

International Journal of Clinical and Experimental Hypnosis



ISSN: 0020-7144 (Print) 1744-5183 (Online) Journal homepage: www.tandfonline.com/journals/nhyp20

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To cite this article: Aminata Bicego, Naji Alnagger, Etzel Cardeña, Corine Sombrun, Charlotte Martial, Jitka Annen, Olivia Gosseries & Audrey Vanhauzenhuysse (04 Dec 2025): Exploring Mystical-Type Experiences Through Auto-Induced Cognitive Trance, International Journal of Clinical and Experimental Hypnosis, DOI: [10.1080/00207144.2025.2544055](https://doi.org/10.1080/00207144.2025.2544055)

To link to this article: <https://doi.org/10.1080/00207144.2025.2544055>



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Exploring Mystical-Type Experiences Through Auto-Induced Cognitive Trance

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ABSTRACT

Mystical-type experiences can be induced through techniques like hypnosis and meditation. These experiences are common in near-death experiences (NDEs) and have been linked to paranormal beliefs. This study explored auto-induced cognitive trance (AICT) as a method to induce mystical-type experiences and NDE outside of life threatening situations (NDE-like), as well as examining the influence of factors like religious/spirituality practices, and paranormal beliefs. Twenty-seven participants capable of self-inducing AICT were studied. Before the experiment, their religious/spirituality practices and paranormal beliefs were assessed. Participants underwent five conditions: rest, rest with auditory stimulation, imagination, AICT, and AICT with auditory stimulation. Experience intensity, mystical-type experiences, and NDEs-like were measured before and after AICT and rest. Results showed that AICT induce mystical-type experiences more frequently (29%) compared to the rest condition (0%). More specifically, the intensity of the experience and features of NDEs-like during AICT were linked to mystical-type experiences during AICT only. This is the first study to demonstrate that AICT can induce mystical-type experiences in healthy individuals.

ARTICLE HISTORY

Received 5 February 2025
Revised 12 May 2025
Accepted 28 May 2025

KEYWORDS

Beliefs; modified state of consciousness; mystical-type experiences; trance states

Mysticism is a multifaceted term used to define an experience of union with the Divine, the Absolute, along with other modifications of consciousness (Stace, 1960). Several ancient cultures practiced elements of mysticism dating back thousands of years. Much of the current philosophical and academic efforts to study mysticism stem from William James (1902) and, later, Walter Stace (1960) who – from their study of various theological sources – helped to establish the psycho-spiritual field of investigation. These early efforts to examine the phenomena empirically helped to characterize the *mystical experience*—the core phenomenal feature of mysticism (Stace, 1960). Stace's (1960) definition describes mystical experience by unity (a sense of oneness devoid of physical and mental objects), transcendence, a loss of a placement in space and time, ineffability, peace, joy, sacredness,

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Supplemental data for this article can be accessed online at <https://doi.org/10.1080/00207144.2025.2544055>

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and a noetic quality (where the experience feels real to the person). Stace's definition has been largely adopted by contemporary scientific research (Barrett et al., 2015; Johnson et al., 2019; Letheby & Letheby, 2021; Yaden et al., 2022) as most scales assessing mystical experiences base their items upon his definition (Wulff, 2014). To overcome any confusion, and since this paper explores these phenomena outside of any religious context, the term mystical-type experiences will be preferred and used here.

Endorsement of paranormal beliefs has been positively linked to mystical-type experiences (Kohr, 1980; Palmer, 1979; Shaffer, 1982; Thalbourne, 1994, 2006; Van Quekelberghe et al., 1991). Paranormal phenomena encompass a broad spectrum of experiences that appear to challenge the prevailing understanding and accepted knowledge of mainstream western scientific views. These phenomena vary significantly in the extent to which they have been studied and supported by research. Parapsychological or psi phenomena are commonly considered part of this category and refer to the purported ability to acquire knowledge independently of sensory perception or reasoning, as well as the direct influence of mental processes, such as intention, on physical events (Cardena, 2018). Psychosomatic and hypnotically induced experiences are not considered amongst paranormal phenomena (Tobacyk, 2004). Endorsing some paranormal beliefs or anomalous experiences such as "astral journeys" (i.e. out-of-body experiences), reincarnation, dissociation of mind and body, and communicating with the dead was found to increase the likelihood of recalling a near-death experience (NDE) outside of a life-threatening situation referred to as NDE-like as in sleep (Bicego et al., 2023). NDEs also present some features of mystical-type experiences such as encounters with a mystical presence or traveling to a transcendent realm (Greyson, 2006). Greyson (2014) showed that NDE-experiencers scored higher on the Mysticism scale (Hood, 1975) compared to people having come close to death without having experienced an NDE. During an NDE, experiencers often feel positive affect, sense of boundarylessness, distortion of space and time, a noetic quality, and a sense of unity (Greyson, 2014; Martial et al., 2020).

These features have also been described in the scientific literature of the effects of psychedelic drugs, which has also provided valuable insight into the impact of mystical-type experiences. In several groups of patients with affective disorders such as depression or anxiety, the use of psilocybin has shown promising therapeutic avenues, especially for individuals who experienced mystical-type experiences during the substance intake (Gukasyan et al., 2022; McCulloch et al., 2022; Roseman et al., 2017; Ross et al., 2016).

Mystical-type experiences have been linked to spirituality and religiosity as they are commonly associated with related practices (Bitēna & Mārtinsone, 2021; Lifshitz et al., 2019; Moreira-Almeida, 2012; Willard & Norenzayan, 2017). However, mystical-type experiences can occur spontaneously, outside of any religious or spiritual context or intention (e.g. Maslow, 1961; Miller, 2004). Marshall (2019) listed 13 different potential triggers of mystical-type experiences including neurophysiological alterations, such as sensory deprivation (Hood et al., 1990), pharmacological agents (i.e. psilocybin, Griffiths et al., 2006), and techniques that can alter cognition sometimes leading to trance-like subjective experiences such as hypnosis (Cardena et al., 2013; Lynn & Evans, 2017) or meditation (de Castro, 2015; Van Gordon et al., 2019). Trance can be broadly understood as a state of consciousness marked by deep absorption, triggered by an event that disrupts an individual's usual points of reference (Bioy, 2022). This shift alters their perception of reality, leading to an atypical, transient experience often characterized by a narrowed awareness of the external world

(Bourguignon, 1978; Hove et al., 2016), heightened focus, and a transformed sense of self (Becker, 1994). As trance encompasses a wide spectrum of experiences, it is not a singular phenomenon but rather an umbrella term that includes diverse practices with distinct cultural roles and induction techniques (Grégoire et al., 2024). These states, though varied in their manifestations, share the common feature of temporarily reshaping cognition, perception, and self-awareness (Marie et al., 2024).

Auto-Induced Cognitive Trance (AICT) is a technique that draws inspiration from Mongolian shamanic traditions but has been adapted for Western culture. It uses vocalizations and movements to bring about the altered conscious experience, independent of any shamanic rituals (Gosseries et al., 2020, 2024; Grégoire et al., 2022). People experienced in AICT have reported disembodiment, spirit possession, and being united with the universe (Flor-Henry et al., 2017; Grégoire et al., 2024; Vanhauzenhuysse et al., 2024). AICT also modifies physiological variables (heart rate and respiration) indicating a hyperarousal state of the autonomic nervous system (Oswald et al., 2023) and has an electrophysiological activity profile different from resting state and other types of conscious experiences (Kumar et al., 2024). As with hypnosis and meditation, AICT is learnt through a standardized training that aims at volitionally inducing it, first by using specific sound loops, then individualized movements and/or vocalizations. Based on anecdotal reports and given that AICT is thought to be devoid of any shamanic or religious influence, assessing whether it induces mystical-type experiences might contribute to the current scientific knowledge on those experiences. Answering this question has also a translational value since mystical-type experiences could represent a psychological process of change (van Elk & Yaden, 2022), which may induce positive outcomes in the person who has such experiences. The ability to induce a rapid transformative experience without any psychoactive substance could potentially benefit a broad range of people.

The aims of this study were to assess whether: (1) AICT induces mystical-type experiences more frequently than rest, and (2) whether certain attributes (i.e. spirituality, religiosity, paranormal beliefs, intensity of the experience, and NDE-like during AICT) correlate with the occurrence of mystical-type experiences during AICT. We anticipate that compared to a baseline, resting state (rest), AICT would induce mystical-type experiences. We also hypothesized that having religious/spiritual practices, endorsing paranormal beliefs, having an intense AICT experience, and experiencing an NDE-like during AICT would positively correlate with the occurrence mystical-type experiences during AICT.

Methods

Participants and Training

Participants in this study were the same as those included in a larger protocol aiming at characterizing the neurophenomenology of AICT as well as its physiological features (Grégoire et al., 2024; Kumar et al., 2024; Oswald et al., 2023; Vanhauzenhuysse et al., 2024). Twenty-seven adults proficient in using AICT and fluent in French were enrolled. Prior to the study, participants underwent an AICT training, utilizing an ensemble of techniques developed by TranceScience Research Institute (<https://trancescience.org>). The techniques aim at teaching individuals to volitionally induce the AICT through specifically designed sound loops (i.e. binaural sounds with pure tones between 100 Hz and 200 Hz and

beating rates lower than 10 Hz combined with serial music sequences and voice sounds), with the final goal being to induce AICT without the sound loops and in a safe manner. The training consists of two separate practice sessions, each lasting two days, with a two-week interval in between. Participants were also encouraged to practice at home during the two-week gap. Please see Grégoire et al. (2022) for a thorough description of the training. The study was approved by the Ethics Committee of the Faculty of Medicine of the University of Liege, Belgium (number: 2019/141) and all participants gave informed consent.

Procedure

Prior to the experiment, sociodemographic data (e.g. age, sex, education), current religious and/or spiritual practices, and paranormal beliefs (Tobacyk, 2004) were collected by two of the coauthors (A.V. and O.G.) through paper-pencil questionnaires. Each participant underwent a single experimental session consisting of five conditions: ordinary conscious resting state (rest), ordinary conscious state with auditory stimulation (rest-auditory), imagining a previous intense AICT without entering an AICT state (imagination), AICT, and AICT with auditory stimulation (AICT-auditory). The order of the first three conditions were counterbalanced between volunteers while the last two conditions were always carried out after the first three conditions (to avoid a potential after-effect of AICT), and in the same order (to start with the AICT without external stimulation as done in their daily life).

Participants were instructed to keep their eyes closed, remain seated, and stay as still as possible throughout the five conditions. In the rest conditions (with and without auditory stimulation), participants were instructed to think of nothing in particular, while in the imaginative condition they were instructed to imagine an intense previous AICT episode. In the AICT conditions (with and without auditory stimulation), participants had to induce the AICT according to their preference and habits, using body movements and/or vocalizations for approximately 2–10 minutes. Once they reached that state, they were instructed to remain motionless until the end of the recording. If participants felt that the state was fading away, they could reinduce the AICT, and the recording was prolonged. Each condition lasted around 12 minutes. The experimenters could determine when participants achieved the AICT because they had instructed the participants to remain still upon entering the AICT. Brain and body parameters were recorded in all five conditions. After each condition, participants were invited to rate the intensity of the experience on a numerical rating scale ranging from 0–10. After the rest and the AICT conditions only, they were instructed to complete the Revised-Mystical Experience Questionnaire (MEQ30, Barrett et al., 2015) and the Near-Death Experience Scale (Greyson, 1983). In this current article, we only analyzed sociodemographic data, paranormal beliefs (Tobacyk, 2004), intensity of the experience related to the rest and AICT, the MEQ30 (Barrett et al., 2015) and the NDE scale (Greyson, 1983).

Outcomes

Various sociodemographic data were collected, including the age, sex, education, nationality, culture of origin, family status, whether the individual are religious or spiritual, whether they are atheists, their current religious/spiritual practice, if they ever used alcohol,

drugs or psychotropic drugs, whether they ever experienced a life-threatening situation, a coma, a NDE, or a physical or psychological trauma. In this study, we only analyzed the participants' religiosity/spirituality.

The Revised Paranormal Belief Scale (RPBS) is a self-reported scale that measures belief in paranormal phenomena through seven dimensions: Traditional Religious Belief (e.g. "The soul continues to exist though the body may die"), Psi (e.g. "Some individuals are able to levitate [lift] objects through mental forces"), Witchcraft (e.g. "Black magic really exists"), Superstition (e.g. "Black cats can bring bad luck"), Spiritualism (e.g. "Your mind or soul can leave your body and travel (astral projection)"), Extraordinary Life Forms (e.g. "The abominable snowman of Tibet exists"), and "Precognition" (e.g. "Astrology is a way to accurately predict the future"). It consists of 26 items to which participants respond to using a seven-point Likert scale (1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = uncertain, 5 = slightly agree, 6 = moderately agree, and 7 = strongly agree). Total score is calculated by doing the sum of all items (range: 26–182) while scores for the subscales are based on means (range: 1–7). The higher the score the higher one endorses paranormal beliefs (Tobacyk, 2004).

The intensity of the experience was assessed using a numerical rating scale (NRS) ranging from 0 (not intense at all) to 10 (the most intense ever). The higher the score, the higher the intensity of the experience. We here only used the scores referring to the rest and the AICT condition (without auditory stimulation).

The revised Mystical Experience Questionnaire 30 items (MEQ30) assesses the occurrence and intensity of a mystical-type experience. It comprises four factors: Mysticality (e.g. experience of pure being and pure awareness, experience of the fusion of personal self into a larger whole), Positive Mood (e.g. experience of amazement, experience of ecstasy), Transcendence of time and space (e.g. loss of usual sense of time, loss of environmental awareness), and Ineffability (e.g. sense that the experience cannot be described adequately in words). It consists of 30 items to which participants respond using a six-point Likert scale (0 = none, not at all, 1 = so slight cannot decide, 2 = slight, 3 = moderate, 4 = strong, equivalent in degree to any previous strong experience or expectation of this description, 5 = extreme, more than ever before in my life and stronger than 4). Scores are obtained by calculating a mean to item responses, with a total score ranging from 0 to 5. A complete mystical-type experience is considered when the score is equal or above 60% on all factors, that is, a score equal to 3 on the total score and all subscales (Barrett et al., 2015).

The Greyson NDE Scale is composed of 16 questions that assess whether a person has had a subjective experience that can be considered an NDE. This scale is divided into four subscales (Cognitive, e.g. "Did time seem to speed up?"; Affective, e.g. "Did you have a feeling of peace or pleasantness?"; Paranormal, e.g. "Were your senses more vivid than usual?"; and Transcendental, e.g. "Did you seem to enter some other, unearthly world?"). It has a maximum score of 32, with a score ranging from 0 to 2 (0 = not present, 1 = moderately or ambiguously present, and 2 = definitely present) for each question. A minimum score of 7 is the cutoff for a "true" NDE (Greyson, 1983). This scale was used to assess NDE-like.

Statistical Analyses

First, descriptive statistics were estimated. Discrete variables were expressed with count and percentages. The normality of quantitative variables was examined graphically with histograms and quantile-quantile plots and statistically with a Shapiro-Wilk normality test. To answer the

primary aim, univariate analyses were performed. This enabled a paired *t*-test comparison of the MEQ30 total and subscale scores between the AICT condition and rest. A χ^2 test was conducted to assess the difference between complete mystical-type experiences during AICT and rest conditions. Then, to answer secondary research questions, Spearman correlations were carried out to assess the link between religiosity/spirituality, paranormal beliefs (RPBS), the MEQ30 (during AICT), NDE-like (NDE scale during AICT), and intensity of experience (during the AICT) scores. To assess the link between religious/spiritual practices and MEQ30, we carried out an independent *t*-test. The correlation of the MEQ30 total score with each item of the NDE scale using adjusted Spearman correlations was estimated. To deepen our analyses, we investigated several variables (i.e. religious/spiritual practices, paranormal beliefs, intensity of the experience, MEQ30, and NDE scale) by comparing individuals who reported a complete mystical-type experience with those who did not, using a χ^2 test for discrete variables and a U Mann-Whitney test for numerical variables. Two-tailed *p*-values < .05 were considered to be statistically significant. When appropriate (i.e. correlation between the MEQ30 total score during AICT and each item of the NDE scale), multiple comparisons were corrected using the Holm method. The acquired data were processed using statistical data processing software Rcmdr version 2.9–1 (Using the R Commander, n.d.) and Jamovi version 2.4 (Jamovi - Stats. Open. Now., 2025). Figures were produced using RStudio (Posit team, 2025).

Results

Participants

The mean age of the participants was 44.96 (standard deviation [*SD*] = 13.48) years-old and most of the participants were women (*n* = 23, 85%). A little more than half of the participants reported having religious or spiritual practices (*n* = 14, 52%). A detailed description of the sample can be found in Appendix 1.

The endorsement of paranormal beliefs was low, as the mean total score (83.95, *SD* = 28.01) fell below half of the maximum possible score (91 out of 182). The pattern of results was similar considering the subscales except for the Spiritualism subscale that reached a mean score of 4.63 (*SD* = 1.90; Table 1).

Intensity of the Experience

The intensity of the AICT experience (7.81, *SD* = 1.47) was significantly higher (*W* = 374, *p* < .001) compared to the rest experience (2.96, *SD* = 2.21).

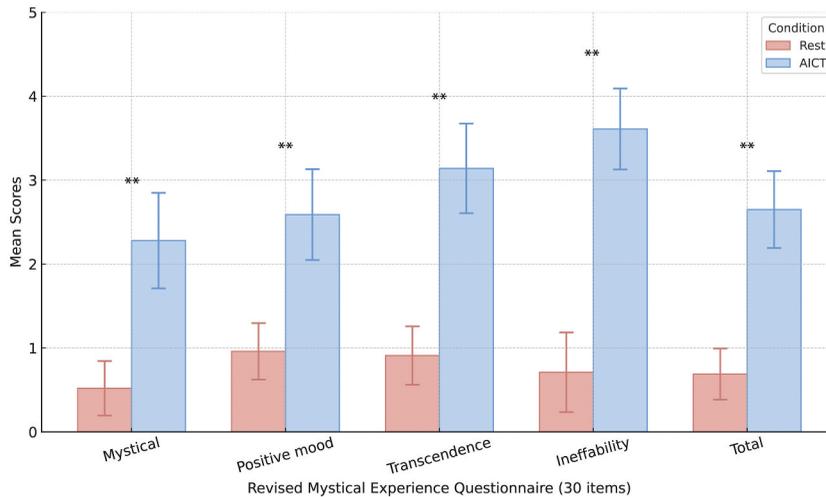
Mystical-Type Experiences Induced by AICT

During AICT, participants obtained significantly higher scores on all subscales of the MEQ30 compared to rest (Figure 1 and Appendix 2). This means that AICT induced more mystical-type experiences compared to rest. Notably, 8 of the 27 volunteers (29%) reported a complete mystical-type experience (total score and scores of all the subscales > 3) during AICT while none of them had a complete mystical-type experience during rest.

To further our analysis, we examined several variables – including religious/spiritual practices, paranormal beliefs, experience intensity, MEQ30 scores, and NDE scale scores – by comparing

Table 1. Paranormal Beliefs Assessed via the Revised-Paranormal Beliefs Scale ($N = 27$) Expressed in Means, Standard Deviations (SD) and Ranges

	Mean (SD)	Min – max
Traditional religious belief (1–7)	2.67 (0.94)	1–4.50
Psi (1–7)	3.50 (1.33)	2–6.50
Witchcraft (1–7)	3.72 (1.75)	1–7
Superstition (1–7)	1.34 (0.61)	1–3
Spiritualism (1–7)	4.63 (1.90)	1–7
Extraordinary life form (1–7)	2.73 (0.94)	1–5
Precognition (1–7)	3.40 (1.41)	1–6.25
Total score (1–182)	83.95 (28.01)	31–133

**Figure 1.** Mean Scores and 95% Confidence Interval of MEQ30 Total and Subscale Scores Across Rest and AICT Conditions

Differences in mean scores and 95% Confidence Interval of the Revised Mystical Experience Questionnaire's (30 items, MEQ30) total score and its subscales: mystical, positive mood, transcendence, ineffability between rest and auto-induced cognitive trance (AICT) conditions. Histograms represent mean scores, error bar represent 95% Confidence Interval, red: rest condition, blue: auto-induced cognitive trance condition, **: $p \leq .001$.

individuals who reported a complete mystical-type experience with those who did not. Except for the MEQ30 and the NDE scale, none of the variables differed significantly between the two groups. Logically, participants with complete mystical-type experiences scored significantly higher on the MEQ30 and the NDE scale compared to those who did not reach complete mystical-type experiences (Appendix 3).

Exploring Mystical-Type Experiences: Paranormal Beliefs, Religiosity/Spirituality, Intensity of Experience and NDE-Like

Results indicated no significant correlations between any of the subscales of the MEQ30 during AICT and any of the subscales of the PRBS (Appendix 4), indicating that the endorsement of paranormal beliefs was not linked to having mystical-type experiences during AICT. Having religious/spiritual practices was not significantly linked to any subscales of the MEQ30 during AICT. This means that whether participants practiced

religious/spiritual activities or not was not linked to having mystical-type experiences during AICT (Appendix 5). Intensity of the AICT experience was positively correlated with the Mysticality subscale of the MEQ30. No other subscale significantly correlated with the intensity of the experience during AICT (Appendix 6), indicating that, except for the Mysticality subscale, experiencing mystical-type events during AICT was not linked to the intensity of the AICT experience.

Regarding the link between the MEQ30 and the NDE scale, first, the Mysticality subscale of the MEQ30 was significantly correlated to the Affective, the Paranormal, and the Transcendence subscales of the NDE scale as well as with the total score. Second, the Positive Mood subscale of the MEQ30 was significantly correlated with the Affective and total subscales of the NDE scale. Third, the Transcendence subscale of the MEQ30 was significantly correlated with the Transcendental and total subscales of the NDE scale. Finally, the total score of the MEQ30 was significantly correlated with the Affective, Paranormal, Transcendental and total subscales of the NDE scale. All other links were not significant (Figure 2 and Appendix 7).

When assessing the link between the MEQ30 total score during AICT and each item of the NDE scale, only item 7, “Did you feel a sense of harmony or unity with the universe?” correlated significantly with the MEQ30 total score ($\rho = .67$, $p^{\text{adj}} = .01$).

Discussion

This study aimed at retrospectively examining whether AICT can induce mystical-type experiences and if specific attributes are linked to those experiences within the context of AICT. Results indicate that, compared to rest, AICT induced higher scores of mystical-type experiences and that about 29% of participants had complete mystical-type experiences, as measured by the MEQ30. Mean scores obtained at the MEQ30 correlated with those of the

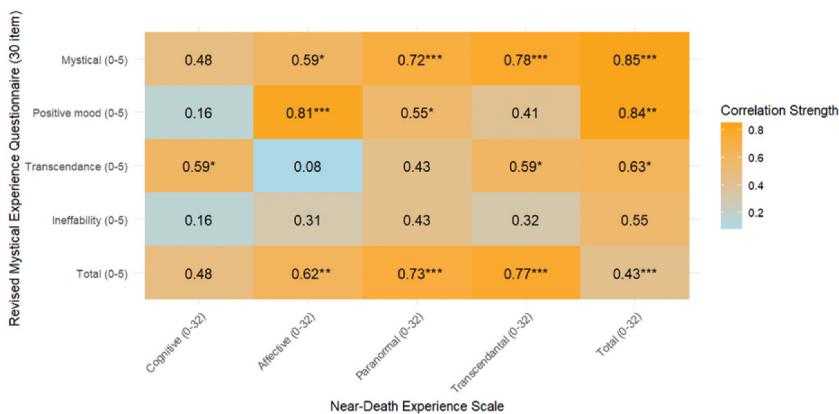


Figure 2. Heatmap of the Correlation Matrix Between MEQ30 and NDE Scale Total Scores and Subscales During AICT

Correlation Matrix Between the Revised Mystical Experience Questionnaire (30 items, MEQ30) total score and its subscales: mystical, positive mood, transcendence, ineffability and the Near-Death Experience (NDE) Scale total score and its subscales: cognitive, affective, paranormal, transcendental. Correlation coefficients are represented in the cells. Significance levels are denoted as follows: *** $p \leq .001$, ** $p \leq .01$, * $p < .05$. The color gradient ranges from blue (weaker correlations) to orange (stronger correlations), indicating the strength of the relationships.

NDE scale. One item of the NDE scale correlated with the total MEQ30 score: the feeling of harmony or unity with the universe. No other attributes nor sociodemographic data appeared to have any relation to mystical-type experiences in this context.

Our first hypothesis was confirmed since AICT induced more mystical-type experiences compared to rest. Mystical-type experiences were previously reported both spontaneously and induced in studies using trance states in healthy cohorts (Cardena, 2005; Cardena et al., 2013; de Castro, 2015; Evans & Lynn, 2021; Lynn & Evans, 2017; Van Gordon et al., 2019). Cardena et al. (2013) showed that “neutral” hypnosis (i.e. hypnosis with the only suggestion to go deep in hypnosis) led to transcendental experiences only among those scoring high in hypnotic suggestibility. Although Cardena et al. (2013) did not aim at producing mystical-type experiences, Lynn and Evans (2017) specifically designed two studies to induce mystical-type experiences, through hypnosis, in healthy participants (Evans & Lynn, 2021; Lynn & Evans, 2017). Their results showed that hypnosis could induce mystical-type experiences and that this was more likely for participants with a high hypnotic suggestibility (Evans & Lynn, 2021; Lynn & Evans, 2017). Similar results were found in advanced meditators as they scored higher on the Mysticism scale (Hood, 1975) during emptiness meditation compared to ordinary resting state or mindfulness meditation (Van Gordon et al., 2019). These findings were also observed when comparing meditation practitioners to non-practitioners (de Castro, 2015).

Mysticism and mystical-type experiences have long been linked to shamanic trances. As shamans and spirit possession practitioners alter their conscious experience, often describe their experience as entering a “supernatural” world which manifests phenomenologically as experiencing a sense of boundarylessness or sense of unity, out-of-body experiences, and possession (Marie et al., 2024; Winkelmann, 2024). These mystical-type experiences occur within a particular context (e.g. with or without psychedelic substances) that are most of the time rooted in spiritual beliefs and/or religion. AICT is based on the idea that the capacity to enter such a trance state is a natural human ability and does not require adherence to any spiritual, shamanic, or ritualistic belief system. The technique was therefore developed to be devoid of explicit religious or symbolic elements, with the intention of making it accessible to all individuals, regardless of their personal beliefs. However, participants in the present study were already familiar with AICT and its creator, C.S., through her books and personal accounts, which include descriptions of her experiences with Mongolian shamanism. These narratives may have introduced implicit suggestions – such as sensations of spirit possession or encounters with non-ordinary entities – that could have influenced participants’ expectations. Furthermore, during the training workshops, participants were exposed to repetitive sound loops and instructor vocalizations involving animal calls, unfamiliar melodies, or expressions in an unrecognizable language, which, while not intended as rituals, may still resemble ritualistic elements. These components, despite AICT’s theoretical distancing from spiritual or shamanic practices, could have contributed to shaping the phenomenology of the participants’ experiences (see also the Limitations section for further discussion). Furthermore, the absence of any link between religious/spiritual practices and mystical-type experiences during AICT is in line with the fact that these experiences seem to occur in the absence of any spiritual/religious or ritualistic moderator. However, our small sample size is probably the reason for this null result, encouraging us to remain cautious in our interpretations. As presented in the

introduction, NDEs are often referred to as mystical-type experiences. Interestingly, the sense of unity has been found to be one of the features most often experienced in NDEs (Charland-Verville et al., 2014; Greyson, 2014). Similarly, our findings show that Item 7 of the NDE scale, the one related to unity, was the only item that correlated positively with the MEQ30 total score. Although some authors (Barrett & Griffiths, 2018; Pahnke, 1966) considered unity as a key characteristic of mystical-type experiences, they did not necessarily elevate it above other aspects such as the noetic quality, ineffability, or the deeply felt positive mood. Other authors, on the other hand described unity as the main feature of mystical-type experiences (Pennachio, 1986; Wulff, 2014). Although mystical-type experiences induced by AICT share similar features with NDE-like, it is interesting to observe that unity was the stand-out feature. Nonetheless, given the conceptual overlap between the NDE Scale and the MEQ30, significant correlations between these two instruments are unsurprising.

Unity and, more largely, mystical-type experiences have been linked to long term improvements in healthy participants and patients in the psychedelic literature. In the healthy cohorts, these improvements concerned positive effect on mood, attitudes, and self-care behaviors, prosocial attitudes/behaviors and healthy psychological functioning (Griffiths et al., 2006, 2008, 2011, 2018). Specifically, participants reported having improved family relationships, increased physical and psychological self-care behaviors and increased spiritual practice 14 months after the psilocybin intake (Griffiths et al., 2008). Regarding patients, studies show reduction of symptomatology (e.g. anxiety, depression, fear of death) and life satisfaction/well-being increases (Gukasyan et al., 2022; McCulloch et al., 2022; Roseman et al., 2017; Ross et al., 2016). Future studies should address whether mystical-type experiences induced by other procedures such as AICT and hypnosis induce lasting after-effects. Especially since another study examining phenomenological features of AICT has shown that 52% of their sample reported a feeling of unity as assessed by a self-made questionnaire (Grégoire et al., 2024).

Contrary to our findings, previous works found that belief in the paranormal was positively associated with mystical-type experiences (Kohr, 1980; Palmer, 1979; Shaffer, 1982; Thalbourne, 1994, 2006; Van Quekelberghe et al., 1991). Our results might be non-significant because our sample did not highly endorse paranormal beliefs. This is likely to explain the absence of any relationship between paranormal beliefs and mystical-type experiences. Results regarding the intensity of the experience align with previous findings showing that the intensity of an altered state of consciousness is positively associated with the occurrence of mystical-type experiences. In the psychedelic literature, higher doses of psilocybin were linked to greater mystical-type experiences (Barrett et al., 2015; Griffiths et al., 2011). Similar associations have been reported in non-pharmacological contexts. For instance, in studies using hypnosis or meditation, participants reporting higher levels of intensity also scored higher on mystical experience scales (Lynn & Evans, 2017; Van Gordon et al., 2019). Future studies should further investigate how the intensity of a subjective experience may modulate the phenomenological features of non-pharmacologically induced experience such as AICT, and whether it acts independently or in interaction with other variables like suggestibility, absorption or expectation for example.

This research has some limitations. First, our sample was small with the consequent low power in analyses. Second, the study was not designed with the sole intention to answer the present research question. A more specifically designed study could have included other questionnaires (e.g. 5-Dimensional Altered States of Consciousness, Dittrich, 1998), long

term assessments, or even an integration session (as in psychedelic-assisted psychotherapy) to fully understand mystical-types experience within the context of AICT. Knowing that mystical-type experiences are multidimensional, future studies should examine the dynamic relationship between the features of mystical-type experiences and relate them to psychological and behavioral modifications. Moreover, assessing mystical-type experiences after the imagination condition would have provided a more relevant comparison than the rest condition. Third, it is also important to note, that the experiential aspects (i.e. spirit possession, out-of-body experience, transcendental experiences) of C.S., the AICT creator, has been widely publicized, and that these phenomenological anecdotes are familiar to our sample. So, even outside any particular context or belief system, it is possible that this has somehow primed our participants. A recent study provides support for this hypothesis by comparing two trance practices developed by leaders trained in shamanic communities (Grégoire et al., 2024). Findings indicate that despite shared features between the two practices – such as emotional expression, altered perceptions, and a sense of unity – only participants in the AICT group reported vocal phenomena like sounds, songs, screams, and the use of what might appear to be unknown languages. These differences are likely attributable to variations in the induction techniques and the distinct suggestions and explanations provided by the respective figurehead of each practice. A study controlling or at least evaluating experimenter effects and demand characteristics might clarify this issue (see Cardeña & Pekala, 2014). Fourth, variables found to predict alterations of consciousness such as hypnotic suggestibility and expectancies (Cardeña & Terhune, 2014) should be evaluated in the future. Furthermore, neuroscientific studies have linked mystical-type experiences to particular patterns of activation and/or connectivity, it would thus contribute to the current understanding of AICT, mystical-type experiences and neurophysiology of consciousness to also employ neuroimaging and neurophysiological tools.

In conclusion, this study shows that AICT, a volitionally induced procedure that seeks to modify conscious experience can lead to mystical-type experiences in healthy volunteers. No specific attribute (sociodemographic, spiritual/religious practices) nor paranormal beliefs were found to be linked to the occurrence of a mystical-type experience during AICT. Future studies should address the multidimensionality of mystical-type experiences, use mixed methods, control for potential intervening variables, and examine the benefits of such experiences for personal development and health in patient populations.

Acknowledgments

The authors thank the volunteers for their participation in the study. They also thank Gabriel Castellar Barroso for his help with coding the heatmap correlation matrix, and Maxime Jamouille for his help in editing colors in [Figure 1](#). JA is postdoctoral fellow funded (1265522N) by the Fund for Scientific Research-Flanders (FWO). OG is research associate at FRS-FNRS.

Disclosure Statement

CS is the founder of the TranceScience Research Institute, Paris. All other authors declare no conflict of interest.

Funding

The study was supported by the University and University Hospital of Liège and its Algology Interdisciplinary Centre and its Fonds Internes pour la Recherche Scientifique - FIRS, the AstraZeneca foundation, the Belgium Foundation Against Cancer: Grants Number: 2023/081, the BIAL foundation, the Fonds National pour la Recherche Scientifique (FNRS), and the European Union's Horizon Europe research and innovation program under the Marie Skłodowska-Curie grant agreement Number: [101151810].

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Data Availability Statement

The data is available upon request to the authors.

Generative Artificial Intelligence Statement

ChatGPT (<https://chatgpt.com/>) has been used to edit the English language.

Author Contributions

Conceptualization: A.V. and O.G.; methodology: A.V. and O.G.; formal analysis: A.B.; investigation: A.V., O.G., C.M., and J.A; resources, A.V. and O.G.; writing – original draft: A.B.; writing – review and editing: all authors; visualization: A.B. and N.A.; supervision: A.V. and O.G.; project administration, A.V. and O.G.; funding acquisition, A.V. and O.G. All authors have read and agreed to the published version of the manuscript.

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