agents could induce these states, and James used nitrous oxide himself for this purpose. The 'mystical state' was already regarded as 'Cosmic Consciousness' by Carpenter (1892) and Bucke (1901).<sup>237</sup> Furthermore, Vedantist Swami Vivekananda and his call for a/his universal religion at the First World Parliament of Religions in Chicago (1890s) directly influenced James.<sup>238</sup>

Later on, French intellectual and sympathiser of Hindu mysticism Romain Rolland, in conversation with Freud (1920), coined the term 'oceanic feeling'.<sup>239</sup> The term 'oceanic boundlessness' and James H. Leuba's *The Psychology of Religious Mysticism* (1925) heavily influenced later studies.<sup>240</sup> This all leads to the primary influence on the mystical-construct, Walter T. Stace (1960). Stace continued the perennialist take of identifying experiences as the root of all formations deemed 'religious' (specifically Hindu, Judaic, Christian, Islamic, Buddhist [incl. Zen Buddhism] and Taoist). In *Mysticism and Philosophy* (actually only chapter 2; pp.41–133), Stace identifies a 'unitive experience,' supposedly unmediated by interpretation, as the core component of EMs.<sup>241</sup> His twofold typology of

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Schmitt, *Perennial*, 1966:505–32; Asprem & Granholm, *Esotericism*, 2013:34; Hanegraaff, *Esotericism*, 2013:27, 52, 167; Faivre, *Renaissance*, 2016:137 in: Magee, *Mysticism*, 2016; the term is still used today to refer to a putative 'common core' in formations deemed 'religions'; the lineage of perennialism: e.g., James, *Varieties*, 1902; Leuba, *Mysticism*, 1925; Huxley, *Perennial*, 1945; Stace, *Mysticism*, 1960; Staal, *Mysticism*, 1975; cf. Jones, *Mysticism*, 2016, *Perennial*, 2022:659–78; see Sjöstedt-Hughes, *Metaphysics*, 2023:1–17; including a veridical and non-veridical kind.

<sup>237</sup> This includes: (1) subjective light, or photism, (2) moral elevation, (3) intellectual illumination, (4) sense of immortality, (5) loss of fear of death, (6) loss of sense of sin, (7) suddenness; Carpenter, *Ceylon*, 1892 was influenced by Indian thinking, see Ganeri, *Cosmic*, 2022:43–57; most likely also by Hegelian 'eternal consciousness,' see Sjöstedt-Hughes, *Metaphysics*, 2023:7; Bucke, *Cosmic*, 1901: saw it as an evolutionary development.

<sup>238</sup> Strassman, *Mystical*, 2018:2; by "the latter half of the 19<sup>th</sup> century (...) mysticism became a global species of religious experience with innumerable subspecies, historical, geographic, and national," see Schmidt, *Mysticism*, 2003:282; Wulff, *Mystical*, 2014:370: gradual psychologising, the culmination: James.

<sup>239</sup> They believed the feeling to be regressive, recapitulating the state of consciousness inhabited by infants prior to the development of the ego; see Freud, *Suppression*, 1920; cf. Timmermann et al., *DMT*, 2018:9; Rolland used it originally in reference to "the flash of Spinoza," see Sjöstedt-Hughes, *Substance*, 2022:211–35.

<sup>240</sup> Leuba, *Mysticism*, 1925, has a chapter (chapter 2:8–30) on mystical ecstasy produced by drugs (alcohol, mescaline, hashish, ether, and nitrous oxide).

<sup>241</sup> This chapter stars: Russell, *Mysticism*, 1921; 14th century *The Cloud of Unknowing*; [Spanish] Teresa of Ávila (1515–82); [Canadian] Richard M. Bucke (1837–1902); Leuba, *Mysticism*, 1925; R.C. Zaehner; [British] Alfred Tennyson (1809–92); [British] John A. Symonds Jr. (1840–94); [English] Edward Carpenter (1844–1929); [English] Charlie D. Broad (1887–1971); William James; Stace regards 'visions' and 'voices' as sensuous and non-mystical (1960:47; e.g., vision of Mary, voice of Jesus, vision of Kali, voices heard by Joan of Arc, Socrates, or Mohammed, or Damascus Paul); [German] Meister Eckhart (c.1260–c.1328); [Belgian] John van Ruysbroeck (1293/4–1381); [Spanish] John of the Cross (1542–91); The Upanishads, trans. by Swami Prabhavananda and Frederick Manchester; Stace also excludes 'raptures,' 'trances,' and 'hyperemotionalism' (1960:51; e.g., Teresa of Ávila's raptures, Sri Ramakrishna, sex metaphores of Catherine of Genoa, Madame Guyon; emotional types: Catherine of Genoa, Teresa, Heinrich Suso, "frenzies of emotions"; intellectual/soeculative type: Eckhart, Buddha); [German] Rudolf Otto (1869–1937); [Iranian] Abu Yazid of Bistam (c.848–c.874); [British] Arthur J. Arberry (1905–69); [Hungarian-British] Arthur Koestler (1905–83); [Indian] Sri Aurobindo (1872–1950); [English] Evelyn Underhill (1875–1941); [American] Howard H. Brinton (1884–1973); [Spanish] Ignatius of Loyola (1491–1556); 7 representative cases of extroverted mysticism (= equals 'nature mysticism') (1960:62–81): Meister Eckhart; Teresa of Ávila; [German] Jakob Böhme (1575–1624); [American] N.M. an anonymous intellectual man whom had an NEM induced by mescaline; [Indian] Sri Ramakrishna (1836–86); W. Wordsworth (1770–1850); [British] John Masefield (1878–1967); [American] Margaret P. Montague (1878–1955); Mandukya Upanishad; advaita Vadanta; R.C. Zaehner; [Austrian] Martin Buber (1878–1965); [German] Heinrich Suso (1295–1366); [Greek] Plotinus (c.204/5–270); [British] Margaret Smith (1884–1970); [Persian] Al-Ghazali (c.1058–1111); [Persian] Mahmud Shabistari (1288–1340); [Ukrainian] Levi Yitzchok of Berdichev (1740–1809); [German-born] Gershom Scholem (1897–1982); Mahayana Buddhism; [Indian] Ashvagosha (c.80–c.150); Surangama Sutra; [American] Dwight Goddard (1861–1939); [Japanese] Daisetsu T. Suzuki (1870–1966); [English] Robert A. Vaughan (1823–57); [Persian] Mansur al-Hallaj (c.858–922); [English] Reynold A. Nicholson (1868–1945); F. Hadland Davis (1882–1956); [Swiss] Franz Pfeiffer (1815–68); [Persian] Al-junayd of Baghdad (830–910); [Spanish] Abraham ben Samuel Abulafia (1240–91); Brihadaranayaka Upanishad; [American] Henry C. Warren (1854–99); [British] Travers C. Humphreys (1901–83); [German] Edward Conze (1904–79); [American] Edwin A. Burt (1892–1989); [American] James B. Pratt (1875–1944); [French] Pierre Janet (1859–1947).

'introvertive' and 'extrovertive' mysticism is based on Rudolf Otto's (1917) twofold typology of spiritual mysticism: 'introspection' and 'unifying vision.'<sup>242</sup> At the same time, Abraham Maslow (1959) formulated a secular equivalent, the 'peak experience' and later the 'plateau experience,' with many similar elements.<sup>243</sup> During this period, some scholars (e.g., R.C. Zaehner or D.T. Suzuki) enquired if psychoactives could even occasion 'genuine' EMs in contrast to seasoned 'religious' practice.<sup>244</sup>

Inspired by all these developments and the perennialist perspective, William A. Richards and Walter N. Pahnke (1960s) developed the SOCQ100 and MEQ43 scales to measure EMs.<sup>245</sup> Independent of Richards and Pahnke, but also primarily based on Stace and perennialist beliefs, Ralph W. Hood, Jr. developed the Hood Mysticism Scale or M-scale (1975). Both Richards and Hood reasserted the presence of a 'common core' in EMs despite varied interpretations, as proposed by Stace. Hood reiterates that "mysticism is the best candidate for a distinct, *sui generis* experience that has been recognised across diverse traditions and cultures" (cf. §1.2.1).<sup>246</sup> Some scientific researchers still advocate conceptualising EMs as a potentially universal phenomenon. The academic study of religion has rigorously challenged this assertion.<sup>247</sup> In line with this, various scholars, primarily Steven T. Katz (1978), proposed a contextualist-constructivist approach to studying mysticism.<sup>248</sup> This means that social formations do not simply add interpretations to acute experiences but shape them through and through. Lastly, Adolf Dittrich (1998) developed the OAV or (5D- or 11D-) Altered States of Consciousness questionnaire. Its factor, 'oceanic boundlessness' (OBN), captures factors and items of EMs (see ch.1).<sup>249</sup>

All these sources, but primarily James and Stace, lie at the basis of the current mystical-construct of PS (ch.1). Reflecting on this, the sources of the mystical-construct are very much entangled in (the difficulty of shedding the yoke of) WEIRD countries' greatest trick, masking contingent EACP terms as hegemonic universals. The problems with these sources, constructs, and their transportation to the context of contemporary psychedelic science will come to the fore in the next section.

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<sup>242</sup> Otto, *Heilige*, 1917, *Mystik*, 1926; cf. Wulff, *Mystical*, 2014:373; although Otto was a contextualist and "acknowledged that there are many other types of mysticism as well."

<sup>243</sup> Maslow, *Peak*, 1959:43–66, *Peak*, 1970, *Human*, 1971; Krippner, *Plateau*, 1972:107–20; Heitzman, *Plateau*, 2003; Gruel, *Plateau*, 2015:44–63.

<sup>244</sup> Zaehner, *Mysticism*, 1957; Suzuki, *Drugs*, 1971:128–33; argued they could not: *Satori*: (1) irrationality, inexplicability, incommunicability; (2) intuitive insight; (3) authoritativeness; (4) affirmation (positive character); (5) sense of the beyond; (6) impersonal tone; (7) feeling of exaltation; (8) momentariness; Odin, *Psychedelic*, 2022.

<sup>245</sup> Pahnke, *Mysticism*, 1963:290–1; Pahnke & Richards, *Mysticism*, 1966:175–208; Pahnke, *Mysticism*, 1966:295–314; Pahnke et al., *Psychotherapy*, 1970:1856–63; cf. Hovmand et al., *Subjective*, 2023:19–32, *Danish*, 2024:1–10; In 1967, Pahnke joined the Maryland Psychiatric Research Center in Spring Grove, Maryland. He worked with therapists Stanislav Grof, W.A. (Bill) Richards, and Richard Yensen, among others.

<sup>246</sup> Hood, *Mystical*, 1975; Richards, *Sacred*, 2015; Hood et al., *Psychology*, 2018:355–88; cf. Streib et al., *Mysticism*, 2020:467–91; there is a difference between postulating a 'common core' in formations deemed 'religions' and a 'common core' of experiences deemed 'mystical.'

<sup>247</sup> Taves, *Reconsidered*, 2009, *Nonordinary*, 2020:670; Martin, *Experience*, 2016:525.

<sup>248</sup> This still included the axiom that mystical thought equals EMs; see, e.g., Katz, *Mysticism*, 1978, *Mysticism*, 1983; cf. de Certeau, *Mystic*, 1992:11–25; King, *Mystic*, 1999.

<sup>249</sup> Dittrich, ASCs, 1998; Studerus et al., OAV, 2010; cf. Majić et al., *Afterglow*, 2015:241–53: 'oceanic boundlessness,' including positive experiences of derealisation and depersonalisation.

## 2.2 Critique

This section presents a critical analysis of [1] the mystical-constructs, [2] assumptions affecting the research on psychedelics and PEMs, and [3] hurdles with the current methods and measurements.

### Mystical-Constructs

**James-Stace Problem.** James (1902; 49p.) and Stace (1960; 92p.) contribute only one chapter to the mystical-construct. James' four characteristics are obviously limited and are no longer directly used by PS. Stace embeds the valuable parts of James. Nevertheless, James' account employs mainly WEIRD and 'christian' reports and sources, with a rough year average of 1708 (see n.251:  $av. = 95676/56 \approx 1708$ ). Quite a few sources are of the theologian-esotericist-orientalist kind. Obviously, much more can be and is already said about James' limitations; there is no need to repeat them here. The chapter of Stace is somewhat more extensive and foundational for the PS mystical-construct (e.g., quoted in many PS studies). Stace employs the axiom that sense experience and its interpretation are distinguishable, though not wholly separable. The chapter is short, lacks much historicisation or contextualisation, has a year average of 1666 (see n.258:  $av. = 86650/52 \approx 1666$ ), and uses colonial-orientalist-theological-theosophical sources. Even though Stace uses a broader set of formations deemed religious and non-religious, he still has a nag for all things WEIRD. Stace also supplies some superficial interpretations and easy comparisons. Therefore, the chapter presents Stace's interpretations of secondary sources' interpretations of mystics interpretations, entangled in various formations deemed religious, which may actually lack concrete experiences (see §1.2.2). Moreover, this is then transported from spontaneous EMs to PEMs, from philosophy to PS, and from 1960 to contemporary research.<sup>250</sup>

Various scholars have criticised Stace on historical and theoretical grounds.<sup>251</sup> For instance, the perennialist program seems to dilute accounts of EMs to such a degree that it eradicates any cultural and religious specificity. What remains bears little resemblance to the mystics' descriptions. What they dismiss as an interpretive overlay may actually be the distinguishing feature of EMs.<sup>252</sup> Moreover, 'classical mystics' did not regard EMs as ends in themselves but rather as sources of knowledge. They utilised these to facilitate a transformation in accordance with the essential 'nature of reality' as defined by their formations deemed 'religious.' They also did not stress EMs for their joy,

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<sup>250</sup> Everything that does not resemble Stace's 'pure consciousness' is disregarded or reinterpreted; no Shamanic or Indigenous examples, little Jewish (e.g., no gematria, Philo, Merkavah/Hekhalot mysticism, Hasidei Ashkenazi, Kaballa, Zohar, Hasidism, or Buber's 'unforgettable experience'), low percentage of mystics who identify as women (some very distasteful hysteria-talk); Stace seems to need to repeatedly assure himself that his research subjects are the: "universal common characteristics of mysticism in all cultures, ages, religions, and civilisations of the world" (1960:43, 53, 57, 62, 74, 85, 99, 105, 132); oldest the Brhadaranyaka Upanishads ( $\pm 7$ -6th century BCE); continues WEIRD's harmful obsession with the mind at the expense of the body; Stace does distinguish between low-level interpretation (e.g., felt unity) and high-level interpretation (e.g., met God).

<sup>251</sup> E.g., Pike, *Mystic*, 1992; King, *Mystic*, 1999:166.

<sup>252</sup> Proudfoot, *Religious*, 1985:121.

sometimes being anything but joyful, but for the insights and alignment with 'reality.'<sup>253</sup> Furthermore, parts of the mystical-construct have their basis in theological assumptions, which enforces increasingly narrow definitions. These can sometimes be very distorting. For instance, R.C. Zaehner (1957) had to tell Buddhists what they really experienced, an eternal self (*atman*), even though they explicitly rejected that notion.<sup>254</sup> Hence, the mystical-construct is ambiguous and a scene of 'embattled conceptual nets.'<sup>255</sup> Moreover, all these limitations and biases become embedded in the scales and questionnaires. Researchers could then update the mystical-construct via contemporary sources, but it would remain non-exhaustive and conceptual battles would endlessly continue.<sup>256</sup>

**Narrowness.** The mystical-construct reflects a century of debate over the relationship between experiences deemed mystical, religious, or psychopathological. Fueled by an effort to identify a common core, researchers sought to define and separate these experiences. To specify this, James, Zaehner, and Stace progressively narrowed the criteria for the mystical-construct and built a selective hierarchy and positive valence into the construct.<sup>257</sup> The broad range of experiences was narrowed, even though psychoactives and psychopathology were part of it from the start.<sup>258</sup> They relegated many 'primitive,' 'pseudomystical,' and non-WEIRD phenomena to the margins (cf. §1.1.2). This laid the foundation for 'common core mysticism' (CCM)—reliance on Stace embedded these limitations and biases in the mystical-construct, which undercuts comparative investigation of such experiences. The MEQ and HMS continued this narrowing, as Hood and Richards still underwrite Stace's CCM. PS-scholars Barrett and Griffiths, not defending Stace's CCM, do find his 92-page philosophical treatise on EMs "the most definitive."<sup>259</sup>

Using Stace to operationalise (P)EMs has two significant drawbacks: [1] the perennialism creates an exceptionalism (*sui generis*) that prevents comparisons with other experiences; [2] comparisons with negative and psychopathological experiences are avoided, undercutting research into these valences. Research by Hood et al. (2001) shows that experiences of 'undifferentiated unity' (F1) and the possible positive, 'religious' interpretation (F2) are distinct. Nour et al. (2016) show that F1 is indistinguishable from ego-dissolution in the context of psychoactive-induced or psychotic

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<sup>253</sup> Jones, *Mysticism*, 2021:6, *Mysticism*, 2024; cf. Inge, *Mysticism*, 1938:388; "emphasising knowledge does not mean that emotions are not a prominent part of mystical ways of life but only that classical mystics are more likely to consider mystical experiences to be primarily cognitive rather than affective (Jones, *Mystical*, 2021:238:n6);" this stands in contrast to James, *Varieties*, 1902:380: "mystical states are more like states of feeling than like states of intellect."

<sup>254</sup> Jones, *Mysticism*, 2021:238:n1.

<sup>255</sup> Spilka et al., *Psychology*, 2003:299; Sjöstedt-Hughes, *Mysticism*, 2023:1–17.

<sup>256</sup> Sjöstedt-Hughes, *Mysticism*, 2023:8; Geyer, *Psychedelic*, 2023:1–8.

<sup>257</sup> Taves, *Nonordinary*, 2020:671: "(a) the identification of an underlying experience of the divine or real (an authentic core) that the various religious traditions elaborated and interpreted in disparate ways and (b) the explanation of how and why phenomenologically similar experiences could give rise to different psychological outcomes (e.g., transformative or debilitating). Whereas James held the two agendas in tension, Stace abandoned the second."

<sup>258</sup> I.e., any submarginal or subliminal state (cf. Transliminality Scale; Lange et al., *Transliminality*, 2000:591–617); mysticism as: "divinations, inspirations, demoniacal possessions, apparitions, trances, ecstasies, miraculous healings and productions of disease, and occult powers," see James, *Self*, 1890:362.

<sup>259</sup> Hood, *Mysticism*, 2013:294–306; Richards, *Sacred*, 2015; Barrett & Griffiths, *Hallucinogens*, 2018:393–430.

experiences of unity.<sup>260</sup> This means that the elevated emotions factor, including feelings of insightfulness, spiritualness and ineffability, are interpretations and, therefore, not *necessarily* part of (P)EMs. It also means that the two unity factors do correlate with psychopathological experiences.<sup>261</sup> Concerning positive valence in the first PEMs studies, they deliberately selected for or controlled positive experiences.<sup>262</sup> Moreover, researchers behind the NADA scale based on non-WEIRD traditions acknowledge that 'nondual awareness' can be unsettling and emotionally distressing. They nonetheless queried only positive experiences.<sup>263</sup>

What is needed are broader, more inclusive measures. APZ > OAV > 5D-ASC is one example of a broader assessment. 11D-ASC is better suited for psychoactive-induced states, and it includes negative emotions. MEQ30 seems to measure a set of factors extracted from something more complex and variable. For instance, when in one of the first PEMs studies, participants were given the APZ, they reported more visionary experiences ( $VUS=8.87$ ), and the negative unity factor ( $AIA=5.03$ ) was not negligible.<sup>264</sup> Neither is part of the MEQ30 and so it continues with the narrowness of Stace. Nevertheless, narrowing could be a good research strategy if explicitly acknowledged as a feature of interest. For instance, Carhart-Harris et al. (2016) suggest that ego-dissolution experiences, unity and dissolved boundaries "may be conceptually inseparable, occurring together during 'peak' psychedelic experiences." The correlations between selfless unity and ego-dissolution reinforce the idea of a generic experience of blurred or dissolved self-boundaries, which can take on a positive, negative, or neutral valence.<sup>265</sup> However, this explicit narrowing has its basis in neuropsychological theory.

**Conceptual Vagueness.** Studies on various experiences deemed 'religious' or 'anomalous' lack conceptual clarity. They are characterised by the 'jingle-jangle fallacy,' the erroneous assumption that can occur when the same term refers to different phenomena (jingle fallacy) or multiple terms denote the same or similar phenomena (jangle fallacy).<sup>266</sup> Many of the terms and measures are conceptually vague regarding their phenomenological referents. Terms such as 'self,' 'ego,' 'oneness,' or 'dissolution' are often used without precision. For instance, "I have experienced all notion of self

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<sup>260</sup> Hood et al., *Mysticism*, 2001:691–705; Nour et al., *Ego-Dissolution*, 2016.

<sup>261</sup> Hood, *Mysticism*, 2013:298; "By referring to this experience as mystical when it is not necessarily experienced as emotionally positive, sacred, or as revealing anything about ultimate reality (i.e., noetic), Hood obscured the generic "unity" experience and the role that positive valence and other associations (e.g., ideas of sacredness or feelings of insight) play in constituting it as mystical." Taves, *Nonordinary*, 2020:674.

<sup>262</sup> Griffiths et al., *Mystical-type*, 2006:268–83; MacLean et al., *Questionnaire*, 2012:721–37; Barrett et al., *Questionnaire*, 2015:1182–90.

<sup>263</sup> Hanley et al., *NADA*, 2018:1626–8; MEQ30 see ch.1; DME: Dimensions of Meditative Experience Questionnaire, see Osis et al., *Meditative*, 1973:109–35; EOM: Effects Of Meditation, see Reavley & Pallant, *Meditation*, 2009:547–52; OAV see ch.1, Studerus et al., *OAV*, 2010; EDI see ch.1, Nour et al., *Ego-Dissolution*, 2016.

<sup>264</sup> Griffiths et al., *Mystical-type*, 2006:276.

<sup>265</sup> Nour et al., *Ego-Dissolution*, 2016:1–13; Taves, *Nonordinary*, 2020:678.

<sup>266</sup> Strassman, *Mystical*, 2018:1–4; Johnson, *Pitfalls*, 2020:578; Britton et al., *Selflessness*, 2021; Canby et al., *Dissolution*, 2024:2; 'there are phenomenological similarities between specific religious experiences in long-time, dedicated practitioners of spiritual traditions and those brought on by psychedelics. However, to equate the two is a categorical error. Strassman points to a similarly impressive phenomenological overlap between the DMT and prophetic states. However, the DMT and prophetic experiences fundamentally differ in origin, mechanisms, meanings, messages, and impact on the individual and their community.'

and identity dissolve away” is used in both NADA and EDI. However, it is unclear what ‘self’ or ‘identity’ means in this statement or what it would mean for these to dissolve away. As such, researchers are left guessing how participants interpret these questions.<sup>267</sup> This is even stronger when terms like ‘sacred,’ ‘holy,’ ‘ultimate reality,’ ‘unity,’ ‘oneness,’ ‘pure being,’ ‘eternity’ or ‘pure awareness’ are used. These are WEIRD, EACP perennialist terms, which are highly abstract and not ‘common sense.’

Returning to self-loss, it lacks phenomenological specificity, and when used as, e.g., ‘self-transcendence,’ it glosses over differences between these experiences and other mental states.<sup>268</sup> There are also more precise scales (EASE anomalous self-experiences; EAWWE anomalous world-experiences) than the mystical-construct, which measures many aspects of selfhood that can be altered in many ways (jingle).<sup>269</sup> For instance, the conceptualisation of selfhood and self-loss can include decreased self-salience, a minimal, core, narrative and embodied self, or temporal and conceptual self, self-referential thoughts, memories, beliefs, and imagination, a multisensory sense of self, body ownership, spatial self-location, somatic depersonalisation, a pervasive sense of inner void and feelings of being anonymous or non-existent, and many more. This complexity shows the vagueness of what ‘simple’ scales measure.<sup>270</sup>

The preexisting constructs that categorise experiences consist of multiple characteristics or components that may not always co-occur. For instance, the mystical-construct has seven components, which is problematic because combining all of these into a single category hinders a more nuanced understanding of each component. This also makes it challenging to identify which component, for example, affects mental health. The multitude of scales and significant overlap further complicate the research.<sup>271</sup> Lastly, as mentioned in §1.1.2, many different terms are used to describe somewhat similar phenomena without any apparent phenomenological specificity (jangle), like ‘non-dual awareness,’ ‘oneness experiences,’ ‘ecstatic experiences,’ ‘selflessness,’ ‘self-transcendence,’ and ‘ego-dissolution,’ ‘anomalous self-experiences,’ ‘spiritual transcendence,’ ‘quantum change,’ ‘self-transformative,’ ‘deep absorption,’ ‘plateau experiences,’ and many more.

As presented here, the jingle and jangle fallacy demonstrates the problems with researcher-based constructs. Some quantitative scales with non-specific wording may capture a broader range of experiences than intended. Furthermore, multiple phases in the experiences may also contain differences, adding to the complexity of researching and measuring these constructs.<sup>272</sup>

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<sup>267</sup> Lindström et al., *Self-transcendent*, 2022:75–101; Canby et al., *Dissolution*, 2024:3; sometimes also unclear whether they measure higher-/intermediate-/lower-order constructs.

<sup>268</sup> Sheldon et al., *Absorption*, 2015:276–83; Yaden et al., *Self-transcendent*, 2017:143–60.

<sup>269</sup> Parnas et al., *EASE*, 2005:236–58; Gallagher, *Self*, 2013:1–7; Sass et al., *EAWWE*, 2017:10–54; Millière et al., *Psychedelics*, 2018; Lindahl & Britton, *Buddhist*, 2019; Lindström et al., *Self-transcendent*, 2022:75–101.

<sup>270</sup> Gallagher, *Self*, 2000:14–21; Parnas et al., *EASE*, 2005:236–58; Zahavi, *Self*, 2011:1–21; Ataria et al., *Meditator*, 2015:133–47; Sass et al., *EAWWE*, 2017:10–54; Millière et al., *Psychedelics*, 2018; Sass et al., *Disorder*, 2018:720–7; Nave et al., *Dissolution*, 2021; Sleight et al., *Dissolution*, 2023:6.

<sup>271</sup> Canby et al., *Dissolution*, 2024:3; see the use of many scales in: Baker et al., *Spirituality*, 2023:1261–70.

<sup>272</sup> Sass et al., *EAWWE*, 2017:10–54; Hartogsohn, *Meaning-enhancing*, 2018; Taves, *Nonordinary*, 2020:669–90; Cole-Turner, *Noetic*, 2021:1058; McGovern et al., *Psychedelics*, 2022; Sleight et al., *Dissolution*, 2023:13; Canby et al., *Dissolution*, 2024:16–7.

## Assumptions

**Mystical Exceptionalism.** The assumption that EMs can or should be set apart from other experiences deemed 'religious,' 'anomalous,' and 'pathological' has significant implications. It stands in the way of recognising considerable overlap and research into the various mechanisms that lead to these appraisals.<sup>273</sup> For instance, studies of 'anomalous' experiences (e.g., lucid dreaming, hallucinations, out-of-body experiences, past lives, mental healing, NDEs, MEs, or alien encounters) are not well demarcated.<sup>274</sup> Moreover, what counts as religious, anomalous, or pathological depends on the interpretive framework of the individual, group, or tradition.<sup>275</sup> Various psychologists also recognise and differentiate between first-person awareness, neural correlates, and the effects of intellectual and material culture on these experiences.<sup>276</sup> Consequently, the mystical, religious, anomalous, and pathological categorisations are contingent on many factors and can become hegemonic tools.

In the psychology of religion, for instance, the leading graduate textbook (Hood et al. 2018) has sharply distinguished 'religious' and 'mystical' for many years.<sup>277</sup> They view experiences deemed 'religious' as the product of cultural-self-neural entanglement, but EMs as having exceptional status, being *sui generis*, and having a 'common core.' This is done based on a narrow definition of EMs.<sup>278</sup> More specifically, Hood and Richards operationalised Stace's narrow definition (HMS & MEQ), and Richards, active in PS research, fully embraces this exceptionalism, even proposing a 'religion of mystical consciousness' (more on this later). Both also still reassert the common core (CCM) as a distinct, *sui generis* experience.<sup>279</sup> In recent studies, colleagues and admirers of Hood concede that CCM and HMS are too narrow and call for a more inclusive model of 'altered self-consciousness' that goes beyond 'mystical unity' and includes more experiences such as disembodiment or imagery.<sup>280</sup> This mystical and psychedelic exceptionalism has its basis in theological rather than scientific justifications. Therefore, future research should avoid these assumptions.<sup>281</sup>

**Experiences / Interpretations?** According to Stace, interpretations are that "which the conceptual intellect adds to the experience for the purpose of understanding it."<sup>282</sup> Stace made four theoretical assertions that became embedded in measures of (P)EMs and are often presupposed in the analysis and discussion of the data: [1] The experience of unity is perceived, directly

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<sup>273</sup> Taves, *Reconsidered*, 2009; *Nonordinary*, 2020:669; cf. American Psychiatric Association, 1994; 2013:14; Mezzich et al., *Culture*, 1999:457–64.

<sup>274</sup> Cardeña et al., *Anomalous*, 2000, *Anomalous*, 2014; Maraldi & Krippner, *Anomalous*, 2019:306–19.

<sup>275</sup> Martin, *Experience*, 2016:525–40; Taves, *Nonordinary*, 2020:670.

<sup>276</sup> See, e.g., Metzinger, *Précis*, 2005:1–35; Markus & Kitayama, *Cultures*, 2010:420–30; Klein, *Self*, 2012:253–7, *Self*, 2012:474–518; Vignoles et al., *Global*, 2016:966–1000.

<sup>277</sup> Spilka et al., *Psychology*, 2003[1996]; Hood et al., *Psychology*, 2018[2009]; Taves, *Psychology*, 2020:25.

<sup>278</sup> Stace, *Mysticism*, 1960; Forman, *Mysticism*, 1998; D'Aquili & Newberg, *Mystical*, 1999; Wulff, *Mystical*, 2014:369–408; Anderson et al., *Mystical*, 2014:217–45.

<sup>279</sup> Hood, *Mysticism*, 2013:294–306; Richards, *Sacred*, 2015; Hood et al., *Psychology*, 2018:355, 383–388; Streib et al., *Mysticism*, 2020:467–91.

<sup>280</sup> Chen et al., *Daoist*, 2023:411.

<sup>281</sup> Taves, *Nonordinary*, 2020:670.

<sup>282</sup> Stace, *Mysticism*, 1960:37.

apprehended, unmediated, and uninterpreted. However, this precludes the possibility of *processing below the threshold of consciousness* during the acute experiences that 'mediate' what is apprehended. [2] Cultural environments and prior beliefs (set and setting) are interpretations but do not determine the experience itself. However, they do not explore the neuropsychological processes or social constructions generating the 'experience itself.' [3] Capitalisation of Unity, One (Stace), and the Real (Hood) signals the presence of underlying untestable metaphysical claims. This results in measures that conflate appraisals with the experience itself, limiting understanding of the mechanisms behind them. [4] The elevated emotions are part of the experience, not the interpretation. This claim rests on a narrow definition that limits interpretation to conscious reflection above the threshold of consciousness. Current neuroscientific research suggests that interoceptive signals (including the sense of self) are often appraised and valenced below the threshold of *consciousness*.<sup>283</sup> Subsequently, these assumptions highlight the limitations and biases built into Stace's theory.

Reflecting on this, research on PEMs should distinguish more clearly between attributions of causality (state; neuropsychological research) and ascriptions of qualities (trait; descriptive research). They should acknowledge that these ascriptions are the interpretations of participants and may even occur below the threshold of consciousness. Many studies also use retrospective self-reports, subject to memory and self-consistency biases. Moreover, the traits that produce ascriptions of qualities may also be subpersonal and inaccessible to self-report methods.<sup>284</sup> Colleagues of Hood acknowledge the criticisms of CCM and mention that (religious) ascriptions are indistinguishable from the experiences themselves.<sup>285</sup> They then introduce a modified vision that states that these RSMEs are expressed but not determined by culture and language. This modified vision is still limited because no expression is separate from culture and language. These fully construct human experienced reality. Moreover, even 'culture' and 'language' are loaded terms. Hence, they have difficulty letting go of the *sui generis* approach and its accompanying assumptions.

Nevertheless, many scales erroneously mix measuring experiences, interpretations, cognitive appraisals and affective responses.<sup>286</sup> This mixing adds additional imprecision concerning measurement because their phenomenology is confounded with ascriptions shaped by an individual's cognitive makeup and social formations. Many factors influence PEMs, and MEQ30's pre-defined range also contributes to the shape and content of PEMs.<sup>287</sup>

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<sup>283</sup> Craig, *Feelings*, 2011:72–82; Seth, *Interoceptive*, 2013:565–73; Taves, *Nonordinary*, 2020:673.

<sup>284</sup> Taves, *Attribution*, 2008:125–40; Subbotsky, *Magic*, 2011:126–43; Pennycook et al., *Cognitive*, 2012:335–46; Van Elk, *Self-attribution*, 2017:313–21; Exline et al., *Attributions*, 2023:461–87.

<sup>285</sup> Chen et al., *Daoist*, 2023:397–414; Katz, *Mysticism*, 1978; Belzen, *Specificity*, 2009; they acknowledge that past research (e.g., Chen et al., *Chinese Buddhist*, 2011:654–70) showed the merits of both CCM and 'social constructionism.'

<sup>286</sup> Taves, *Non-ordinary*, 2020:669–90; Yaden & Newberg, *Spiritual*, 2022.

<sup>287</sup> Ninian Smart, for instance, understands his phenomenology to offer as low an hetero-interpretation as possible to supply a 'pure description' of EMs; Smart, *Mystical*, 2009[1965]:56; Jonathan Tuckett critiques this and says the notion of a 'pure experience' is nonsense within philosophical phenomenology; the positionality and intentionality of consciousness entails that by definition experiences are interpreted; Tuckett, *Experience*, 2017:28–34; *Phenomenology*, 2018:125.

**Psychedelic Religion.** An example of entanglement with religionist perspectives. Psychologist William A. Richards, a seminal figure in PS who worked at Johns Hopkins and with Roland Griffiths, published *Sacred Knowledge: Psychedelics and Religious Experiences* (2016). Rick J. Strassman (2018) calls Richards' perspective a new 'psychedelic religion of mystical consciousness,' a mélange of New Age, Vedanta, and Christianity.<sup>288</sup> Stocker et al. (2024), a study reviewed in Chapter 1, used Richards' *Sacred Knowledge* extensively. Richards et al. use the mysticomimetic model (i.e., PEMs equal EMs), and rather than seeing their PS-data as indicating psychological and neurobiological functions, they see it as proving certain 'universal truths.'<sup>289</sup> For instance, one such truth is the 'indestructibility of consciousness,' which is based on taking patients' reports at face value.

*Sacred Knowledge* does point to science for its validation, prioritises feelings and certainty, and demeans competing models. The perennialism and hierarchism of James and Stace are part of Richards' model, and because psychopharmacology and religious studies critique these, they receive Richards' demeaning remarks. Moreover, even though Roland Griffiths said not to conflate Richards' views with the members of Hopkins' team, Griffiths has done little or nothing to differentiate his own view. According to Strassman, Richards' psychedelic protocol, which is still in use, steers participants towards (his) spiritual goals. Strassman says one should retain a healthy scepticism for the 'religious leaders' research at New York University and Hopkins—because they, for instance, downplay negative experiences and adverse effects. In closing, Richards' religionist perspective seems to continue the limited and biased assumptions of WEIRD's perennialism (the veridical kind).

**Neo-Colonialism?** Some studies call for an embrace and promotion of issues of equity and diversity, which are also important on the conceptual level.<sup>290</sup> They focus on the inclusion of diverse ways of knowing and doing (e.g., Indigenous knowledge systems), along with a sensitivity to the variety and diversity of human experience, the danger of PEMs becoming explained away as epiphenomena, and the impoverishment of the PEMs when stripping them of 'ontological and epistemological significance.'<sup>291</sup> Savoldi et al. (2023) even argue that when others transferred potions (ayahuasca and jurema) to Metropolitan settings, traditional elements were usually altered or redefined according to new 'spiritual worldviews,' 'New Age' ideas, or psychotherapeutic goals. These new settings affect the form and content of experiences, producing other kinds of experiences that differ from the traditional context.<sup>292</sup> Through the decolonial approach, they intend "to say that jurema is jurema and

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<sup>288</sup> Strassman, *Mystical*, 2018:1–4; many more insights can be found in this review!

<sup>289</sup> Walter Pahnke and Stanislav Grof also belonged to this team of Spring Grove, and they were actually resisted (grant's non-renewal) in the mid-1980s because they had "gotten religion," see Strassman, *Mystical*, 2018:1.

<sup>290</sup> Bartlett et al., *Interdisciplinary*, 2023:415–24; Singh, *Indigenous*, 2023; Graziosi et al., *Beyond*, 2023:1–12.

<sup>291</sup> Cf. Phelps, *Guidelines*, 2017:450–87; Sloshower, *Psychiatry*, 2018:113–32; Tai et al., *Therapist*, 2021; the diverse ways of knowing are, e.g., the Indigenous perspectives where "(...) the substances from which psychedelics are derived are often referred to as 'plant teachers' (Fotiou, *Indigenous*, 2020) – as conscious, intelligent beings who certainly carry as much ontological weight as a serotonin neurotransmitter." "Building an understanding of religious phenomena, and of mystical states in particular, is becoming a crucial component in building theories and practices around psychedelic-assisted psychotherapy and other psychological healing modalities."

<sup>292</sup> Labate & Cavnar, *Ayahuasca*, 2018, *Ayahuasca*, 2021; Grünwald, *Jurema*, 2020; even though they found in the current study (Savoldi et al., *Ayahuasca*, 2023:332–60): "significantly higher means in ineffability, temporal

ayahuasca is ayahuasca.” These substances have a history of continuity, changes, adaptations, and ‘cultural’ and ‘religious’ re-actualisation.<sup>293</sup> This includes the destruction of indigenous habitats and ways of life by WEIRD “settlers and explorers” of mainstream pharmacology (pretending to have found ‘new’ medicines). Pharmaceutical corporations should not wield the power to dictate individuals’ access to these experiences. PS, psychedelic therapy and “racist spiritual ideologies” attempt to capture the market by ‘civilising’ the psychedelic experience and giving it a scientific status, which overshadows adverse, indigenous, healing, or extreme bodily aspects.<sup>294</sup>

The body and its significance have become a site of contestation, certainly because PS emphasises visions, ego-dissolution, and a disembodied mental life. When scientists and popular media frame ‘mystical unity’ and ‘ego-dissolution’ as a universal or essential outcome of taking entheogens/psychedelics, they risk enacting a neo-colonial act. This can occur by codifying the experiences with significant elements of specific societies and agendas.<sup>295</sup> Moreover, claiming a ‘pure experience’ in WEIRD contexts and studies can also qualify as a neo-colonial act. The so-called WEIRD psychedelic revolutions are forgetting ‘revolution zero’—the enduring indigenous entheogenic cultures that have persisted for millennia in various adapted contexts up to the present day.

The ‘oneness’ of PEMs is unique across global PRSME-diversity and would likely not make much sense to an Indigenous ayahuasca specialist (cf. §1.1.2).<sup>296</sup> It resembles the Christian union with God that Dumont (1986) situates at the origins of modern individualism and empowers a particular discursive individualism in neo-shamanism circles.<sup>297</sup> This ‘oneness,’ or ‘we are all one,’ enforced on the interpersonal level what Viveiros de Castro (2004) described as “silencing the Other by presuming a univocality—the essential similarity—between what the Other and We are saying.”<sup>298</sup> It exemplifies the broader ‘New Age movement’s’ “remarkable ability to fashion contradictory ideas into an overarching vision that still privileges individual experience.” Nevertheless, this is sometimes enforced by ayahuasca specialists, saying that “on a higher level, we are all one vibration.”<sup>299</sup> Much more can be said about this. However, the neo-colonial imposing of ‘oneness,’ or any other abstract factors of PEMs on the vast diversity of experiences, must be critically engaged and addressed—even more so when it hegemonically silences certain ontological and epistemological formations.

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quality, religious quality, and total HMS related to the ayahuasca ritual than in the jurema ritual. No differences between ayahuasca and jurema rituals were found to report ego-dissolution, or mystical facets such as ego quality, inner subjectivity, unifying quality, positive affect, or noetic quality.”

<sup>293</sup> Grunewald et al., *Jurema*, 2022:307–32.

<sup>294</sup> Gearin & Sáez, *Altered*, 2021; cf. Fotiou & Gearin, *Purging*, 2019:1–9; “racist spiritual ideologies” (cf. Richards, *Sacred*, 2016); Gearin and Sáez refer in their article to certain forms of Neoshamanism, so-called shamanism without shamans; Mosurinjohn et al., *Mystical*, 2023; Hovmand et al., *Danish*, 2024:8.

<sup>295</sup> Some frame it as ‘the apex’ experience, cf. hierarchisation; Gearin & Devenot, *Dissolution*, 2021; “we argue that scientists have overlooked how the absorption, reactualisation, and appropriation of indigenous jurema practices by Brazilian neoshamanic practitioners have resulted in novel epistemological formulations that bring into focus different social and cultural realities of the everyday plight of jurema drinkers.”

<sup>296</sup> Shanon, *Antipodes*, 2002; Gearin & Devenot, *Ego-Dissolution*, 2021:917–35.

<sup>297</sup> Dumont, *Individualism*, 1986.

<sup>298</sup> Viveiros de Castro, *Perspectival*, 2004:10.

<sup>299</sup> Brown, *Light*, 2002:120; Gearin & Sáez, *Altered*, 2021:138–63; many more insights in this article!

## Methods & Measurements

**Methods.** Various studies have raised criticisms and concerns about the quantitative psychometric method, advocating for qualitative and mixed-method research instead.<sup>300</sup> They call for a more comprehensive and culturally sensitive approach, incorporating the assessment of cross-cultural subjective experiences,<sup>301</sup> using qualitative phenomenology approaches<sup>302</sup> and open-ended interviews.<sup>303</sup> Their emphasis is on methods that prioritise the conceptual perspectives of the participants,<sup>304</sup> such as semi-structured interviews that allow for elaboration beyond preset questions.<sup>305</sup> While more challenging to analyse, these methods better capture the diversity of experiences.<sup>306</sup> There is a call for a multilevel interdisciplinary paradigm, incorporating multidimensional frameworks based on neuropsychological research<sup>307</sup> to enhance contextual realism and capture the subtleties of set and setting.<sup>308</sup> Some even question the empirical study of these experiences, criticizing the methods, modes of thought, and assumptions of modern science.<sup>309</sup> As a result, there is a push for a broad research program focusing on experiences regardless of categorisation or appraisal and developing generalised instruments to capture them.<sup>310</sup>

**Extra-Pharmacological.** The extra-pharmacological model in psychedelic research posits that the immediate 'set and setting' strongly influences subjective drug effects.<sup>311</sup> The scope of this thesis only allows for a short summation of various aspects (see Figure 4 for the current model). *Cultural scripts and feedback loops:* talk of PEMs by participants, press, or researchers themselves affect the pre-state (maybe even via imprinting, e.g., creating a desire to experience PEMs);<sup>312</sup> as mentioned before, the psychedelic state can include emotionally appraised interoceptive signals to which valence can be attached below the threshold of consciousness;<sup>313</sup> the psychedelic state makes

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<sup>300</sup> Exline et al., *Messages*, 2023:376, 361–79.

<sup>301</sup> Graziosi et al., *Beyond*, 2023:10, 1–12.

<sup>302</sup> McMillan & Fernandez, *Phenomenology*, 2023:784; McMillan & Jordens, *Quantitative*, 2022:225–37; Žuljević et al., *Linguistic*, 2023:1–13.

<sup>303</sup> Breeksema et al., *Phenomenology*, 2023:1547–60.

<sup>304</sup> Friedman & Ballentine, *Sentiment*, 2023:1–16.

<sup>305</sup> Chen et al., *Daoist*, 2023:399; cf. Chen et al., *Chinese*, 2011:654–70; “this interview paradigm and questions have since been used to study Shamanic experiences (Kelkar & Chen, *Shamanic*, 2019) and, in non-religious settings, to explore bonding experiences between physicians and patients (Chen & Hirsh, *Relational*, 2019) and soulmate relationships (Chen & Patel, *Mystical*, 2021:176–88).”

<sup>306</sup> Lindahl et al., *Mixed-methods*, 2017; Taves, *Non-ordinary*, 2020; Chen et al., *Daoist*, 2023.

<sup>307</sup> Paloutzian & Park, *Psychology*, 2014; Lindahl et al., *Mixed-methods*, 2017; Letheby & Gerrans, *Dissolution*, 2017; Millière, *Dissolution*, 2017; Millière et al., *Psychedelics*, 2018; Taves, *Non-ordinary*, 2020; Letheby, *Philosophy*, 2021; Yaden & Newberg, *Spiritual*, 2022; Bohn et al., *Pedro*, 2023:309–31.

<sup>308</sup> Nour et al., *Ego-Dissolution*, 2016; Barrett & Griffiths, *Hallucinogens*, 2018:393–430; Letheby & Gerrans, *Dissolution*, 2017; Millière et al., *Psychedelics*, 2018; “our experience of space depends on sensorimotor structures involved in the construction of body awareness,” cf. Savoldi et al., *Ayahuasca*, 2023.

<sup>309</sup> Savoldi et al., *Ayahuasca*, 2023:348.

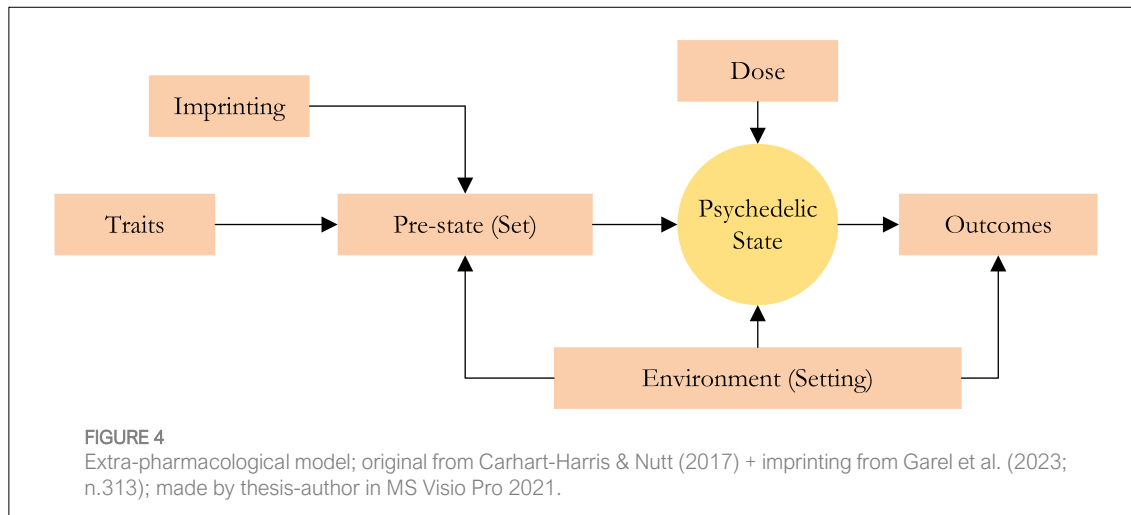
<sup>310</sup> Johnstad, *Entheogenic*, 2023:382.

<sup>311</sup> Carhart-Harris et al., *Context*, 2018:725–31; Lifshitz et al., *Cultural*, 2018:573–94.

<sup>312</sup> Holas & Kamińska, *Mindfulness*, 2023:1398–409; reify a research-education feedback loop by advising to continuously educate oneself about both the latest research and developments in psychedelics and mindfulness; piNEMs correlate with treatment outcomes, press focus more on them; Yaden & Griffiths, *Subjective*, 2021:568–72; Nautiyal & Yaden, *Subjective*, 2023:215–6; Graziosi et al., *Beyond*, 2023:1–12.

<sup>313</sup> Craig, *Feelings*, 2011:72–82; Seth, *Interoceptive*, 2013:565–73; Taves, *Nonordinary*, 2020:673.

people suggestible, some even argue hyper-suggestible (this highly influences the reports afterwards).<sup>314</sup> *Set or mindset*: e.g., expectations, beliefs, motivations, preparation, and intention. *Setting or environment during the state*: e.g., physical, temporal, cultural, and social formations.<sup>315</sup> *Imprinting or delayed environmental influences*: environmental exposures prior to psychedelic sessions manifest “involuntarily and spontaneously in the content and form of the perceptual changes of the experiences” (e.g., participants’ extensive reading about PEs and PEMs).<sup>316</sup>



Moreover, researchers’ or clinicians’ focus on meaningful, mystical, or beneficial experiences can also affect imprinting and expectations;<sup>317</sup> dreaming and dream-lag effects are most analogous to PEs and PEMs;<sup>318</sup> practices before or during sessions affect the state (e.g., meditation and introspection).<sup>319</sup> The *REBUS* model proposes that ‘beliefs’ (broadly taken) are relaxed under psychedelics (i.e., weakening of high-level processes and disruption in DMN);<sup>320</sup> intermediate-level priors, like

<sup>314</sup> See, e.g., Dupuis, *Suggestibility*, 2021:1–16; De Filippo & Schmitz, *Synthetic*, 2024:1–20; e.g., ‘imaginative suggestibility,’ Carhart-Harris et al., *Suggestibility*, 2015:785–94: it is important to consider how the interpretation or framing of these experiences is influenced by suggestion; ethnographic studies often note a cultural consistency in hallucinatory experiences, supporting a culturalist perspective on psychedelic hallucinations, see Dupuis, *Identity*, 2022:198–216, Dupuis, *Socialization*, 2022:625–37.

<sup>315</sup> Granqvist et al., *Suggestibility*, 2005:1–6; Hartogsohn, *Extra-pharmacological*, 2016:1259–67, 2017; Wright, *Dream*, 2018:193–205; Dupuis, *Suggestibility*, 2021:1–16, *Identity*, 2022:198–216; Kruger et al., *Evidence*, 2023:4; Cherniak et al., *Attachment*, 2023:262; Hirschfeld et al., *Dose-response*, 2023:1606; this potential diversity of outcomes based on cultural differences may be especially problematic in psychedelic research, as psychedelic effects are highly context-dependent, see Carhart-Harris et al. *Context*, 2018:725–31; Sepeda et al., *Supportive*, 2019; Nayak & Johnson, *Psychedelics*, 2021:167–75; Kettner, et al., *Communitas*, 2021; Gukasyan & Nayak, *Insights*, 2022:652–64; Davis et al., *Psychometric*, 2023:1–11; Hovmand et al., *Danish*, 2024:6; Canby et al., *Dissolution*, 2024:18.

<sup>316</sup> Carhart-Harris et al., *Context*, 2018:725–31; Garel et al., *Imprinting*, 2023:1–13.

<sup>317</sup> Garel et al., *Imprinting*, 2023:9, do not recognise their own imprinting of the participants: “her expectations for mystical-type experiences,” “become more personally meaningful and/or mystical-like, and ultimately more beneficial,” “Given her disappointment with this experience and its lack of emotional or mystical content.”

<sup>318</sup> Stenstrom et al., *Sleep*, 2012:37–46; Sears, *Dream-Specific*, 2015:134–55.

<sup>319</sup> See, e.g., Holas & Kamińska, *Mindfulness*, 2023:1398–409.

<sup>320</sup> Carhart-Harris & Friston, *REBUS*, 2019:316–44; REBUS postulates that psychedelic drugs weaken the hierarchical control of high-level processes over neural information transmission. Constraints on lower-level neural systems are thus decreased, yielding an increase in bottom-up signalling, potentially due to disruption of the brain’s default mode network (DMN); see for REBUS and imprinting: Garel et al., *Imprinting*, 2023:9.

past emotional experiences, lead to more PEMs; recent and early childhood exposures to, e.g., symbols and rituals deemed 'religious' contribute to the content of PEMs through a complex interplay of subpersonal symbolism, personal meaning, and imprinting.<sup>321</sup> *The anarchic brain model* describes an entropic effect of psychedelics that reduces top-down cortical control and liberates bottom-up information flow (this malleability also affects non-pharmacological factors and outcomes).<sup>322</sup> Interestingly, even the expectancy of the therapists, guide, 'leadership,' shaman, or group can influence the PEs, PEMs, or clinical outcomes.<sup>323</sup> Unnuanced focus on positive valence by science communications and broader media or a hype bubble of inflated expectations affects the experiences.<sup>324</sup> *The experiences differ according to personality*: trait openness, absorption, creative problem-solving, extroverted-introverted, neuroticism, state of surrender, vulnerability, catharsis, cognitive and psychological flexibility, and more.<sup>325</sup> These can also include transliminality, weak-strong self-boundaries, fantasy proneness, self-identification, and magical ideation.<sup>326</sup> Societal and individual biases, worldviews, or policies also affect the experiences.<sup>327</sup> Moreover, systemic physiological (e.g., pulse rate) and neural (e.g., fractional amplitude of low-frequency fluctuations) affect PEMs.<sup>328</sup>

Furthermore, subjective effects, and certainly PEMs, are dose-dependent. The higher the dose, the more likely PEMs occur (therefore also form-, route-, and co-use-dependent). Additionally, this is affected by the multiple phases of the experiences with contrasting or contradictory characteristics.<sup>329</sup> Participants' gender, age, preparation-integration, linguistic tools, sentiment, surfacing of previously suppressed emotions, pathology, appraisal, medications, previous experience with various substances, differences in individual pharmacokinetics, but also duration and intensity (incl. peak-

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<sup>321</sup> Murzyn, *Dreams*, 2008:1228–37; Lifshitz et al., *Cultural*, 2018:573–94; Garel et al., *Imprinting*, 2023:11; cf. Bronkhorst, *Mystical*, 2022:1–20.

<sup>322</sup> Carhart-Harris & Friston, *REBUS*, 2019:316–44; Lawrence et al., *Familiarity*, 2023:1–13; 'pivotal mental states': "transient, intense hyper-plastic mind and brain states, with exceptional potential for mediating transformation:" criteria "(a) elevated cortical plasticity, (b) an enhanced rate of associative learning, and (c) a unique capacity to mediate psychological transformation," see Brouwer & Carhart-Harris, *Pivotal*, 2021:319–52.

<sup>323</sup> Griffiths et al., *Mystical-type*, 2006, *Depression*, 2016:1181–97; Aday et al., *Expectations*, 2022:1989–2010; Sloshower et al., *Psilocybin*, 2023:700; Levin et al., *Therapeutic*, 2024:1–15.

<sup>324</sup> The positive/neutral/negative valence belongs to the contextual factors, because 'pivotal mental states' are valence agnostic, not good per se, see Yaden et al., *Hype*, 2022:943–4; Jacobs, *Transformative*, 2023:1–14.

<sup>325</sup> See, e.g., MacLean et al., *Openness*, 2011:1453–61; Sweat et al., *Associations*, 2016:344–50; Russ et al., *Response*, 2019:1–21; Aday et al., *Predicting*, 2021:424–35; Révész et al., *Associations*, 2021:12; Shults, *Entity*, 2023:298; Nayak et al., *Naturalistic*, 2023:1–19; Ko et al., *Predicting*, 2023:2106; extroverted personalities correlate with entity-encounters (social), and introverted personalities correlate with self-loss and unity (individual), see Johnstad, *Entheogenic*, 2018:244–60; Johnstad, *Entheogenic*, 2023:380–96.

<sup>326</sup> Thalbourne & Houran, *Transliminality*, 2000:853–64; Merckelbach et al., *Fantasy*, 2001:987–95; Bresnick & Levin, *Personality*, 2006:5–24; Timmermann et al., *DMT*, 2018; Evans et al., *Transliminality*, 2019:417–38; Van Lente & Hogan, *Oneness*, 2020:7; Nave et al., *Dissolution*, 2021; Sleight et al., *Dissolution*, 2023:3–4.

<sup>327</sup> Lifshitz et al., *Cultural*, 2018:573–94; Garel et al., *Imprinting*, 2023:1–13; Nayak et al., *Naturalistic*, 2023.

<sup>328</sup> Castillo et al., *Acute*, 2023:1–15.

<sup>329</sup> See, e.g., Carter et al., *Relationship*, 2005:1497–508; Griffiths et al., *Mystical-type*, 2011; Garcia-Romeu et al., *Mystical*, 2014:157–64; Carhart-Harris et al., *Psychological*, 2016, *Context*, 2018:1–7; Barsuglia et al., *Prior*, 2018:1–6; Taves, *Non-ordinary*, 2020:669–90; Aday et al., *Expectations*, 2022:1989–2010; Qiu & Minda, *Experiences*, 2023:123–33; Zeifman et al., *Co-use*, 2023:1–11; Hirschfeld et al., *Dose-response*, 2023:1606; Raghildstveit et al., *5-MeO-DMT*, 2023:1–10; Nayak et al., *Naturalistic*, 2023:1–19; Herrmann et al., *Experiential*, 2023:501–17; Canby et al., *Dissolution*, 2024:15.

end rule) of the experience, have an effect.<sup>330</sup> A desire for identity, place, meaning, or certainty in times of crisis and that most people in WEIRD countries are theists or ex-theists of one stripe or another affect the experiences.<sup>331</sup> More factors can be added and will be through future research. Nevertheless, this short summation of various extra-pharmacological factors already shows that the researcher-based constructs can warp the reports and content of psychedelic-induced subjective effects in many ways.

## 2.3 Subconclusion III

How do contextualisation and criticisms affect the measurement of psychedelic-induced experiences deemed 'mystical'? It shows that the underlying sources and researcher-based constructs of PEMs are biased, narrow, and conceptually vague. They are fundamentally entangled with WEIRD perennial, universalist, esoteric, colonial, religionist, theological, theosophical, and orientalist reports and sources. The measurement of PEMs is further problematised by surrounding and internal assumptions that warp the current field of PS. These are, for instance, mystical exceptionalism, a presupposed place of interpretations, psychedelic religion, or neo-colonial aspects. This shows that the limitations and biases of the underlying sources and models became embedded in the current mystical-construct. Some researchers in PS (and ASR) already see, acknowledge, and offer solutions to reduce these limitations and biases. They call for a broader, open-ended, mixed-methods, interdisciplinary, multidimensional, and cross-cultural approach to measuring PEMs. This approach should also be able to deal with the numerous extra-pharmacological factors that influence the reports *and* content of the experiences. These factors show that researchers must minimise or eliminate researcher-based constructs as they can warp the reports and content of PEMs. The psychedelic state, with its neural entropic, hyper-plastic, and hyper-suggestible effects, complicates the quantitative psychometric measurements greatly. So, is there an approach that could tackle many of these complications in measuring PEMs? Yes, there is, and the next chapter will introduce this approach.

### Hypotheses

[-] This chapter affirms hypotheses 1-7 of subconclusions 1 & 2 (§1.1.3 & §1.2.3).

[8] The limitations and biases are embedded in the mystical-construct, making it unfit for measurement.

[9] The novel methodological approach should minimise or eliminate researcher-based constructs.

[10] The novel methodological approach should supply new methods for measuring PEMs.

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<sup>330</sup> Kahneman, *Thinking*, 2013; Yaden et al., *Ineffability*, 2016; Hood et al., *Psychology*, 2018; Hirschfeld et al., *Dose-response*, 2023:1602–11; Ko et al., *Predicting*, 2023:2106; Žuljević et al., *Linguistic*, 2023:1–13; Friedman & Ballentine, *Sentiment*, 2023:1–16; Barbut Siva et al., *Interactions*, 2024:145–55.

<sup>331</sup> Jones, *Mysticism*, 2024:385–8.

### 3. ADVICE

This chapter is all about positioning in the debate, introducing and applying a novel methodological approach, and providing practical advice for future research.

#### 3.1 Positioning

Should psychedelic science move beyond the mystical-construct and aim to demystify the psychedelic state and experience? Sanders et al. argue in favour, while Brekxsema et al. disagree. Both groups adhere to methodological naturalism and secularism. Thus, what are the problems identified by raising this question? They both acknowledge ME-scales' initial legitimacy, but the former advocates for a change in methodology.<sup>332</sup>

For starters, one [1] problem is that some researchers regard (P)EMs as *sui generis*, which stifles solid scientific research. [2] The predefined mystical-construct becomes part of the cultural feedback loop and supplies researchers, participants, and laypeople with interpretations. PS risks creating biased data and fails to learn from participants' own articulation and interpretation. [3] Even though most PS-researchers do not include elements deemed 'supernatural' in their mystical-constructs, one must consider (mis)translations or (mis)understandings from lab to clinical practice to laypersons.<sup>333</sup> Additionally, the mystical-construct already uses some perennialist terms and concepts with connotations deemed 'religious' (e.g., 'holy,' 'sacred,' and 'ultimate reality').<sup>334</sup> [4] The validity of the ME-scales is also called into question because one cannot (yet) make a clear differentiation between the causal roles of trait and state, that is, between extra-pharmacological factors and the acute real-time experiences in questionnaire responses.<sup>335</sup>

Sanders et al. argue that with these complications, scales like MEQ30 should be regarded as a tool for prediction, that is, measuring the likelihood that individuals interpret psychedelic states as 'mystical,' but not for post-trip measurement.<sup>336</sup> They call for a different approach, demystifying the scientific understanding of the psychedelic state by solely focusing on neuropsychological mechanisms underlying the psychedelic state (e.g., the REBUS model).<sup>337</sup> Brekxsema et al.<sup>338</sup> argue against Sanders et al. and posit that they base their commentary on an incomplete understanding of EMs as a scientifically validated and rigorously studied domain of human experience. Brekxsema et

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<sup>332</sup> Johnson, *Pitfalls*, 2020:578–81; Brekxsema & van Elk, *Weirdness*, 2021:1471–4; Sanders & Zijlmans, *Mysticism*, 2021:1253–5; cf. Jylkkä, *Reconciling*, 2021:1468–70, *Naturalism*, 2024:1–16.

<sup>333</sup> See, e.g., [synthesisretreat.com/mystical-experience/](https://synthesisretreat.com/mystical-experience/); or [thethirdwave.co/Mystical-Experience/](https://thethirdwave.co/Mystical-Experience/); and the "psychedelic religion of mystical consciousness" of Richards, *Sacred*, 2016; cf. Smith, *Doors*, 2000:133; Strassman, *Mystical*, 2018:1–4; Sjöstedt-Hughes, *Substance*, 2022:211–35.

<sup>334</sup> Contra Eliade, *Sacred*, 1957; cf., e.g., McCutcheon, *Manufacturing*, 1997, *Critics*, 2001; *Shift*, 2021; Fitzgerald, *Ideology*, 2000; Chidester, *Empire*, 2014.

<sup>335</sup> Anderson et al., *Mystical*, 2014:217–45.

<sup>336</sup> Roseman et al. (*Emotional*, 2018:974) suspect other, more 'mundane' concepts to drive beneficial outcomes.

<sup>337</sup> Carhart-Harris & Friston, *REBUS*, 2019:316–44.

<sup>338</sup> Brekxsema & van Elk, *Weirdness*, 2021:1471–4; cf. Jylkkä, *Reconciling*, 2021:1468–70, *Naturalism*, 2024.

al. say that EMs are clinically and scientifically highly relevant (i.e., predicting treatment outcomes and having explanatory power), that good methodological tools are available for studying EMs, and that PS should fully embrace the study of “mystical and other weird experiences.” They also value considerations deemed ‘existential,’ ‘religious,’ or ‘spiritual’ as significant factors influencing the overall quality of life, especially among individuals approaching the end of life—regarding ‘meaningfulness’ and ‘transcendence’ as pivotal components of ‘spiritual well-being.’ Brekxema et al. take it as a fact that subjective experiences are at the heart of what psychedelics do. According to them, researchers can distinguish between acute experiences and attributions via these research methods.

The thesis author critiques both standpoints. Indeed, PS should abandon EMs, but only the researcher-based mystical-constructs that deem experiences ‘mystical’. The categorisation, phenomenology, and appraisals of experiences as ‘mystical’ should be delegated to their proper place, participants’ speech-acts (i.e., letting the participants speak for themselves). This would be a first step in bringing down the WEIRD (and EACP) hegemonic constructs. Chapters 1 and 2 show that the basis for the mystical-construct and its quantitative psychometric measurements are limited, biased, weak, vague and imposing. Therefore, PS needs a broader, less imposing, culturally sensitive, and more neutral measurement tool in combination with more qualitative and narrative research. An excellent candidate, backed by various PS studies, is the Inventory of Non-Ordinary Experiences (INOE). Thus, PS should fully embrace the study of “mystical and other weird experiences,” but not via the current approach. For instance, the current measurement tools do not allow researchers to distinguish between phenomenology and attributions. What is needed is a demarcated but complementary and interdisciplinary research program on subjective experiences (categorisation, phenomenology, and appraisals) as explanandum and underlying mechanisms as explanans. This would relocate the tasks of the researchers and participants in the research program, lessening the limitations, biases, weaknesses, vagueness, and imposing character of the current research program. It deals with many of the concerns raised by Sanders et al. and still has a place for Brekxema et al. study of “mystical and other weird experiences.”

The following section will present how this research program and methodology (the building block approach) deals with the concerns raised in Chapters 1 and 2. The thesis author chooses this approach over and against, e.g., ‘mystical fictionalism’ as proposed by Bradley Garb and Mitchell Earleywine (2022), viewing “reports of mystical experiences as true even if the mystical fails to be veridical,” or the ‘fruits over roots’ approach proposed by, e.g., Yaden et al. (2017), putting “forward that the merit of a given experience ought to derive from its ‘fruits,’ (outcomes) not its ‘roots.’”<sup>339</sup> These approaches descriptively reduce participants’ reports (judging them as ‘true’ but ‘not veridical’) or downplay necessary research into the underlying mechanisms that give rise to these experiences. The building block approach avoids these pitfalls.

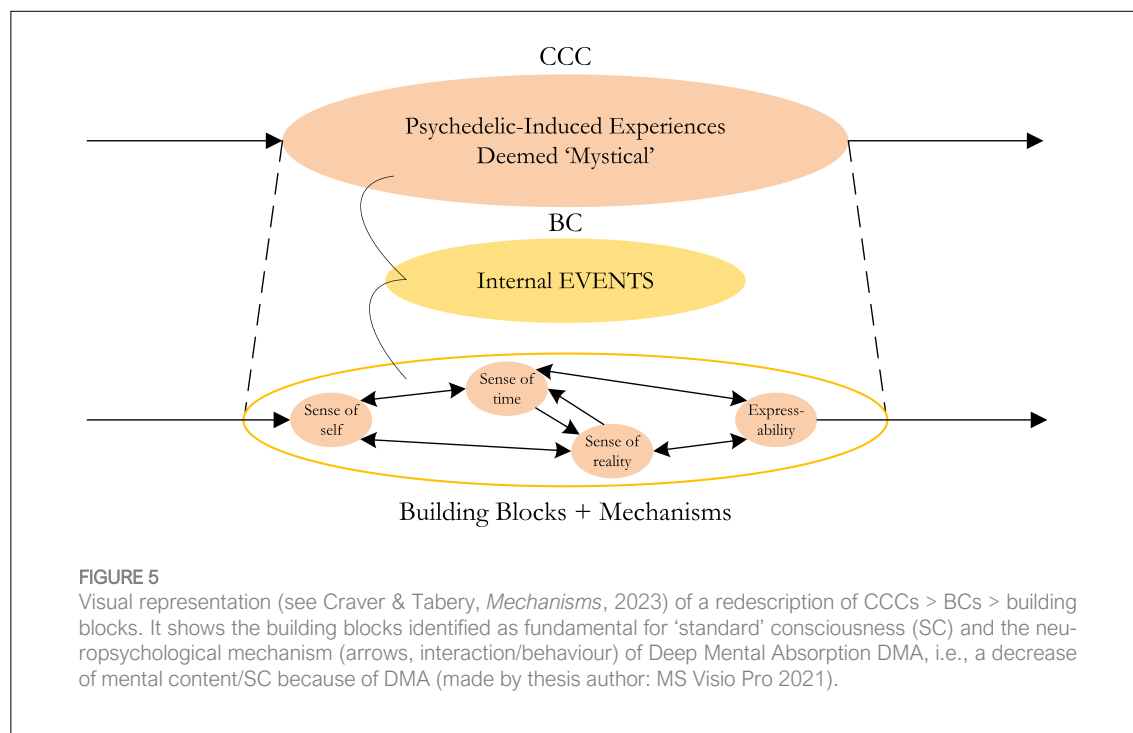
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<sup>339</sup> Garb & Earleywine, *Fictionalism*, 2022:48–53; Yaden et al., *Roots*, 2017:338–53.

## 3.2 Building Block Approach

The 'building block approach' (BBA) follows the idea that to explain human experiences, which people typically express in 'complex cultural concepts' (CCCs) and take place in social formations, researchers need to redescribe phenomena of interest (via explanatory reductionism) in behavioural terms and decompose them into building blocks. This allows for a reconstruction of the emergence of phenomena and the identification of underlying mechanisms interacting in their production.<sup>340</sup>

The BBA starts with a central distinction between CCCs, such as 'mystical' and 'mystical(-type) experiences,' entangled in social formations, and 'basic concepts' BCs. They (BCs) are concepts that translate relatively easily across times, places, and levels of cognition. The redescription from CCCs to BCs allows researchers to investigate phenomena at the level of 'ordinary' human awareness (personal level) and processes below the threshold of awareness (subpersonal level). For instance, by redescribing PEMs > CCCs as 'internal EVENTS' > BCs, researchers can study these at both the personal and subpersonal levels. Subsequently, researchers can identify the building blocks of the internal EVENTS. In this instance, the building blocks might include the fundamental aspects of 'standard' consciousness (SC) and the mechanism that affects these, such as deep mental absorption (DMA, see Figure 5). The research strategy of the BBA is to analyse how interactive assemblies of underlying building blocks and mechanisms create CCCs.



<sup>340</sup> Boyer, *Explained*, 2001:298; Taves, *Reconsidered*, 2011[2009], *Religious*, 2020:25–54; Asprem & Taves, *Explanation*, 2018:133–57; cf. 'piecemeal approach,' see Barrett, *Cognitive*, 2011:231; *Advance*, 2017:282–84; Larsson et al., *Building*, 2020; cf. Schilbrack, *Building*, 2021:276–8; <https://bbhe.ucsb.edu/>. Cf. my Douma, *Explaining*, 2024: [ResearchGate dx.doi.org/10.13140/RCS-2024-thrmse25-ResMA-thesis](https://doi.org/10.13140/RCS-2024-thrmse25-ResMA-thesis); [Academia .edu/114687768](https://Academia.edu/114687768).

## Terms & Assumptions

Regarding the 'building blocks of human experiences' (BBHE), 'human experiences' "encompass any behaviours (perceiving, doing, or feeling) or events (happenings) that people are aware of, individually or collectively."<sup>341</sup> For instance, 'states of feeling' deemed 'unitive experiences' are individual and 'mystical bonds' are collective. Human experiences at the personal level are perceptions of self-other interactions within an environment, mainly studied by humanists and social scientists. The human experience at the subpersonal level is not readily accessible to people, which comes to the fore and is studied by, e.g., cognitive psychologists, neuroscientists, and biologists. The nature of psychedelic-induced human experiences adds a level of complexity. Nevertheless, the BBA starts from the assumptions "that [1] humans evolved as social animals and [2] that subpersonal mechanisms play a central role in enabling and constraining human experiences."<sup>342</sup>

Anthropologists, historians, and psychologists have offered various definitions of 'culture.' Their usage of 'culture' as an analytical concept has been profoundly criticised in recent years. BBA does not define or operationalise it as an analytic concept. Instead, BBA perceives it as a CCC that should be clearly specified in behavioural terms that can translate easily across different populations and personal and subpersonal levels (e.g., redescribing it as a basic concept: 'patterned practice'<sup>343</sup> or 'shared behaviours'<sup>344</sup>). This is the constructivist element of BBA, which aims to elucidate how 'patterns of practice' coalesce in specific social formations and examine how they are constructed on top of identifiable features of human cognition. Furthermore, reframing 'culture' as 'shared behaviours' is valuable for BBA because it highlights several mechanisms for why commonalities exist.

## Complex Cultural Concepts

CCCs encompass abstract nouns with fluid and overlapping meanings that can differ within and across different discursive formations. They describe general things such as experiences, objects, practices, and more. Terms like 'religious,' 'spiritual,' or 'mystical' are CCCs. They are insider terms, serving as the primary data (the explanandum) and the starting point for the BBA. Various social formations adopt these contested insider CCCs, each interpreting them differently and using them for distinct purposes. Academic communities also use these CCCs as tools for analysis, like PEMs in

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<sup>341</sup> Asprem & Taves, *Explanation*, 2018:133–57; <https://bbhe.ucsb.edu/>.

<sup>342</sup> Cf. Dennett, *Personal-Subpersonal*, 2013:86–90.

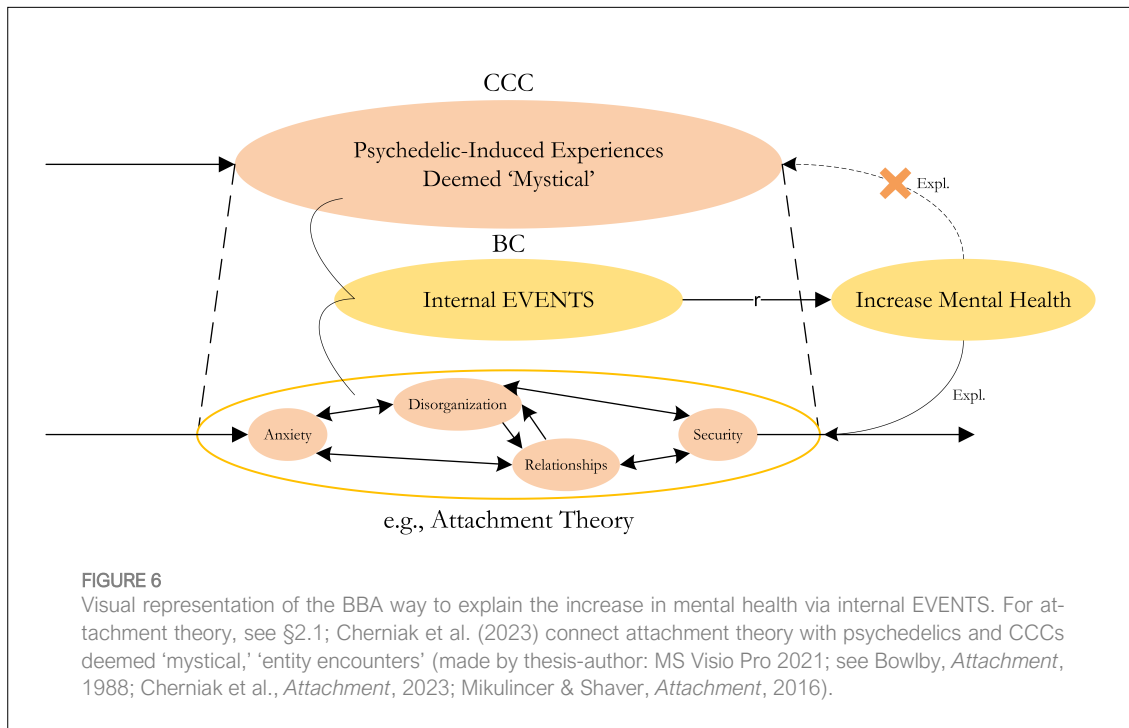
<sup>343</sup> Roepstorff et al., *Patterned*, 2010:1051–9; e.g., "patterns of practice at the level of social interaction correlate in relevant ways with neural and psychophysical patterns," "patterned practices in domain-specific material-discursive environments," with the assumption that "regular, patterned activities shape the human mind and body through embodiment, and internalisation."

<sup>344</sup> Tooby & Cosmides, *Culture*, 1992:19–136, 117: i.e., "any mental, behavioral, or material commonalities shared across individuals, from those that are shared across the entire species down to the limiting case of those shared only by a dyad, regardless of why these commonalities exist." Three subtypes: 'metaculture,' 'epidemiological' culture, and 'evoked' culture; cf. Sperber, *Culture*, 1996; Claidière & Sperber, *Attraction*, 2007:89–111; cf. my Douma, *Review*, 2024: *ResearchGate* publication/375796650; *Academia .edu*/114104277.

PS. Due to their variability and multifaceted use, BBA does not operationalise CCCs but aims to elucidate the behaviours they represent within the context of specific discursive formations.

Take the CCC 'mystical experience.' The discursive formation of PS should not operationalise this CCC but let it remain an insider term, primary data, and the explanandum. PS should allow the participants to describe the phenomena of interest as freely as possible (with less imposing methods). The outcome is a specific 'patterned practice,' which certain formations may deem 'mystical,' but others may deem differently. This allows the participants to speak for themselves.

Furthermore, take the correlations between the CCC 'psychedelic-induced experiences deemed mystical' and the increase in mental health (see Figure 6). If one wants to scientifically explain the increase in mental health, pointing to the CCCs for an explanation does not clarify anything (these are also explanandum). Explanation of PEMs, internal EVENTS, increase in mental health, and their correlation goes via the subpersonal mechanisms (in this instance, e.g., attachment theory).



## Social Formations

A social formation refers to any entity (organization, movement, or network) that connects individuals in a way that solidifies terminology and meanings through shared discourse and practice. In this case, the formations and discourses refer to academic research programs and disciplines (PS and ASR). These formations are also part of various layers of formations, ranging from WEIRD academics to governments to subcultures, all of which maintain and constrain these formations. The BBA emphasises formations due to their role in producing CCCs and enabling the selective cultivation of shared cognitive building blocks through 'patterns of practice.' It is within formations that CCCs acquire

specific meanings. The multitude of formations using the same terms with different meanings (denotation and connotation) and for different purposes renders these concepts highly complex. For example, the CCC 'mystical experiences' is utilised differently in various formations such as religions, esoteric groups, New Age movements, perennialist philosophy, academic disciplines, and more. In the context of the BBA, the analysis of change, conflict, entanglement, or merging of formations and CCCs is an essential part of the first step in the 'reverse engineering process' (see below). In this step, plays of power, discourse, and identity are central and deconstructionist analysis can or should be part of the process.

## Basic Concepts

BCs are highly adaptable across social formations and (sub)personal levels as they are rooted in broadly shared aspects of human experience, embodied interactions within environments, and evolved mental processes. They help researchers transition from CCCs (e.g., PEMs) to tangible behaviours (e.g., internal EVENTS) and bridge personal and subpersonal levels (see Figure 6).<sup>345</sup> BCs are quite straightforward, basic, descriptive, and constant across social formations. Rendering CCCs > BCs is vital for establishing detailed, accurate analyses and promoting equitable, less biased comparisons across various (disciplinary) formations. BCs are basic because 'pan-human cognitive mechanisms' constrain the formation of linguistic structures, leading to the formation of 'basic ontological categories' such as ANIMAL or TOOL, which are integral components of 'meta culture,' known as the 'building blocks of human experience' (BBHE).<sup>346</sup> Furthermore, the framework incorporates embodied metaphors that resonate with individuals as physical beings engaging with their surroundings.<sup>347</sup> For instance, PEMs can be likened to 'journeys' or 'paths,' drawing from the shared, embodied experience of walking from one place to another. This approach yields more precise, readily translatable depictions of 'patterned practices' and 'shared behaviours,' serving as a foundation for a wide range of endeavours, from comparative studies to experimental research.

## EVENTS

The basic concept for PEMs could be 'internal EVENTS.' An EVENT is a concept rooted in the pan-human cognitive ability to organise ongoing streams of experiences into coherent segments with a clear beginning and end. A wide range of disciplines implicitly recognises events as a foundational

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<sup>345</sup> Cf. CCC: 'belief' > BC: 'representation' > analysing formation, formulation, and transmission via, e.g., epidemiology of representations, see Sperber, *Explaining*, 1996.

<sup>346</sup> Chomsky, *Syntactic*, 1957; Berlin & Kay, *Basic*, 1969; Berlin, *Classification*, 1978:9–26; Tooby & Cosmides, *Psychological*, 1992:19–136; Atran & Medin, *Folkbiology*, 1999; Spelke & Kinzler, *Core*, 2007:89–96; For more see, e.g., Boyer, *Imagining*, 2016:17–30; Richert & Lesage, *Nature*, 2022:90–109; Barrett, *Cognitive*, 2022; the terms are not basis because of their "disembodied and disconnected from ordinary language, but rather the opposite: their grounding in the body and common bodily processes"; see <https://bbhe.ucsb.edu/>.

<sup>347</sup> Lakoff & Johnson, *Metaphors*, 1980; *Embodied*, 1999; cf. Csordas, *Body*, 2002; Morgan, *Material*, 2021:78.

concept, encompassing everything from historical to discursive events. EVENT is an excellent candidate for bridging the gap between the fundamental (lower-level) processes of how individuals perceive and process information about the world and the more complex (higher-level) processes involved in constructing narratives and cultural classes for 'special' experiences, actions, or occurrences.<sup>348</sup> The BC of EVENT aligns with extensive research on 'event cognition,' which highlights that there are critical processes that constrain an individual's cognitive representation of EVENTS.<sup>349</sup> These constraints can help explain how EVENTS are transformed into memories, stories, and narratives and provide deeper insights into how individuals cognitively represent, interpret, and reinterpret events across different formations and over time. By studying the constraints on event processing within event cognition, researchers can make more sophisticated inferences about the role of background knowledge in experience, the relationship between different narrative accounts, processes of creating meaning regarding seemingly inexplicable or hard-to-understand events, and the process of classifying and explaining EVENTS.

## Reverse Engineering

Reverse engineering serves as the core research strategy of BBA, involving a sequence of steps to dissect complex systems and analyse their constituent parts to understand [1] their functioning and [2] trace how the parts have been assembled and categorised in specific discursive formations.<sup>350</sup> This research strategy offers a systematic way to integrate many different methods to study human experiences, which are necessary because CCCs and social formations highly mediate them. The strategy involves the following steps: "[Step 1] redescribing CCCs in more basic behavioural or event terms, [Step 2] identifying components (building blocks) and explaining how they interact to produce the behavioural phenomenon of interest, and [Step 3] testing the proposed theoretical model using comparisons, experiments, and/or simulations."<sup>351</sup>

For psychedelic science, this process begins with fully recognising that (P)EMs are CCCs. This progresses with **Step 1**: [1.1] CCC identification: in which social formations, by whom, how, and for what purpose are (P)EMs used? Various identification methods can include critical discourse analysis and genealogical or conceptual history. [1.2] Behavioural redescription: experiencing psychedelic-induced subjective effects; [3] Expression in BCs: CCCs: PEMs > to 'internal EVENTS.'

**Step 2**: [2.1] Identify potential building blocks: one should first look at similar internal EVENTS induced by psychedelics (e.g., 'flow,' 'self-transcendence,' 'mindfulness,' 'peak,' and more), which

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<sup>348</sup> Taves & Asprem, *Event*, 2016:1–20; Andersen et al., *Problems*, 2016:20–2; Bulkeley, *Dreams*, 2016:22–4; Kavanagh, *Cognition*, 2016:24–6; Lang & Kundt, *Coding*, 2016:26–8; Lindahl, *Event*, 2016:28–30; Nielbo et al., *Internal*, 2016:30–2; Proudfoot, *Experience*, 2016:32–4; Radvansky, *Foundational*, 2016:34–6; van Elk & Zwaan, *Predictive*, 2016:36–8; Asprem & Taves, *Connecting*, 2016:35–44; this article and its responses have not been read by the thesis author (yet) due to time restrictions, see limitations.

<sup>349</sup> Zacks & Tversky, *Event*, 2001:3–21; Zacks et al., *Event*, 2007:273–93; Radvansky & Zacks, *Event*, 2014.

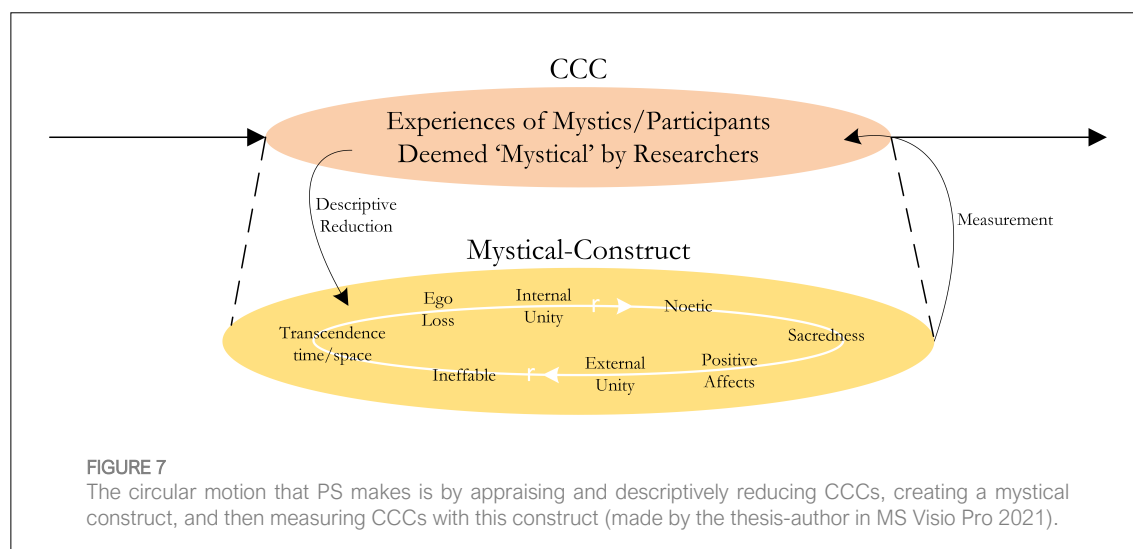
<sup>350</sup> See, e.g., Asprem, *Reverse*, 2015; Taves, *Reverse*, 2015:191–216.

<sup>351</sup> Asprem & Taves, *Explanation*, 2018:133–57; <https://bbhe.ucsb.edu/>.

may lead to identifying similarities (e.g., cognitive mechanisms) and differences (e.g., formations and framing). The comparison might lead to the existing neuropsychological literature on, for instance, 'standard' consciousness and the sense of reality, time, self and expressibility as building blocks of internal EVENTS, including their context and framing. One must remember that similar internal EVENTS induced by psychedelics can also still be researcher-based constructs or that the existing neuropsychological literature still hegemonically focuses on WEIRD contexts. This is something that researchers should critically address by working towards the inclusion of diverse ways of knowing.

[2.2] Explaining how the building blocks (mechanically) interact to produce the phenomenon: for instance, the building blocks of 'standard' consciousness decrease by the psychedelic-induced internal EVENTS and lead to states of consciousness variously deemed 'non-ordinary.' This interaction is the mechanism, theory, and model of 'deep mental absorption' (DMA). Hence, a DMA mechanism interacting with the building blocks of 'standard' consciousness explains the workings of the internal EVENTS, which individuals variably appraise as 'mystical' (see Figure 8). Other building blocks and mechanisms might explain these internal EVENTS deemed 'mystical' even better. The BBA works, therefore, with explanatory pluralism. As shown in Figure 8 and explained below, mechanisms can also be vertically nested. Subsequently, another mechanism interacting with the DMA mechanism and its building block, 'sense of self,' can be the modulation of the Default Mode Network.<sup>352</sup>

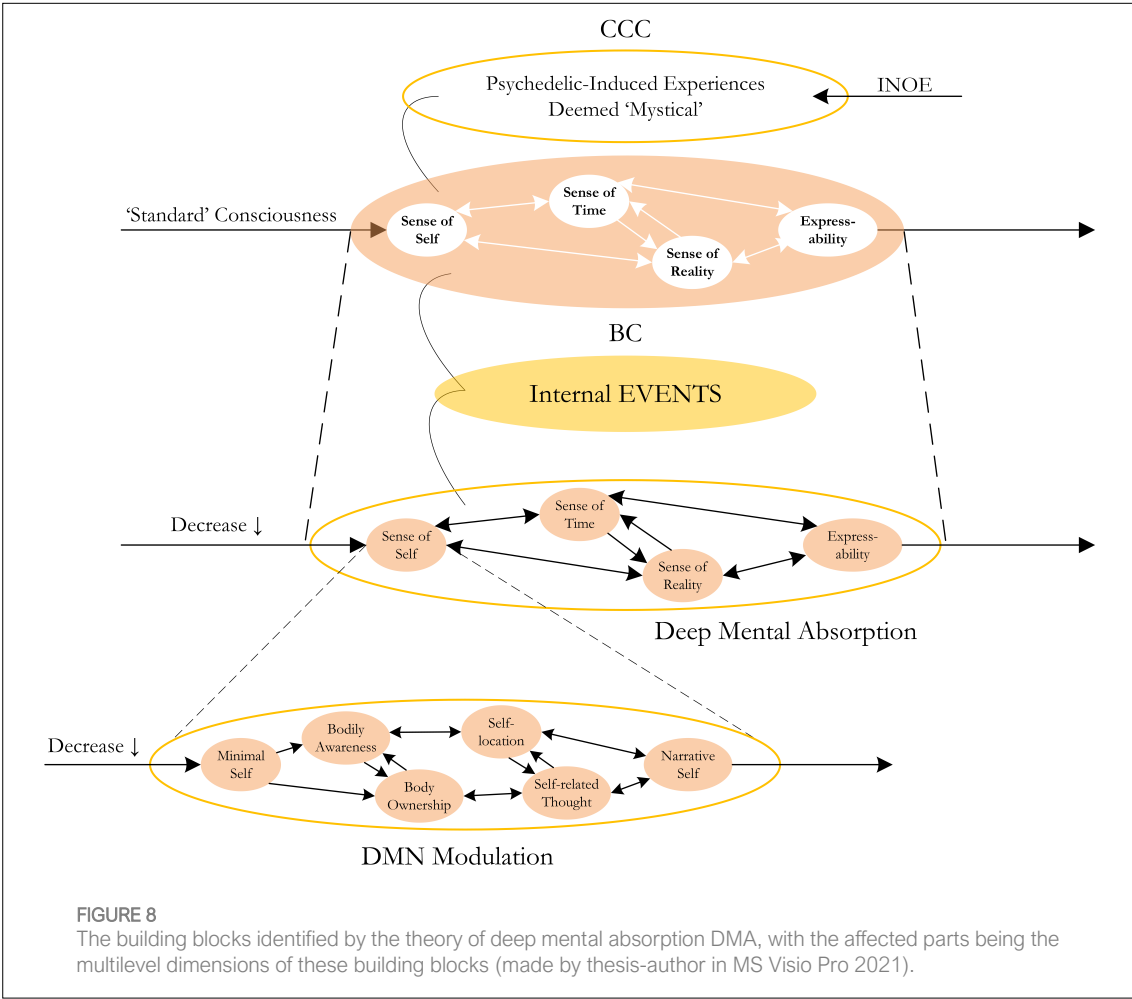
How does this differ from the mystical-construct? There, researchers descriptively reduce CCCs and appraise them as 'mystical,' which they then use to create the mystical-construct without redescribing them into behavioural terms or BCs.<sup>353</sup> This mystical-construct is then circularly fed back to participants, measuring CCCs with descriptively reduced CCCs (see Figure 7).



<sup>352</sup> Being "the interaction between the default mode network (DMN) (which generates our sense of self and simulates scenarios based on input from our emotional and motivational systems), the salience network (SN) (which weights information in terms of its significance), and reality or source monitoring (SM) systems (which frames events in light of internal and external cues, including social interactions)."

<sup>353</sup> Proudfoot, *Religious*, 1985:121; "what remains bears little resemblance to the mystics' descriptions."

**Step 3.** [3.1] Researchers have the opportunity to test different theoretical models in various ways, such as comparison, simulations, and experimentation. The theoretical model in this iteration is 'Deep Mental Absorption' DMA (see Figure 8). Comparatively, DMA functions similarly in mindfulness, meditation, flow, awe, peak, or plateau experiences but also experiences variously deemed religious, anomalous, and pathological. While these may seem similar in composition, they may not necessarily behave in the same way. [3.2] Digital simulations, such as artificial neural networks and AI-informed machine learning models like BERT (Bidirectional Encoder Representations from Transformers), can create more accurate depictions of CCCs by using event narratives as their data.<sup>354</sup> This approach allows for mapping the building blocks and mechanisms of a theory into a model to simulate expected outcomes based on various combinations. Given the numerous factors influencing psychedelic internal EVENTS, this approach can become quite extensive. [3.3] Additionally, researchers can employ experimental methods to manipulate the building blocks of mechanisms in controlled conditions to test if they affect behaviour as predicted. For example, they can investigate whether a decrease in 'standard' consciousness—measured via neuropsychological factors—can explain the psychedelic-induced experiences deemed 'mystical.'



<sup>354</sup> Friedman & Ballentine, *Sentiment*, 2023:1–16.

## Mechanisms

A mechanism explains how the building blocks of a system interact to produce or maintain the behaviour of that system. The BBA has its basis in the 'mechanical philosophy of science' (MPS), an influential current in recent philosophy of science.<sup>355</sup> As shown in Figure 8, the mechanism DMA consists of building blocks (SC: 1. Sense of self, 2. Sense of time, 3. Sense of reality, and 4. Expressibility), each engaging in their own behaviour, that interact (expressed by the arrows, i.e., decreasing mental content) to produce the behaviour of interest (i.e., BCs: internal EVENTS, CCCs: PEMs). This demonstrates a specific causal sequence. However, this is just one example of a mechanism (DMA) because mechanisms are nested within mechanisms vertically to generate multilevel mechanisms. For example, the building block [1. Sense of self] consists of more specific building blocks that can interact via different mechanisms, such as the behaviour of the DMN in upholding and decreasing the 'sense of self' (as shown in Figure 8). They can also be horizontally nested mechanisms in a causal chain, which involve the interaction between other building blocks and mechanisms.

## 3.3 Future Research

What advice can be given for the future measurement of psychedelic-induced experiences deemed 'mystical' in psychedelic science (and the academic study of religion)? Firstly, researchers could apply the BBA methodology and expand research on mechanisms (e.g., via CESR). Secondly, they could use the newly developed INOE capturing CCCs and two methods to analyse event narratives.

## Proposing Tools

**Inventory of Non-ordinary Experiences (INOE).**<sup>356</sup> In order to avoid imposing researcher-defined mystical-constructs and culturally-derived disciplinary appraisals of what counts as EMs, PEMs, or 'non-ordinary,' a new type of measurement is necessary. The 'Inventory of Nonordinary Experiences' (INOE) is designed to explore a broad range of phenomenological features and appraisals, allowing researchers to make comparisons across different cultures.<sup>357</sup> Its goal is to collect information about experiences that may stand out to individuals in various cultures, as compared to what they consider

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<sup>355</sup> Cummins, *Explanation*, 2000:117–44; Woodward, *Causal*, 2003; Craver, *Mechanisms*, 2007; Bechtel & Wright, *Mechanisms*, 2007:31–79; Illari & Williamson, *Mechanisms*, 2011:818–44; Visala, *Cognitive*, 2011; *Naturalism(s)*, 2018:51–70; Illari & Russo, *Causality*, 2014:122–4; Craver & Darden, *Mechanisms*, 2013; Glennan, *Mechanical*, 2017; Aspelmeyer & Taves, *Explanation*, 2018:133–57; Craver & Tabery, *Mechanisms*, 2023.

<sup>356</sup> Taves et al., *Inventory*, 2017; Taves et al., *Nonordinary*, 2019; Taves & Kinsella, *INOE*, 2019; Wolf & Ihm, *Validation*, 2019; Vyas, *Validation*, 2019; Barlev, *Implementation*, 2019; Taves et al., *INOE*, 2023:e0287780; [remlab.religion.ucsb.edu/about/inventory](https://remlab.religion.ucsb.edu/about/inventory); Taves & Barlev, *Feature-based*, 2023:50–61.

<sup>357</sup> **Emotion** (joy, peace, love, loss, awe, fear, hopelessness, misfortune, compassion, pleasure, special places, devotion [object or person]), **Sensory/Body** (light[s], sounds [voices], touch, faces, paralysis, pain), **Sense of self** (absorbed, OBE, diminished self, automaticity), **Presence-related** (presence [non-ordinary], guidance, places [animated], objects [animated]), **Paranormal/Enhanced abilities** (lucid dreaming, déjà vu, past life, ESP [event], ESP [minds]), **Sickness/Health** (healing, near death), and **Meaning** (coincidences, messages, deep insight, meaning in life); nicknames such as 'joy' are not part of the items (participants do not see these).

to be 'ordinary' or 'everyday' (a definition dependent on the individual). This approach recognises that different experiences may stand out for people in different cultures, and the INOE aims to identify experiences based on recognizable phenomenological features across cultures and academic disciplines. The inventory then uses follow-up questions to capture the context, effects, and individual appraisals of these experiences. The INOE distinguishes between experiences and appraisals because [1] the same appraisal may be applied to different experiential phenomena, and [2] different appraisals may be applied to similar experiential phenomena.<sup>358</sup> In order to ensure cross-cultural comprehension of the INOE survey items, researchers assess the validity of individual items using the newly developed 'Response Process Evaluation' (RPE). Practically, respondents provide yes/no responses to all the experience items. Upon completion, follow-up questions are presented for the items to which they responded affirmatively (i.e., follow-up items: mental state, impact, life effect, category, science, reason, and agent). Although the INOE explores experiences and participant appraisals using general terms, it is important to complement this with more narrative approaches. This allows for capturing participants' phenomenological experienced features, appraisals, and event narratives, ensuring their voices are heard and minimizing the influence of hegemonic constructs, such as the mystical-construct of PS, particularly in non-WEIRD contexts.

**Event Model Analysis (EMA).** EMA is a qualitative data analysis method that utilises research in event cognition to propose approaches for segmenting and coding event narratives.<sup>359</sup> Humans engage with the world by forming models that attempt to anticipate environmental occurrences, known as event models. Researchers in the area of event cognition investigate the processes involved in constructing these event models, asking: what do individuals typically represent? How do elements within events interconnect? How do individuals record and reconstruct events from memory? EMA provides a coding framework and analysis method based on the current scientific understanding of event model formation. Consequently, researchers can more effectively elucidate 'what happened,' display the constraints on interpretation during the creation of event models, and gain insight into the impact of memory on the portrayal of a past event.

The purpose of EMA is to reconstruct event models presented in event narratives. Researchers can use this method to reconstruct any event model, whether it represents a 'physical' event or an 'internal' event. This method is most valuable when applied to ambiguous events, where the individual provides explanations and categorisations that seem 'surprising' or 'unconventional.' In such cases, EMA provides a framework for grounding the analysis in the psychological and physiological mechanisms involved in 'interpreting' the flow of experience without hastily categorising the experience. EMA enables researchers to mediate more precisely between the event narratives (CCCs) and the explanatory contexts (BCs) related to the mechanisms.

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<sup>358</sup> Validated items and intended interpretations, see: <https://doi.org/10.1371/journal.pone.0287780.s001>.

<sup>359</sup> Taves & Asprem, *Event*, 2016:1–20; Asprem & Taves, *Connecting*, 2016:35–44; Asprem & Taves, *Event*, 2022:532–41; cf. Zacks et al., *Event*, 2007:273–93; Radvansky & Zacks, *Event*, 2014; <https://bbhe.ucsb.edu/>.

**Appraisal Charts.** Appraisal charts are a valuable tool for analysing event narratives. They allow researchers to examine how and under what circumstances attributions and post-event explanations change over time.<sup>360</sup> When individuals explain why things occur, they typically rely on two types of explanations: reasons and causes. These explanations differ from formation to formation, depending on representations of agency, intentionality, or animacy. For instance, what WEIRD formations regard as impersonal causes, non-WEIRD formations regard as animate and personal.

Nevertheless, the appraisal charts provide researchers with a more rigorous method of evaluating the extent to which an event narrative has its basis in real-time, personal and subpersonal appraisals or in post-event factors that influence memory and conscious interpretations of events over time. The PS research program includes extra challenges because of the (pre-event) non-pharmacological factors. These charts are designed to refine the analysis of event narratives and, when enough sources are available, to evaluate the credibility of various historical interpretations of an individual's understanding of events over time. Recognizing the constraints of first-person accounts in assessing the connection between real-time and post-event evaluation processes, researchers should complement their interpretations with 'reliability estimates' based on the nature of the sources (as Bronkhorst did, see §1.2.2).

## Conclusion

How can contemporary psychedelic science, aided by insights from the academic study of religion, improve its measurement of psychedelic-induced experiences deemed 'mystical' (PEMs)?

**REVIEW.** It can achieve this by moving away from the current researcher-based mystical-construct, which this thesis has demonstrated to have numerous limitations and biases. Its emphasis on Western Educated Industrialised Rich Democratic (WEIRD) contexts, exclusion of many non-WEIRD experiences, hegemonic use of Euro-American Christian-Protestant and perennialist (EACP) terms and assumptions, and various other complexities render it unsuitable as a measuring tool. The academic study of religion makes similar observations. It reveals highly diverse experiences and settings, highlights that imposing a WEIRD mystical-construct on non-WEIRD experiences and settings can amount to neo-colonial acts, but also suggests that theorising about psychedelic-induced experiences can assist psychedelic science towards explaining subjective effects.

**ANALYSIS.** The contextualisation and critique did not improve the situation for the mystical-construct but rather confirmed the findings and hypotheses presented in the previous chapters. It also highlighted the unreliable nature of the foundations of the mystical-construct, the entanglement of WEIRD and EACP assumptions in the constructs and research community, and the necessity for a novel methodology regarding measuring and theorising PEMs.

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<sup>360</sup> Malle, *Mind*, 2004; Taves, *Reconsidered*, 2009; Taves & Asprem, *Event*, 2016:1–20.

**ADVICE.** The thesis concludes with recommendations for future research in psychedelic science and the academic study of religion. It proposes the building block approach (BBA) as a better-suited methodology for measuring and theorising PEMs. This approach addresses the limitations and biases of the mystical-construct by eliminating researcher-based constructs, prioritising participant categorisation and appraisals, and facilitating theoretical research. Additionally, it introduces participant-focused, cross-culturally sensitive tools for future research, such as the Inventory of Non-ordinary Experiences, Event Model Analysis, and appraisal charts. These tools, in conjunction with the BBA, have the potential to improve the measurement of psychedelic-induced experiences deemed 'mystical' in contemporary psychedelic science.

## HYPOTHESES

- [1] PS' mystical-construct is so WEIRD (+EACP) that imposing it on the non-WEIRD would be a neo-colonial act.
- [2] Pre-defined researcher-based mystical-constructs are too imposing to capture participant-deemed PEMs.
- [3] The broader INOE, qualitative, and cross-cultural research will better capture the participant-deemed PEMs.
- [4] The diversity of valences and extra-pharmacological factors will reveal many troubles with measuring PEMs.
- [5] The low evidence of underlying EMs in the pre-1960s models makes them unfit for measurement.
- [6] A novel methodological approach will lessen the limitations and biases of the mystical-construct.
- [7] A novel methodological approach should open up theoretical research regarding (P)EMs.
- [8] The limitations and biases are embedded in the mystical-construct, making it unfit for measurement.
- [9] The novel methodological approach should minimise or eliminate researcher-based constructs.
- [10] The novel methodological approach should supply new methods for measuring PEMs.

## Limitations

Time was somewhat of a limiting factor. I had a limited timeframe of three months (April–June, '24) to conduct my research and write this thesis. Regrettably, this time constraint necessitated some concessions regarding the depth of analysis. Despite recognizing the significance of numerous valuable studies in my dataset, I could not delve into them due to these time constraints. Most notably, research on event cognition, especially Taves & Asprey, *Event*, 2016:1–20, and the included responses. Additionally, a thorough genealogical study akin to Bronkhorst's analysis in §1.2.2 is warranted for contextualising the mystical-construct, which could possibly deconstruct it. My understanding of (extra-)pharmacological factors, neuroscience, and decolonial approaches is somewhat limited, and I plan to delve deeper into these areas to ensure that my research remains current. I also acknowledge that I would have liked to provide critical comments on the Building Block Approach and add adjustments regarding psychedelic experiences, but this would have required more time than was available. I hope and intend to explore these aspects in my future studies and research endeavours wherever I end up.

Regarding personal interests, I was drawn to the topic due to my love for deviancy and experiences that I consider 'transformative.' I also wanted to challenge negative assumptions about drugs and deconstruct societal norms. My previous MA thesis delved into Death-of-God Theology and New-Age Science,<sup>361</sup> which further fueled my interests, and my current ResMa thesis has only intensified those interests. I personally have not used psychedelics, nor have I had any experiences that I would consider 'mystical,' 'spiritual,' or 'transformative.' However, through my research for this thesis, I have developed a deep passion for this subject, from studying psychedelics, consciousness, and absorption to delving into neuroscience, psychopharmacology, event cognition, and the construction of human experiences of 'reality.' I have also become a strong advocate for the Building Block Approach and have been surprised by how well this methodology fits this topic. If allowed to pursue a PhD on this topic, I would embrace it with my personal passion and commitment, aiming to contribute intelligently to the conversations of our time.

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<sup>361</sup> See Douma, H. (2023). *MA-Thesis*: "Religious Naturalism: Modelling and Comparing Ultimacy in Thomas J.J. Altizer's Death-of-God Theology and David J. Bohm's New-Age Science." *ResearchGate* [dx.doi.org/10.13140/academia.academia.edu/104067823](https://doi.org/10.13140/academia.academia.edu/104067823); based on previous research: "Wall of Absurdity: Nicholas of Cusa's Coincidence of Opposites and Logic in Thomas J.J. Altizer's Death-of-God Theology." *ResearchGate* [dx.doi.org/10.13140/academia.academia.edu/103772905](https://doi.org/10.13140/academia.academia.edu/103772905); "Drawing Down the Ultimate: Explorations into Radical Death-of-God Theologies and New-Age Religion." *ResearchGate* [dx.doi.org/10.13140/academia.academia.edu/103797401](https://doi.org/10.13140/academia.academia.edu/103797401).

## Appendix 1 – Studies

PS includes, e.g., the following fields of study (based on the studies of Tabel 1): Biophysics/Chemistry, (Molecular/ Neuro) Biology, (Clinical/ Applied) Psychology, Human Resilience, Advanced Study, (Psycho-/ Neuro-) Pharmacology, Translational Science, (Transcultural/ Neuro) Psychiatry, Behavioral Sciences, Anesthesiology, (Hospice/ Palliative/ Clinical/ Legal/ Bio) Medicine, (Cognitive/ Clinical) Neuroscience, Neurology, Nursing, (Biobehavioral/ Mental/ Public/ Veteran) Health, (Medical) Psychotherapy, Psychosocial/ Psychoanalytic/ Psychosomatics, Therapeutics, Counseling, Pain Research, Addiction Studies, Consciousness, Neonatology, Education, Xenobiotics, Substance (Ab-)Use, Affective Disorders, Physiology, Biomedical Ethics, Neurophilosophy, Radiology, Social/ Political Sciences, Neuroimaging, Ethnobotanics, Drug Policy, and Psychotrauma.

Extension of Tabel 1, including PS and ASR.

#	Studies	Scales					Mentions	
		MEQ30	EDI	ASC	HMS	Other	Barrett	Griffiths
01	Hashimoto, 2024:1–14	±	±	±			×	×
02	Levin et al., 2024:1–15	×					×	×
03	Acevedo et al., 2024:1–10	±	×			MBQ	×	×
04	Schmid & Bershad, 2024:1–28	×		5d				
05	James et al., 2024:1–14	×	×	5d		MPEQ	×	×
06	Wolinsky et al., 2024:49–55	×	×	×			×	×
07	Barbut Siva et al., 2024:145–55	×					×	×
08	Kervadec et al., 2024:1–9	×					×	×
09	Hovmand et al., 2024:1–10	×	+43		×	SOCQ	×	×
10	Aday et al., 2024:1–10	×	×			AWE-S	×	×
11	Canby et al., 2024:1–21	×	×			OAV	×	×
12	Stocker et al., 2024:80–100	×	+43	×	5/11d	PES48	×	×
13	Tap, 2024:1–14	±	±				×	×
14	McNamara, 2023:374–79	×					×	×
15	Holas & Kamińska, 2023:1398–409	±	±				×	×
16	Johansen et al., 2023:1–12	×	×	±			×	×
17	Corso et al., 2023:166–76	×					×	×
18	Davis et al., 2023:1–11	×	×			CEQ,PIQ	×	×
19	Davis, 2023:1–14	±						
20	Sleight et al., 2023:1–17	±	×		×	EDS		
21	Breeksema et al., 2023:1547–60	×	×	×			×	×
22	Friedman & Ballentine, 2023:1–16	×					×	×
23	Ragnhildstveit et al., 2023:1–10	×						×
24	Wirsching et al., 2023:1–11	×				PEQ	×	×
25	Žuljević et al., 2023:1–13				×	Stage	×	×
26	Graziosi et al., 2023:1–12	×		5/11d		EEE, GEE	×	×
27	Romeo et al., 2023:640–49	×					×	×
28	Baker et al., 2023:1261–70	×		5d	×	many	×	×
29	Ko et al., 2023:2105–113	×		5d			×	×
30	Hirschfeld et al., 2023:1602–11	×		11d			×	×
31	Nayak et al., 2023:1–19	×					×	×
32	Yonezawa et al., 2023:1–5	×					×	×
33	Herrmann et al., 2023:501–17	×	+43	×	5/11d	×	OAV	×
34	Zeifman et al., 2023:1–11	×					×	×
35	Castillo et al., 2023:1–15	×		5d				
36	Garel et al., 2023:1–13	×					×	×
37	Lawrence et al., 2023:1–13	×	×			SOF-Q	×	×
38	Sloshower et al., 2023:698–706	×				CEQ	×	×
39	Kruger et al., 2023:1–5	×						
40	McMillan & Fernandez, 2023:783–8	×	×				×	
41	Jacobs, 2023:1–14	×						×
Studies used for the mystical-construct, but because of time/space restrictions, not for the additional insights:								
42	Batievsky et al., 2023:1–13	×					×	×
43	Søgaard Juul et al., 2023:367–78	×					×	×

44	Qiu & Minda, 2023:123–33	×					×	×
45	Fauvel et al., 2023:170–9	×			×		×	×
46	Gattuso et al., 2023:155–88	×	×	11d			×	×
47	Nikolaidis et al., 2023:239–49	×					×	×
48	Wielßner et al., 2023:1151–65	×	×	5d			×	×
49	Holze et al., 2023:215–23	×		5d			×	×
50	Moreton et al., 2023:1115–26	×					×	×
51	Spriggs et al., 2023:107–16			11d		OBN		×
52	Nayak et al., 2023:80–92	×					×	×
53	Bienenmann et al., 2023:1–29							
54	Michael et al., 2023:1–17							
55	Mosurinjohn et al., 2023:1–12							
56	Yaden & Newberg, 2022:224–47	×			×		×	×
57	Ortiz Bernal et al., 2022:1–13	×					×	×
58	Prugge et al., 2022:1–13	×		11d				×
59	Perkins et al., 2022:1–15	×						×
60	Søndergaard et al., 2022:1–11	×					×	×
61	Friesen, 2022:592–609		×	5d	×			×
62	Dworkin et al., 2022:1666–79	×					×	×
63	Gukasyan & Nayak, 2022:652–64	×		5d			×	×
64	Barone et al., 2022:1–17	±						×
65	Fischman, 2022:1–16	×			×		×	×
66	Sweeney et al., 2022:1–24	×					×	×
67	Nygart et al., 2022:932–42	×					×	×
68	Orłowski et al., 2022:987–1000		×		×			×
69	Pontual et al., 2022:1–10	×					×	×
70	Ko et al., 2022:1–12	×		11d	×		×	×
71	Earleywine et al., 2022:16–27	×	×	5d			×	×
72	van den Berg et al., 2022:1853–79	×		5d			×	×
73	Daldegan-Bueno et al., 2022:1–16	×				SOCQ	×	×
74	Glowacki et al., 2022:1–17	×	×				×	×
75	Lawrence et al., 2022:1–22	×	×			GEQ	×	×
76	Kuc et al., 2022:1425–40	×	×	×vis			×	×
77	Murphy et al., 2022:1–19	×					×	×
78	Nayak & Griffiths, 2022:1–8	×					×	×
79	Dworatzky et al., 2022:1–23	×	×	5d			×	×
80	Raison et al., 2022:1–11	±					×	×
81	McCulloch et al., 2022:1–17	×					×	×
82	Sekula et al., 2022:1–16	×					×	×
83	Hendricks et al., 2022:337–47	±					×	×
84	Family et al., 2022:321–36	×	×	5d			×	×
85	Ermakova et al., 2022:273–94	×					×	×
86	Uthaug et al., 2022:309–20	×	×				×	×
87	Coppola et al., 2022:41–52	±					×	×
88	Gukasyan et al., 2022:151–58	×					×	×
89	Hase et al., 2022:643–59				×	OAV		×
90	Strickland & Johnson, 2022:105–32	×					×	×
91	Rieser et al., 2022:187–211	×		5d			×	×
92	Reckweg et al., 2021:1–12	×	×	5d			×	×
93	Tagliazucchi et al., 2021:1–9	×		5d			×	×
94	McMillan, 2021:701–5	±					×	×
95	Corneille & Luke, 2021:1–19	×		11d			×	×
96	Mollaahmetoglu et al., 2021:1–17			5d	×	(RSME)	×	×
97	Breeksema & van Elk, 2021:1471–4	×	×	×	×	INOE	×	×
98	Jylkkä, 2021:1468–70	×					×	×
99	Earleywine et al., 2021:841–47	×		11d			×	×
100	Zijlmans & Sanders, 2021:1253–55	×		11d	×			
101	Perkins et al., 2021:1–13 (cc)					SIMO		×
102	Agin-Liebes et al., 2021:543–52	×	×				×	×
103	Strickland et al., 2021:472–78	×					×	×
104	Aday et al., 2021:424–35	±	±	11d			×	×
105	Schmid et al., 2021:362–74	× +43		×2			×	×
106	Hirschfeld & Schmidt, 2021:384–97	×		11d			×	×
107	Garcia-Romeu et al., 2021:353–61	×					×	×
108	Pallavicini et al., 2021:406–20	×		×			×	×
109	Stenbæk et al., 2021:459–68	×					×	×

110	Davis et al., 2021:437–46	× +43	×	×	SOCQ	×	×
111	Brouwer & Carhart-Harris, 2021:319	±				×	×
112	Kettner et al., 2021:1–20	×	×vis			×	×
113	Rothberg et al., 2021:150–8			×			×
114	Williams et al., 2021:215–26	×				×	×
115	Olson, 2020:563–67	±					×
116	Schmidt et al., 2020:1–11	×	11d			×	×
117	DiVito & Leger, 2020:9791–99	±				×	×
118	Netzband et al., 2020:3161–71	×				×	×
119	James et al., 2020:1–8	×	×		SOCQ	×	×
120	Russ et al., 2019:3221–30	×	×	5d		×	×
121	Roseman et al., 2019:1076–87	×				×	×
122	Garcia-Romeu et al., 2019:1–14	×				×	×
123	Johnson et al., 2019:83–102	×	×	11d	×	×	×
124	Griffiths et al., 2019:1–26	×			×	×	×
125	Barsuglia et al., 2018:1–6	×			GEE SOCQ	×	×
126	Hajjen et al., 2018:1–20	×		11d		×	×
127	Jalal, 2018:3083–91	±					×
128	Ezquerro-Romano et al., 2018:1–11	±					×
129	Roseman et al., 2018:1–10	×		5d	±	11-ASC	×
130	Timmermann et al., 2018:1–12	×	×			×	×
131	Barrett & Griffiths, 2018:393–430	×	×	×	×	×	×
132	Liechti, 2017:2114–27	×		5d		×	×
133	Winkelman, 2017:1–17	×		5d	×	×	×
134	Barrett et al., 2017:1–12	×				×	×
135	Johnson et al., 2017:841–50	×			TAS	×	×
136	Carbonaro et al., 2017:521–34	×		5d	×	SOCQ	×
137	Griffiths et al., 2016:1181–97	×		5d	×	SOCQ	×
138	Ross et al., 2016:1165–80	×				×	×
139	Sweat et al., 2016:344–50				×		×
140	Bouso et al., 2016:356–72	×		5d		×	×
141	Nour et al., 2016:1–13	×	×	5d		11-ASC	×
142	Barrett et al., 2015:1182–90	×	×		×	SOCQ	×
143	Majić et al., 2015:241–53	±43		5d		SOCQ	×
144	Halberstadt, 2015:99–120			5d		APZ	×
145	Garcia-Romeu et al., 2015:633–54	±				STE	×

...	Academic Study of Religion	Publisher
1	Chen et al., 2023:397–414	The International Journal for the Psychology of Religion
2	Nielsen, 2023:251–3	The International Journal for the Psychology of Religion
3	Bartlett et al., 2023:415–24	The International Journal for the Psychology of Religion
4	Savoldi et al., 2023:332–60	The International Journal for the Psychology of Religion
5	Van Eyghen, 2023:277–93	The International Journal for the Psychology of Religion
6	Bohn et al., 2023:309–31	The International Journal for the Psychology of Religion
7	Johnstad, 2023:380–96	The International Journal for the Psychology of Religion
8	Cherniak et al., 2023:259–76	The International Journal for the Psychology of Religion
9	Exline et al., 2023:361–79	The International Journal for the Psychology of Religion
10	Shults, 2023:294–308	The International Journal for the Psychology of Religion
11	Wilt et al., 2023:19–35	The International Journal for the Psychology of Religion
12	Chen & Patel, 2021:176–88	The International Journal for the Psychology of Religion
13	Spilka & Ladd, 2021:156–64	The International Journal for the Psychology of Religion
14	Streib & Chen, 2021:165–75	The International Journal for the Psychology of Religion
15	Johnstone et al., 2016:287–303	The International Journal for the Psychology of Religion
16	Hui et al., 2015:107–29	The International Journal for the Psychology of Religion
17	Sears, 2015:134–55	Journal for the Scientific Study of Religion
18	Johnstad, 2021:463–81	Method and Theory in the Study of Religion
19	Bronkhorst, 2021:187–227	Method and Theory in the Study of Religion
20	Bronkhorst, 2022:1–20	Religions

Other studies included in the search but excluded because of time/space restrictions of the thesis:

Galen, 2017:221–67; Asprem, 2016:112–40; Blum, 2015:423–46; Bledow, 2022:1–25; Cole-Turner, 2021:1–16; Jones, 2019:756–92; Jones, 2018:992–1017; Ballesteros, 2019:731–55; Letheby, 2017:623–42; Apud, 2017:100–23; Barnard, 2017:225–33; Barua, 2017:124–45; Frishkopf, 2019:857–97; Helminiak, 2017:380–418; Modern, 2023:325–9; Schedneck, 2017:357–62; Stoddard, 2023a:1–12; Stoddard, 2023b:1–14; Taylor, 2020:898–923; Watts, 2019:965–83; Blum, 2017:340–6; Bronkhorst, 2017:1–30.

## Appendix 2 – Prisma

Section & Topic	Item	Checklist Item
<b>TITLE</b>		
Title	1	Identify the report as a systematic review.
<b>ABSTRACT</b>		
Abstract	2	See the PRISMA 2020 for Abstracts checklist.
<b>INTRODUCTION</b>		
Rationale	3	Describe the rationale for the review in the context of existing knowledge.
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.
<b>METHODS</b>		
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).
	13b	Describe any methods required to prepare the data for presentation or

		synthesis, such as handling of missing summary statistics, or data conversions.
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.
	13d	Describe any methods used to synthesise results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesised results.
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.
<b>RESULTS</b>		
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.
Study characteristics	17	Cite each included study and present its characteristics.
Risk of bias in studies	18	Present assessments of risk of bias for each included study.
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.
	20c	Present results of all investigations of possible causes of heterogeneity among study results.
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesised results.
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.
<b>DISCUSSION</b>		
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.

	23b	Discuss any limitations of the evidence included in the review.
	23c	Discuss any limitations of the review processes used.
	23d	Discuss implications of the results for practice, policy, and future research.
<b>OTHER INFORMATION</b>		
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.
	24c	Describe and explain any amendments to information provided at registration or in the protocol.
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.
Competing interests	26	Declare any competing interests of review authors.
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.

## Appendix 3 – Context

### James, *Varieties*, 1902:380–429:

[German] theologian Martin Luther (1483-1546); [British] poet Alfred Tennyson (1809-92); [Scottish] psychiatrist, neurologist and eugenicist James Crichton-Browne (1840-1938); [British] writer and priest Charles Kingsley (1819-75, James quotes Inge, 1899:341); [British] poet and literary critic John A. Symonds Jr. (1840-94); [American] philosopher, mystic and poet Benjamin Paul Blood (1832-1919); [American] educational psychologist Edwin Diller Starbuck (1866-1947); [American] psychologist Ethel D. Puffer Howes (1872-1950); [Swiss] philosopher, poet, and critic Henri Frédéric Amiel (1821-88); [German] writer Malwida von Meysenbug (1816-1903); [American] poet, essayist, and journalist Walt Whitman (1819-92); [Canadian] psychiatrist Richard Maurice Bucke (1837-1902); [Indian] Hindu monk, philosopher, author, and religious teacher Swami Vivekananda (1863-1902); [Austria] student of Freemasonry, Rosicrucianism, and Eastern mysticism; chemist, inventor, and industrialist Carl Kellner (1851-1905); [German] philosopher interested in Buddhism Carl Friedrich Koeppen (1808-63); On Al-Ghazzali and Sufi mysticism: [American] orientalist Duncan Black MacDonald (1863-1943); [German] orientalist Franz August Schmölders (1809-80); [German] writer, philosopher, theologian, historian and journalist Johann Joseph Görres (1776-1848); [French] mystical theologian and writer Jérôme Ribet (1837-1909); [Spanish Dominican] theologian and ascetical writer Thomas de Vallgornera (1595-1665); [Spanish] Catholic priest and theologian Ignatius of Loyola (1491-1556); author Edouard Récéjac (1853-unclear); [Spanish] Catholic priest, mystic,

and Carmelite friar John of the Cross (1542-91); [Spanish] Carmelite nun, mystic and religious reformer Teresa of Ávila (1515-82); [Italian] Jesuit writer and historiographer Dan-iello Bartoli (1608-85); [German] philosopher, Christian mystic, and Lutheran Protestant theologian Jakob Böhme (1575-1624); [American] colonial poet, pastor and physician Edward Taylor (1642-1729); [English] founder of the Religious Society of Friends/Quakers George Fox (1624-91); [American] spiritualist Andrew Jackson Davis (1826-1910); Henry Thomas Butterworth (1809-93); [French] Catholic Visitation nun and mystic Margaret Mary Alacoque (1647-90); [French] priest Paul Lejeune (1850-1932); The Upanishads translated with annotations by [British] philologist and orientalist of German origin Friedrich Max Müller (1823-1900); [Scottish-American] philosopher and lecturer Thomas Davidson (1840-1900); [Greek] author, Christian theologian and Neoplatonic philosopher Pseudo-Dionysius the Areopagite (5th–6th century CE); [Irish] Neoplatonist philosopher, theologian and poet Johannes Scotus Erigena (c.800-c.877); [Scottish] philosopher Andrew Seth Pringle-Pattison (1856-1931); [German] Catholic priest, physician, mystic and religious poet Angelus Silesius (c.1624-1677); [German] Catholic theologian, philosopher and mystic Meister Eckhart (c.1260-c.1328); [American] philosopher Josiah Royce (1855-1916); [French] Protestant professor of theology William Frédéric Monod (1867-1943); [Belgian] playwright, poet, and essayist Maurice Maeterlinck (1862-1949); [Belgian] mystic John van Ruysbroeck (1293/4-1381); [Persian] Sufi poet Mahmoud Shabestari (1288–1340); [Greek] Platonist philosopher Plotinus (c.204/5-270); [German] priest and mystic Henry Suso (1295-1366); [German-Russian] occultist, medium, and author H.P. Blavatsky (1831-91); [English] poet, playwright, novelist and critic Algernon Charles Swinburne (1837-1909); [German-British] philosopher F.C.S. Schiller (1864-1937); [British] Methodist preacher John Nelson (1707-74); [French] psychologist Henri Delacroix (1873-1937); [French] theologian historian Auguste Jundt (1848-90); mention of Sankhya and Vedanta; [French] writer Paul Rousselot (1833-1914); [English] socialist, poet, philosopher, anthologist, and early activist for gay rights Edward Carpenter (1844-1929); [English] nature writer John Richard Jefferies (1848-87); [Hungarian] physician, author, and social critic Max Simon Nordau (1849-1923); [German] physician, anatomist, psychiatrist and neuropathologist Karl Wernicke (1848-1905).

### **Stace, *Mysticism*, 1960:41–133:**

[remember the title is: mysticism and philosophy (133–343)]; “I do not profess to be an expert in any of the cultural areas of mysticism which this book discusses” [kind of problematic]; Stace only took the ‘great’ mystics, in some sense it’s very superficial in that regard; Bertrand Russell, *Mysticism and Logic and Other Essays* (1921); Stace even proposes to use the words ‘enlightenment’ or ‘illumination’ instead, but chooses ‘mysticism’ for historical/Western reasons; 14th century *The Cloud of Unknowing*; Plotinus; Erigena; Eckhart; William James; J.B. Pratt; Dean Inge; Rudolf Otto; [Spanish] Carmelite nun, mystic and religious reformer Teresa of Ávila (1515-82); [Canadian] psychiatrist Richard Maurice Bucke (1837-1902); James H. Leuba’s *The Psychology of Religious Mysticism* (1925);

R.C. Zaehner; [British] poet Alfred Tennyson (1809-92); [British] poet and literary critic John A. Symonds Jr. (1840-94); [English] socialist, poet, philosopher, anthologist, and early activist for gay rights Edward Carpenter (1844-1929); [Scope: Christian, Islamic, Judaic, Hindu, Buddhist (incl. Zen Buddhism), and Taoist mysticisms]; [English] epistemologist, historian of philosophy, philosopher of science, moral philosopher, and writer on the philosophical aspects of psychical research Charlie Dunbar Broad (1887-1971); William James; R.M. Bucke: (1) the subjective light, or photism, (2) moral elevation, (3) intellectual illumination, (4) sense of immortality, (5) loss of fear of death, (6) loss of sense of sin, (7) suddenness; D.T. Suzuki: satori: (1) irrationality, inexplicability, incommunicability; (2) intuitive insight; (3) authoritativeness; (4) affirmation (positive character); (5) sense of the beyond; (6) impersonal tone; (7) feeling of exaltation; (8) momentariness; Stace regards 'visions' and 'voices' as sensuous and non-mystical (also said by mystics themselves; 1960:47; e.g., vision of Mary, voice of Jesus, vision of Kali, voices heard by Joan of Arc, Socrates, or Mohammed, or Damascus Paul); [German] Catholic theologian, philosopher and mystic Meister Eckhart (c.1260-c.1328); [Belgian] Catholic mystic John van Ruysbroeck (1293/4-1381); [Spanish] Catholic priest, mystic, and Carmelite friar John of the Cross (1542-91); The Upanishads, trans. by Swami Prabhavananda and Frederick Manchester; Stace also excludes 'raptures,' 'trances,' and 'hyperemotionalism' (1960:51; e.g., Teresa of Ávila's raptures, Sri Ramakrishna, sex metaphores of Catherine of Genoa, Madame Guyon; emotional types: Catherine of Genoa, Teresa, Heinrich Suso, "frenzies of emotions"; intellectual/soeculative type: Eckhart, Buddha [seems like an anti-emotionalism and continuation of negating something by calling it 'hysterical']); [German] Lutheran theologian, philosopher, and comparative religionist Rudolf Otto (1869-1937); [Iranian] Sufi Abu Yazid of Bistam (c.848-c.874): source: [British] orientalist (Arabic literature, Persian, and Islamic studies) Arthur John Arberry (1905-69); [Hungarian-British] author and journalist Arthur Koestler (1905-83); [Indian] philosopher, yogi, maharishi, poet, and Indian nationalist Sri Aurobindo (1872-1950); [English] Anglo-Catholic writer and pacifist Evelyn Underhill (1875-1941); [American] author, professor and director Howard Haines Brinton (1884-1973); [Spanish] Catholic priest and theologian Ignatius of Loyola (1491-1556); 7 representative cases of extrovertive mysticism(= equals 'nature mysticism') (1960:62-81): Meister Eckhart; Teresa of Ávila; [German] philosopher, Christian mystic, and Lutheran Protestant theologian Jakob Böhme (1575-1624); [American] N.M. an anonymous intellectual man whom had an ME induced by mescaline; [Indian] Hindu mystic Sri Ramakrishna (1836-86); Plotinus; & R.M. Bucke; even though W. Wordsworth (1770-1850) seems to express something like extrovertive mystical ideas, Stace thinks it probable that he did not have an ME; 2 borderline cases: [British] poet John Masefield (1878-1967); [American] writer and novelist Margaret Prescott Montague (1878-1955); Aesthetic experiences; Introvertive mysticism: an 'empty/pure consciousness'; J.A. Symonds; Mandukya Upanishad; advaita (nondualistic) Vedanta; R.C. Zaehner; [Austrian] philosopher Martin Buber (1878-1965); [German] priest and mystic Heinrich Suso (1295-1366); [Greek] Platonist philosopher Plotinus (c.204/5-270); [British] orientalist specializing in Sufism Margaret Smith (1884-1970); [Persian] Sunni Muslim

polymath Al-Ghazali (c.1058-1111); [Persian] Sufi poet Mahmud Shabistari (1288–1340); [Ukrainian] Hasidic master and Jewish leader Levi Yitzchok of Berditchev (1740–1809); [German-born] Israeli philosopher and historian Gershom Scholem (1897-1982); Mahayana Buddhism; [Indian] Buddhist philosopher, dramatist, poet, musician, and orator Ashvagosha (c.80-c.150); Surangama Sutra; [American] Christian missionary Dwight Goddard (1861-1939); [Japanese] essayist, philosopher, religious scholar, translator, and writer Daisetsu Teitaro Suzuki (1870-1966); [English] Congregationalist minister and author Robert Alfred Vaughan (1823–57); [Persian] mystic, poet, and teacher of Sufism Mansur al-Hallaj (c.858-922); [English] orientalist, scholar of both Islamic literature and Islamic mysticism Reynold Alleyne Nicholson (1868-1945); writer F. Hadland Davis (1882-1956); [Swiss] literary scholar Franz Pfeiffer (1815-68); [Persian] mystic Al-junayd of Baghdad (830-910); [Spanish] founder of the school of Prophetic Kabbalah Abraham ben Samuel Abulafia (1240-91); Brihadaranayaka Upanishad; [American] scholar of Sanskrit and Pali Henry Clarke Warren (1854–99); [British] barrister, convert to Buddhism, founder of the London Buddhist Society Travers Christmas Humphreys (1901-83); [German] scholar of Marxism and Buddhism Edward Conze (1904–79); [American] philosopher of religion Edwin Arthur Burt (1892-1989); [American] philosopher James Bissett Pratt (1875-1944); [French] psychologist, physician, philosopher, and psychotherapist Pierre Janet (1859-1947).

## Appendix 4 – Scales

### STACE (3 Factors; 32 Items)

#### A1 Introvertive Mysticism

##### *a Time- and spacelessness*

Stace#11 "I have had an experience in which I had no sense of time or space."

Stace#1 "I have had an experience which was both timeless and spaceless."

##### *b Ego loss*

Stace#3 "I have had an experience in which something greater than myself seemed to absorb me."

Stace#4 "I have had an experience in which everything seemed to disappear from my mind until I was conscious only of a void."

##### *c Ineffability*

Stace#32 "I have had an experience that cannot be expressed in words."

Stace#23 "I have had an experience that is impossible to communicate."

Stace#21 "I have never had an experience which I was unable to express adequately through language."

Stace#2 "I have never had an experience which was incapable of being expressed in words."

#### A2 Extrovertive Mysticism

##### *a Inner subjectivity*

Stace#8 "I have never had an experience in which I felt as if all things were alive."

Stace#10 "I have never had an experience in which all things seemed to be aware."

Stace#31 "I have had an experience in which I felt nothing is ever really dead."

Stace#29 "I have had an experience in which all things seemed to be conscious."

##### *b Unity*

Stace#6 "I have never had an experience in which I felt myself to be absorbed as one with all things."

Stace#19 "I have had an experience in which I felt everything in the world to be part of the same whole."

Stace#24 "I have never had an experience in which my own self seemed to merge into something greater."

Stace#12 "I have had an experience in which I realized the oneness of myself with all things."

Stace#15 "I have never had an experience in which time and space were nonexistent."

Stace#30 "I have never had an experience in which all things seemed to be unified into a single whole."

Stace#28 "I have never had an experience in which I became aware of a unity to all things."

Stace#27 "I have never had an experience in which time, place, and distance were meaningless."

### **A3 Religious Interpretation**

#### *a Positive affect*

Stace#5 "I have experienced profound joy."

Stace#7 "I have never experienced a perfectly peaceful state."

Stace#18 "I have had an experience in which I felt that all was perfection at that time."

Stace#22 "I have had an experience which left me with a feeling of awe."

Stace#25 "I have never had an experience which left me with a feeling of wonder."

#### *b Sacredness*

Stace#9 "I have never had an experience which seemed holy to me."

Stace#14 "I have never experienced anything to be divine."

Stace#16 "I have never experienced anything that I could call ultimate reality."

Stace#20 "I have had an experience which I knew to be sacred."

#### *c Noetic quality*

Stace#13 "I have had an experience in which a new view of reality was revealed to me."

Stace#17 "I have had an experience in which ultimate reality was revealed to me."

Stace#26 "I have never had an experience in which deeper aspects of reality were revealed to me."

## **PSYCHEDELIC EXPERIENCE SCALE (PES100)**

### **STATES OF CONSCIOUSNESS QUESTIONNAIRE (SOCQ100; 9 Factors)**

#### **B1 Internal and external unity**

##### *External unity*

SOCQ#14 "Experience of oneness or unity with objects and/or persons perceived in your surroundings."

SOCQ#47 "Experience of the insight that 'all is One.'"

SOCQ#74 "Awareness of the life or living presence in all things."

SOCQ#27 "With eyes open, seeing something in your surroundings more and more intensely and then feeling as though you and it became one."

SOCQ#62 "Intuitive insight into the inner nature of objects and/or persons in your surroundings."

##### *Internal unity*

SOCQ#35 "Freedom from the limitations of your personal self and feeling a unity or bond with what was felt to be greater than your personal self."

SOCQ#41 "Experience of pure Being and pure awareness (beyond the world of sense impressions)."

SOCQ#77 "Experience of the fusion of your personal self into a larger whole."

SOCQ#83 "Experience of unity with ultimate reality."

SOCQ#54 "Experience of oneness in relation to an "inner world" within."

#### **B2 Objectivity and reality (noetic)**

SOCQ#9 "Gain of insightful knowledge experienced at an intuitive level."

SOCQ#3 "Feeling that the consciousness experienced was more real than your normal awareness of everyday reality."

SOCQ#22 "Certainty of encounter with ultimate reality (in the sense of being able to "know" and "see" what is really real) at some time during your experience."

SOCQ#69 "You are convinced now, as you look back on your experience, that in it you encountered ultimate reality (i.e., that you "knew" and "saw" what was really real)."

### **B3 Transcendence of time and space**

- SOCQ#12 "Feeling that you experienced eternity or infinity."  
SOCQ#2 "Loss of your usual sense of time."  
SOCQ#15 "Loss of your usual sense of space."  
SOCQ#29 "Loss of usual awareness of where you were."  
SOCQ#34 "Sense of being "outside of" time, beyond past and future."  
SOCQ#48 "Being in a realm with no space boundaries."  
SOCQ#65 "Experience of timelessness."

### **B4 Sense of sacredness**

- SOCQ#8 "Sense of the limitations and smallness of your everyday personality in contrast to the Infinite."  
SOCQ#5 "Experience of amazement."  
SOCQ#31 "Sense of profound humility before the majesty of what was felt to be sacred or holy."  
SOCQ#36 "Sense of being at a spiritual height."  
SOCQ#55 "Sense of reverence."  
SOCQ#73 "Feeling that you experienced something profoundly sacred and holy."  
SOCQ#80 "Sense of awe or awesomeness."

### **B5 Deeply-felt positive mood**

- SOCQ#10 "Experience of overflowing energy."  
SOCQ#18 "Feelings of tenderness and gentleness."  
SOCQ#30 "Feelings of peace and tranquillity."  
SOCQ#43 "Experience of ecstasy."  
SOCQ#50 "Feelings of exaltation."  
SOCQ#60 "Feelings of universal or infinite love."  
SOCQ#87 "Feelings of joy."

### **B6 Paradoxality**

- SOCQ#19 "Experience of a paradoxical awareness that two apparently opposite principles or situations are both true."  
SOCQ#26 "Loss of your usual identity."  
SOCQ#42 "Feeling that you have been "outside of" history in a realm where time does not exist."  
SOCQ#51 "Loss of feelings of difference between yourself and objects or persons in your surroundings."  
SOCQ#59 "Sense that in order to describe parts of your experience you would have to use statements that appear to be illogical, involving contradictions and paradoxes."

### **B7 Alleged ineffability**

- SOCQ#6 "Sense that the experience cannot be described adequately in words."  
SOCQ#23 "Feeling that you could not do justice to your experience by describing it in words."  
SOCQ#86 "Feeling that it would be difficult to communicate your own experience to others who have not had similar experiences."

### **B8 Transcency**

### **B9 Positive changes in attitude and/or behaviour**

### **Stocker et al., 2024: Connectedness**

- SOCQ#58 "Increase in the beauty and significance of music."  
SOCQ#60 "Feelings of universal or infinite love."  
SOCQ#62 "Intuitive insight into the inner nature of objects and/or persons in your surroundings."  
SOCQ#95 "Experience of increased awareness of beauty."  
SOCQ#99 "Increased awareness of the importance of interpersonal relationships."

### **57 Distractor items (or visual subscale and distressing subscale)**

- SOCQ#1 "Visions of abstract geometric patterns of colored lines."  
SOCQ#4 "Feelings of anger or aggression."  
SOCQ#7 "Sense of passing through stages in evolution."  
SOCQ#11 "Visions of sexual organs (eg, genitals, breasts)."  
SOCQ#13 "Emotional and/or physical suffering."  
SOCQ#16 "Feelings of despair."  
SOCQ#17 "Visions of art objects (eg mosaics, statues, jewelry, buildings) that reflect expert craftsmanship."  
SOCQ#20 "Sense of decreasing in body size to infancy or early childhood."  
SOCQ#21 "Experience of confusion, disorientation and/or chaos."  
SOCQ#24 "Feelings of being more important than other people and having a very important task to accomplish."  
SOCQ#25 "Experience of radiant, golden light."  
SOCQ#28 "Sense of being trapped and helpless."  
SOCQ#32 "Feeling that you could think with an unusually high degree of sharpness and clarity."  
  
SOCQ#33 "Convincing feeling that you relived experiences that you had as an infant during your biological birth."  
SOCQ#37 "Visions of demons, devils or other wrathful deities."  
SOCQ#38 "With open eyes, seeing objects around you turn into great works of art."  
SOCQ#39 "Experience of repulsive biological material (e.g., urine, feces, pus, dead flesh)."  
SOCQ#40 "Feeling that people were plotting against you."  
SOCQ#44 "Thoughts and ideas flashing by very rapidly."  
SOCQ#45 "Experience of isolation and loneliness."  
SOCQ#46 "Convincing feeling that you obtained information about people or events in an extrasensory manner (e.g., telepathy, clairvoyance, precognition)."  
SOCQ#49 "Visions of angels, cherubim or seraphim."  
SOCQ#52 "Experience of fear."  
SOCQ#53 "Sense of being outside your body."  
SOCQ#56 "Visions of blissful or compassionate deities."  
SOCQ#57 "Feeling of being rejected or unwanted."  
SOCQ#61 "Experience of meaninglessness and absurdity of life."  
SOCQ#63 "Feeling of emotional closeness with people around you."  
SOCQ#64 "Feeling of reluctance to return to normal consciousness."  
SOCQ#66 "Frustrating attempt to control the experience."  
SOCQ#67 "Visions of brilliant white light."  
SOCQ#68 "Experience of exploring organs, tissues or cells of your own body."  
SOCQ#70 "Profound experience of your own death."  
SOCQ#71 "Visions of beautiful jewels and precious stones."  
SOCQ#72 "Experience of antagonism toward your people around you."  
SOCQ#75 "Convincing feeling of contact with people who have died."  
SOCQ#76 "Sense of being separated from the normal world, as though you were enclosed in a thick, silent glass chamber."  
SOCQ#78 "Experience of sexual excitement."  
SOCQ#79 "Feeling of being extremely sensitive to fine nuances of meaning between different words."  
SOCQ#81 "Convincing experiences of life in civilizations that existed in another time and/or place (e.g., Ancient Egypt or Rome, Renaissance France, Colonial America)."  
SOCQ#82 "Visions of events in the life of Christ (e.g., birth, crucifixion, resurrection)."  
SOCQ#84 "Feeling of disintegration, falling apart."  
SOCQ#85 "Fear that you might lose your mind or go insane."  
SOCQ#88 "Feelings of guilt."  
SOCQ#89 "Experiences of intense pressures on various parts of your body."  
SOCQ#90 "Convincing feelings of reliving part of another life prior to your birth (e.g., a previous incarnation)."  
SOCQ#91 "Feelings of grief."

SOCQ#92 "Reliving of sensations and feelings associated with past surgery, illness or accidents."

SOCQ#93 "Experience of physical distress (e.g., nausea, vomiting, sweating, rapid heartbeat)."

SOCQ#94 "Sense of becoming a specific animal and feeling like that animal."

SOCQ#96 "Vision of a religious personage (e.g., Moses, Christ, Buddha)."

SOCQ#97 "Visions of landscapes (e.g., oceans, mountains, deserts)."

SOCQ#98 "Reliving of situations and events from your childhood."

SOCQ#100 "Feeling of being reborn."

## **HOOD MYSTICISM SCALE (HMS 8 Factors; 32 Items)**

### **C1 Ego Quality**

HMS#3 "I have had an experience in which something greater than myself seemed to absorb me."

HMS#4 "I have had an experience in which everything seemed to disappear from my mind until I was conscious only of a void."

HMS#6 "I have never had an experience in which I felt myself to be absorbed as one with all things."

HMS#24 "I have never had an experience in which my own self seemed to merge into something greater."

### **C2 Unifying Quality**

HMS#19 "I have had an experience in which I felt everything in the world to be part of the same whole."

HMS#30 "I have never had an experience in which all things seemed to be unified into a single whole."

HMS#12 "I have had an experience in which I realized the oneness of myself with all things."

HMS#28 "I have never had an experience in which I became aware of a unity to all things."

### **C3 Inner Subjective Quality**

HMS#8 "I have never had an experience in which I felt as if all things were alive."

HMS#10 "I have never had an experience in which all things seemed to be aware."

HMS#31 "I have had an experience in which I felt nothing is ever really dead."

HMS#29 "I have had an experience in which all things seemed to be conscious."

### **C4 Temporal/ Spatial Quality**

HMS#1 "I have had an experience which was both timeless and spaceless."

HMS#11 "I have had an experience in which I had no sense of time or space."

HMS#15 "I have never had an experience in which time and space were non-existent."

HMS#27 "I have never had an experience in which time, place, and distance were meaningless."

### **C5 Noetic Quality**

HMS#13 "I have had an experience in which a new view of reality was revealed to me."

HMS#16 "I have never experienced anything that I could call ultimate reality."

HMS#17 "I have had an experience in which ultimate reality was revealed to me."

HMS#26 "I have never had an experience in which deeper aspects of reality were revealed to me."

### **C6 Ineffability**

HMS#2 "I have never had an experience which was incapable of being expressed in words."

HMS#21 "I have never had an experience which I was unable to express adequately through language."

HMS#23 "I have had an experience that is impossible to communicate."

HMS#32 "I have had an experience that cannot be expressed in words."

### **C7 Positive Affect**

HMS#5 "I have experienced profound joy."

HMS#7 "I have never experienced a perfectly peaceful state."

HMS#18 "I have had an experience in which I felt that all was perfection at that time."

HMS#25 "I have never had an experience which left me with a feeling of wonder."

### **C8 Religious Quality**

HMS#9 "I have never had an experience which seemed holy to me."

HMS#14 "I have never experienced anything to be divine."

HMS#20 "I have had an experience which I knew to be sacred."

HMS#22 "I have had an experience which left me with a feeling of awe."

## **5-DIMENSIONS ALTERED STATES OF CONSCIOUSNESS (5D-ASC; 94 Items)**

### **D1 Oceanic Boundlessness**

#### *a Positive derealization*

5D-ASC#1 "I felt that I was in a wonderful other world."

5D-ASC#18 "Everything seemed to unify into a oneness."

5D-ASC#9 "I felt connected to a higher power."

5D-ASC#42 "Conflicts and contradictions seemed to dissolve."

5D-ASC#34 "I felt one with my surroundings."

5D-ASC#57 "Many things appeared to me as breathtakingly beautiful."

5D-ASC#71 "The boundaries between myself and my surroundings seemed to blur."

5D-ASC#87 "Everything around me seemed to be animated with life."

#### *b Positive depersonalization*

5D-ASC#26 "I felt as if I no longer had a body."

5D-ASC#62 "I had the impression I was out of my body."

5D-ASC#63 "I felt as if I was floating."

5D-ASC#16 "I felt I was being transformed forever in a miraculous way."

#### *c Altered sense of time*

5D-ASC#36 "My sense of time and space was altered as if I was dreaming."

5D-ASC#52 "I experienced past, present, and future as a oneness."

5D-ASC#41 "I experienced a touch of eternity."

#### *d Positive mood*

5D-ASC#3 "Bodily sensations were very enjoyable."

5D-ASC#12 "I experienced boundless pleasure."

5D-ASC#81 "I experienced a kind of awe."

5D-ASC#86 "I experienced profound inner peace."

5D-ASC#50 "I felt very profound."

5D-ASC#91 "I experienced an all-embracing love."

#### *e Unity*

5D-ASC#35 "Worries and anxieties of everyday life felt unimportant."

5D-ASC#40 "I felt extraordinary powers within myself."

5D-ASC#45 "The world seemed to me beyond good and evil."

5D-ASC#69 "I had insights into connections that had previously puzzled me."

5D-ASC#73 "I felt totally free and released from all obligations."

5D-ASC#94 "My experience had religious aspects to it."

### **D2 Dread of Ego-dissolution**

5D-ASC#6 "I felt as if dark forces had overtaken me."

5D-ASC#8 "I felt like a puppet or marionette."

5D-ASC#21 "I felt tormented."

5D-ASC#27 "I felt incapable of making even the smallest decision."

5D-ASC#32 "I was afraid that the state I was in would last forever."

5D-ASC#38 "I had difficulties in distinguishing important from unimportant."

5D-ASC#43 "I was scared without knowing exactly why."

5D-ASC#44 "I experienced everything as frighteningly distorted."

5D-ASC#46 "I experienced my surroundings as strange and weird."

5D-ASC#47 "I felt as if I were paralyzed."

5D-ASC#53 "I experienced unbearable emptiness."

5D-ASC#56 "I felt threatened."

5D-ASC#60 "My body felt numb, lifeless, and/or alien."  
5D-ASC#64 "I felt isolated from everything and everyone."  
5D-ASC#67 "I was not able to complete a thought; my thoughts repeatedly became disconnected."  
5D-ASC#78 "I had the feeling that I no longer had my own will."  
5D-ASC#79 "I was afraid of losing control over myself."  
5D-ASC#80 "I stayed frozen in an very unnatural position for an extended period of time."  
5D-ASC#85 "Time passed slowly in a tormenting way."  
5D-ASC#88 "Everything happened so fast that I could not follow it all."  
5D-ASC#89 "I had the feeling that something terrible was going to happen."

### **D3 Visionary Restructuralization**

5D-ASC#7 "I saw things I knew were not real."  
5D-ASC#14 "I saw regular patterns with closed eyes or in complete darkness."  
5D-ASC#20 "Sounds seemed to influence what I saw."  
5D-ASC#22 "I saw colors with closed eyes or in complete darkness."  
5D-ASC#23 "Shapes seemed to be changed by sounds or noises."  
5D-ASC#28 "Some everyday things acquired special meaning."  
5D-ASC#31 "Things in my environment had a new strange meaning."  
5D-ASC#33 "I saw brightness or flashes of light with closed eyes or in complete darkness."  
5D-ASC#39 "I saw whole scenes roll by with closed eyes or in complete darkness."  
5D-ASC#54 "Objects in my surroundings engaged me emotionally much more than usual."  
5D-ASC#58 "Things came to my mind that I thought long forgotten."  
5D-ASC#70 "Many things seemed incredibly funny to me."  
5D-ASC#72 "I could see images from my memory or imagination with extreme clarity."  
5D-ASC#75 "The colors of things seemed to be altered by sounds or noises."  
5D-ASC#77 "I had very original thoughts."  
5D-ASC#82 "My imagination was extremely vivid."  
5D-ASC#83 "Things in my surroundings appeared smaller or larger."  
5D-ASC#90 "I was able to remember certain events with exceeding clarity."

### **D4 Auditory Alterations**

5D-ASC#4 "I heard single words without knowing where they came from."  
5D-ASC#5 "I heard rings and tones without knowing where they came from."  
5D-ASC#11 "A melody occurred to me that I had to constantly repeat."  
5D-ASC#13 "Meaningless noises sounded like real words or phrases."  
5D-ASC#19 "I heard my thoughts as if I had spoken them out loud."  
5D-ASC#25 "A voice commented on everything I thought although no one was there."  
5D-ASC#30 "I heard complete sentences without knowing where they came from."  
5D-ASC#48 "I heard music without knowing where it came from."  
5D-ASC#49 "I heard something faintly that I could not identify."  
5D-ASC#55 "From an initially diffuse noise, which I could not identify as real, clear rings and tones evolved."  
5D-ASC#65 "I heard voices that did not come from the surroundings as usual."  
5D-ASC#66 "I heard something like a buzzing, swooshing, or humming without recognizing the cause."  
5D-ASC#74 "I heard diffuse noises without knowing where they came from."  
5D-ASC#76 "Sounds and noises were fainter than usual."  
5D-ASC#92 "There were sounds in the room that I feel were unlikely to have been real."  
5D-ASC#93 "I heard a ticking, knocking, ringing, or rattling without being able to recognize the cause."

### **D5 Vigilance Reduction**

5D-ASC#2 "My thoughts and actions were slowed down."  
5D-ASC#10 "I felt sleepy."  
5D-ASC#15 "I felt drunk."

5D-ASC#17 "I felt that I was on the verge of unconsciousness."  
5D-ASC#24 "I perceived everything as blurry, as if through a kind of fog."  
5D-ASC#29 "I felt drowsy."  
5D-ASC#37 "My perception was blurred."  
5D-ASC#51 "I felt numb."  
5D-ASC#59 "I felt like I do shortly before falling asleep."  
5D-ASC#61 "I felt as if I was half-asleep."  
5D-ASC#68 "I felt I was about to fall asleep."  
5D-ASC#84 "I felt exhausted."

## **5-DIMENSIONS ALTERED STATES OF CONSCIOUSNESS (5D-ASC; Old Variant)**

### **Dread of Ego-Dissolution**

5D-ASC#29 "Time passed more slowly than usual."

### **Altered State of Consciousness (Additional Items of the Secondary Scale)**

5D-ASC#51 "Time passed faster than usual."  
5D-ASC#56 "I could not remember what had happened two hours earlier."  
4D-ASC#66 "I no longer knew where I actually was."

## **MYSTICAL EXPERIENCE QUESTIONNAIRE (MEQ43 7 Factors; 43 Items)**

### **E1 Internal Unity**

SOCQ#26; MEQ43#1 "Loss of your usual identity."  
SOCQ#35; MEQ43#2 "Freedom from the limitations of your personal self and feeling a unity or bond with what was felt to be greater than your personal self."  
SOCQ#41; MEQ43#3 "Experience of pure Being and pure awareness (beyond the world of sense impressions)."  
SOCQ#54; MEQ43#4 "Experience of oneness in relation to an 'inner world' within."  
SOCQ#77; MEQ43#5 "Experience of the fusion of your personal self into a larger whole."  
SOCQ#83; MEQ43#6 "Experience of unity with ultimate reality."

### **E2 External Unity**

SOCQ#14; MEQ43#7 "Experience of oneness or unity with objects and/or persons perceived in your surroundings."  
SOCQ#27; MEQ43#8 "With eyes open, seeing something in your surroundings more and more intensely and then feeling as though you and it become one."  
SOCQ#47; MEQ43#9 "Experience of the insight that 'all is One.'"  
SOCQ#51; MEQ43#10 "Loss of feelings of difference between yourself and objects or persons in your surroundings."  
SOCQ#62; MEQ43#11 "Intuitive insight into the inner nature of objects and/or persons in your surroundings."  
SOCQ#74; MEQ43#12 "Awareness of the life or living presence in all things."

### **E3 Transcendence of Time and Space**

SOCQ#2; MEQ43#13 "Loss of your usual sense of time."  
SOCQ#12; MEQ43#14 "Feeling that you experienced eternity or infinity."  
SOCQ#15; MEQ43#15 "Loss of your usual sense of space."  
SOCQ#29; MEQ43#16 "Loss of usual awareness of where you were."  
SOCQ#34; MEQ43#17 "Sense of being 'outside of' time, beyond past and future."  
SOCQ#42; MEQ43#18 "Feeling that you have been 'outside of' history in a realm where time does not exist."  
SOCQ#48; MEQ43#19 "Being in a realm with no space boundaries."  
SOCQ#65; MEQ43#20 "Experience of timelessness."

### **E4 Ineffability and Paradoxicality**

SOCQ#6; MEQ43#21 "Sense that the experience cannot be described adequately in words."  
SOCQ#19; MEQ43#22 "Experience of a paradoxical awareness that two apparently opposite principles or situations are both true."

SOCQ#23; MEQ43#23 "Feeling that you could not do justice to your experience by describing it in words."

SOCQ#59; MEQ43#24 "Sense that in order to describe parts of your experience you would have to use statements that appear to be illogical, involving contradictions and paradoxes."

SOCQ#86; MEQ43#25 "Feeling that it would be difficult to communicate your own experience to others who have not had similar experiences."

#### **E5 Sense of Sacredness**

SOCQ#5; MEQ43#26 "Experience of amazement."

SOCQ#8; MEQ43#27 "Sense of the limitations and smallness of your everyday personality in contrast to the Infinite."

SOCQ#31; MEQ43#28 "Sense of profound humility before the majesty of what was felt to be sacred or holy."

SOCQ#36; MEQ43#29 "Sense of being at a spiritual height."

SOCQ#55; MEQ43#30 "Sense of reverence."

SOCQ#73; MEQ43#31 "Feeling that you experienced something profoundly sacred and holy."

SOCQ#80; MEQ43#32 "Sense of awe or awesomeness."

#### **E6 Noetic Quality**

SOCQ#3; MEQ43#33 "Feeling that the consciousness experienced during part of the session was more real than your normal awareness of everyday reality."

SOCQ#9; MEQ43#34 "Gain of insightful knowledge experienced at an intuitive level."

SOCQ#22; MEQ43#35 "Certainty of encounter with ultimate reality (in the sense of being able to "know" and "see" what is really real) at some time during your session."

SOCQ#69; MEQ43#36 "You are convinced now, as you look back on your experience, that in it you encountered ultimate reality (i.e. that you "knew" and "saw" what was really real)."

#### **E7 Deeply-Felt Positive Mood**

SOCQ#10; MEQ43#37 "Experience of overflowing energy."

SOCQ#18; MEQ43#38 "Feelings of tenderness and gentleness."

SOCQ#30; MEQ43#39 "Feelings of peace and tranquillity."

SOCQ#43; MEQ43#40 "Experience of ecstasy."

SOCQ#50; MEQ43#41 "Feelings of exaltation."

SOCQ#60; MEQ43#42 "Feelings of universal or infinite love."

SOCQ#87; MEQ43#43 "Feelings of joy."

### **11-DIMENSIONS ALTERED STATES OF CONSCIOUSNESS (11D-ASC; 42 Items)**

#### **F1 Experience of Unity**

11D-ASC#1 "Everything seemed to unify into an oneness."

11D-ASC#2 "It seemed to me that my environment and I were one."

11D-ASC#3 "I experienced a touch of eternity."

11D-ASC#4 "Conflicts and contradictions seemed to dissolve."

11D-ASC#5 "I experienced past, present and future as an oneness."

#### **F2 Spiritual Experience**

11D-ASC#6 "I had the feeling of being connected to a superior power."

11D-ASC#7 "I experienced a kind of awe."

11D-ASC#8 "My experience had religious aspects."

#### **F3 Blissful State**

11D-ASC#9 "I enjoyed boundless pleasure."

11D-ASC#10 "I experienced a profound peace in myself."

11D-ASC#11 "I experienced an all-embracing love."

#### **F4 Insightfulness**

11D-ASC#12 "I felt very profound."

11D-ASC#13 "I gained clarity into connections that puzzled me before."

11D-ASC#14 "I had very original thoughts."

#### **F5 Disembodiment**

11D-ASC#15 "It seemed to me as though I did not have a body anymore."

11D-ASC#16 "I had the feeling of being outside of my body."

11D-ASC#17 "I felt as though I were floating."

#### **F6 Impaired Control and Cognition**

11D-ASC#18 "I felt like a marionette."

11D-ASC#19 "I had difficulty making even the smallest decision."

11D-ASC#20 "I had difficulty in distinguishing important from unimportant things."

11D-ASC#21 "I felt as though I were paralyzed."

11D-ASC#22 "I felt isolated from everything and everyone."

11D-ASC#23 "I was not able to complete a thought, my thoughts repeatedly became disconnected."

11D-ASC#24 "I had the feeling that I no longer had a will of my own."

#### **F7 Anxiety**

11D-ASC#25 "I was afraid that the state I was in would last forever."

11D-ASC#26 "I was afraid without being able to say exactly why."

11D-ASC#27 "I experienced everything terrifyingly distorted."

11D-ASC#28 "I experienced my surroundings as strange and weird."

11D-ASC#29 "I felt threatened."

11D-ASC#30 "I had the feeling something horrible would happen."

#### **F8 Complex Imagery**

11D-ASC#31 "I saw scenes rolling by in total darkness or with my eyes closed."

11D-ASC#32 "I could see pictures from my past or fantasy extremely clearly."

11D-ASC#33 "My imagination was extremely vivid."

#### **F9 Elementary Imagery**

11D-ASC#34 "I saw regular patterns in complete darkness or with closed eyes."

11D-ASC#35 "I saw colors before me in total darkness or with closed eyes."

11D-ASC#36 "I saw lights or flashes of light in total darkness or with closed eyes."

#### **F10 Audio-Visual Synesthesiae**

11D-ASC#37 "Noises seemed to influence what I saw."

11D-ASC#38 "The shape of things seemed to change by sounds and noises."

11D-ASC#39 "The color of things seemed to be changed by sounds and noises."

#### **F11 Changed Meaning of Percepts**

11D-ASC#40 "Everyday things gained a special meaning."

11D-ASC#41 "Things around me had a new strange meaning for me."

11D-ASC#42 "Objects around me engaged me emotionally much more than usual."

### **MYSTICAL EXPERIENCE QUESTIONNAIRE (MEQ30 4 Factors; 30 Items)**

#### **G1 Mystical**

MEQ30#1 "Freedom from the limitations of your personal self and feeling a unity or bond with what was felt to be greater than your personal self."

MEQ30#2 "Experience of pure being and pure awareness (beyond the world of sense impressions)."

MEQ30#3 "Experience of oneness in relation to an 'inner world' within."

MEQ30#4 "Experience of the fusion of your personal self into a larger whole."

MEQ30#5 "Experience of unity with ultimate reality. "

MEQ30#6 "Feeling that you experienced eternity or infinity."

MEQ30#7 "Experience of oneness or unity with objects and/or persons perceived in your surroundings."

MEQ30#8 "Experience of the insight that 'all is One.'"

MEQ30#9 "Awareness of the life or living presence in all things."

MEQ30#10 "Gain of insightful knowledge experienced at an intuitive level."

MEQ30#11 "Certainty of encounter with ultimate reality (in the sense of being able to 'know' and 'see' what is really real at some point during your experience. "

MEQ30#12 "You are convinced now, as you look back on your experience, that in it you encountered ultimate reality (i.e., that you 'knew' and 'saw' what was really real)."

MEQ30#13 "Sense of being at a spiritual height."

MEQ30#14 "Sense of reverence."

MEQ30#15 "Feeling that you experienced something profoundly sacred and holy."

### **G2 Positive Mood**

MEQ30#16 "Experience of amazement."

MEQ30#17 "Feelings of tenderness and gentleness."

MEQ30#18 "Feelings of peace and tranquillity."

MEQ30#19 "Experience of ecstasy."

MEQ30#20 "Sense of awe or awesomeness."

MEQ30#21 "Feelings of joy."

### **G3 Transcendence of Space and Time**

MEQ30#22 "Loss of your usual sense of time."

MEQ30#23 "Loss of your usual sense of space."

MEQ30#24 "Loss of usual awareness of where you were."

MEQ30#25 "Sense of being "outside of" time, beyond past and future."

MEQ30#26 "Being in a realm with no space boundaries."

MEQ30#27 "Experience of timelessness."

### **G4 Ineffability**

MEQ30#28 "Sense that the experience cannot be described adequately in words."

MEQ30#29 "Feeling that you could not do justice to your experience by describing it in words."

MEQ30#30 "Feeling that it would be difficult to communicate your own experience to others who have not had similar experiences."

### **EGO-DISSOLUTION INVENTORY (EDI 1 Factor; 8 Items)**

EDI#1 "I experienced a dissolution of my "self" or ego."

EDI#2 "I felt at one with the universe." EDS#7

EDI#3 "I felt a sense of union with others." EDS#9

EDI#4 "I experienced a decrease in my sense of self-importance."

EDI#5 "I experienced a disintegration of my "self" or ego." EDS#5

EDI#6 "I felt far less absorbed in my own issues and concerns."

EDI#7 "I lost all sense of ego."

EDI#8 "All notion of self and identity dissolved away."

### **EGO DISSOLUTION SCALE (EDS 2 Factors; 10 Items)**

#### **H1 Ego-Loss**

EDS#1 "My "self" or ego dissolves into nothingness."

EDS#2 "My "self" disappears and no "me" or "I" is present any longer."

EDS#3 "I feel I do not exist."

EDS#4 "I experience being out of my body."

EDS#5 "I experience a disintegration of my "self" or ego."

EDS#6 "My sense of self moves from one part of my body to another (i.e., from behind my eyes to my heart)."

## H2 Unity

EDS#7 "I feel at one with the universe."

EDS#8 "I feel one with everything around me."

EDS#9 "I feel a sense of union with others."

EDS#10 "I feel I merge with others/the world."

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The references to my educational research over the last two years are meant to demonstrate that this thesis represents the culmination of my research focus and interests. It also illustrates a coherent research program from my MA at Radboud to my ResMA at the University of Groningen.

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