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# Editor's Foreword

This issue of the *Journal* contains three substantial articles by authors representing four countries: Denmark, Germany, Norway, and the United States. Each article makes a valuable contribution to research in the field of near-death studies.

To begin, lead-author Øystein Buer, a PhD candidate in theology at the MF Norwegian School of Theology, Religion and Society and a hospital chaplain at Oslo University Hospital, both in Oslo, Norway, reports the results of his PhD research. He is joined by co-authors Tatjana Schnell, PhD, a professor of existential psychology at MF Norwegian School of Theology, Religion and Society, and a fellow at the Humanistic University of Berlin in Berlin, Germany; and additional co-authors located in Oslo: Mary Kalfoss, PhD, a professor emerita of nursing at VID Specialized University; Lars Weisæth, MD, PhD, a professor emeritus of psychotraumatology and psychoanalysis at the Institute of Clinical Medicine at the University of Oslo; Camilla G. Aukrust, PhD, a registered nurse in the Department of Neurosurgery at Oslo University Hospital; and Angelika Sorteberg, MD, PhD, a senior consultant in neurosurgery in the Department of Neurosurgery at Oslo University Hospital and a professor at the Institute of Clinical Medicine at the University of Oslo. Together, they convey results of a groundbreaking study of near-death experiences (NDEs) during a heretofore neglected population in the field of near-death studies: survivors of aneurysmal subarachnoid hemorrhage (aSAH). Their detailed work addresses the relationship between various aspects of physical consciousness associated with aSAH and experiencers' subjective experiences and post-NDE meaning-making.

Next, J. Steve Miller, PhD, an assistant professor of philosophy at Kennesaw State University in Kennesaw, Georgia, reports the results of his study aimed at differentiating core from non-core NDE features. He alerts researchers to the danger of drawing conclusions on topics such as a comparison of contemporary versus ancient and indigenous NDEs, sin, human life purpose, the nature of God, the teachings of religion, and the real versus hallucinatory nature of NDEs, from phenomena that only a relatively small percentage of near-death experiencers have described in their NDE accounts.

The issue closes with an in-depth work by Sandro Passavanti, PhD, a fellow at the University of Southern Denmark in Odense. His focus is death-related sensory experiences (DRSEs)—perceptual phenomena reported by or observed in patients who are approaching death. He documents how two ancient medical practitioners—Aretaeus of Cappadocia, a 2nd-century AD Greek Pneumatist physician, and Caelius Aurelianus, a 5th-century AD Methodist medical author—described and interpreted DRSEs. Comparing the two practitioners' interpretations, he finds the current debate over whether these phenomena are veridical or illusory reflected in their works.

I expect that readers interested in emerging perspectives from research in the field of near-death studies will find substantial stimulation from the contributions to this issue.

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# Near-Death Experiences During Various Consciousness Phases After Rupture of an Intracranial Aneurysm

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*ABSTRACT:* Near-death experiences (NDEs) occur in individuals who are close to death or in situations of sudden, unexpected, intense physical or emotional danger. Aneurysmal subarachnoid hemorrhage (aSAH) is such an event; however, NDEs have not been investigated in survivors of aSAH. To this end, we

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investigated NDEs in aSAH patients using the Near-Death Experience Scale and related participants' scores to medical variables. Data collection included the phases surrounding unconsciousness in which participants had experiences and participants' perception of hallucinations. All participants reporting subjective experiences during aSAH underwent a structured telephone interview, and selected individuals participated in in-depth interviews. A total NDE Scale score > 0 was reported by 58.6%; a score ≥7 points was reported by 10.6%. Multiple regression analysis identified the presence of *distressing experiences* and greater *aSAH hemorrhage severity* as predictors of higher NDE Scale scores. Most NDEs were experienced after awakening from unconsciousness, and the phases surrounding unconsciousness in which NDEs occurred were dependent on aSAH severity. Participants clearly distinguished NDEs from hallucinations, in that NDEs had an inherent deep existential meaning and appeared real both when experienced and afterwards.

*KEYWORDS*: near-death experiences, aneurysmal subarachnoid hemorrhage, consciousness phases, hallucinations, distressing experiences

Near-death experiences (NDEs) have been reported since ancient times (Martial et al., 2017; Zaleski, 1987). Among reports from the beginning of the 20th century, the Swiss geologist Albert Heim described 30 NDEs, mostly among falling mountain climbers (Holden et al., 2009; Nahm, 2016). Raymond Moody (1975) introduced the term "*near-death experience*" to a wider audience in his seminal book *Life After Life*. This publication attracted considerable interest and generated substantial research. The growing interest in NDEs has resulted in the development of various instruments to assess the characteristics of these experiences, perhaps most prominent among them the Near-Death Experience Scale (NDE Scale; Greyson, 1983; Holden et al., 2009).

People who have had NDEs have described them as more vivid than everyday reality, and on the Memory Characteristics Questionnaire, they rated memories of their NDEs higher than their memories of physical events (Moore & Greyson, 2017). NDEs have also been described as deep and universal mental states with a clear phenomenology during an altered state of consciousness (Facco et al., 2015). Among religious traditions such as Christianity and Buddhism, NDEs have been interpreted by some adherents as experiences that point to existence beyond the border of physical death (Badham, 1997). NDEs have also been understood to be

> unusual, often vivid and realistic, and sometimes profoundly life-changing experiences occurring to people who have been physiologically close to death, as in cardiac arrest or other life-threatening con-

> ditions, or psychologically close to death, as in accidents or illnesses in which they feared they would die. (Greyson, 2014, p. 334)

NDEs have been investigated in individuals who have experienced cardiac arrest (Parnia et al., 2023) or in those who were psychologically close to death, such as in accidents with no actual injuries (Nahm, 2016) (Greyson, 1983) and in other situations in which fear of death was present (Zhi-ying & Jian-xun, 1992). NDEs appear to be connected to multiple contexts, making the phenomenon's origin ambiguous (Martial et al., 2020).

Aneurysmal subarachnoid hemorrhage (aSAH) is a life-threatening, traumatic event that leaves a deep impact on the experiencer (Nordenmark et al., 2020) . To the best of our knowledge, NDEs have not been studied in participants suffering from aSAH, a severe form of brain hemorrhage with a mortality rate as high as 40%. This medical crisis typically occurs very suddenly, without warning signs, in conjunction with the rupture of an intracranial aneurysm. When this rupture occurs, the intracranial pressure increases to such an extent that the intracranial circulation ceases for a time (Nornes, 1973). If this vast intracranial pressure does not spontaneously decline, the individual will die. Upon decline of the intracranial pressure and spontaneous restoration of the cerebral circulation, survivors may be fully conscious or in a prolonged coma, depending on the severity of hemorrhage.

Rupture of an aneurysm is described as excruciatingly painful; in German, it is called "Vernichtungskopfschmerz" (Petridis et al., 2017), directly translated into English as "annihilation pain." Experiencing such extraordinary pain, individuals understand that their life may be at stake. These aSAH features render the cohort of patients experiencing aSAH interesting with regard to NDE studies. An aSAH is a potentially psychologically traumatizing and painful event that may include experiences such as fear and distress in addition to features specified in the NDE Scale—which does not include features of distressing NDEs (Greyson & Bush, 1992).

Although researchers have investigated the temporality of NDE features (Martial et al., 2017), the assessment of whether these features are experienced in a chronological order during unconsciousness, or during other consciousness states surrounding unconsciousness, remains an underexplored area of inquiry. Most researchers have addressed features of NDEs without reference to any specific consciousness phases in which they may have occurred. Therefore, in the present study, we queried aSAH patients with NDEs—who represented the

whole range of consciousness, from being fully awake to being in a deep coma—about the self-reported phases of consciousness they were in during their NDEs. Thus, our purpose in this study was to present the frequency and phenomenology of NDEs in aSAH survivors and link these characteristics to different phases of consciousness and various medical variables. These data may clarify how medical closeness to death—hemorrhage severity—may be related to NDEs. We also aimed to explore a wider specter of what participants experienced in their NDEs to supplement what is already known about the phenomenon, with particular attention to other variables, such as hallucinations, fear, and distress associated with the medical crisis, that could be linked to the content and intensity of NDEs.

## Method

Before beginning our study, we sought and received approval from the Norwegian regional ethical committee and the Oslo University Hospital institutional data protection officer. All participants provided written informed consent.

### Participants

Participants in this study were 198 Oslo University Hospital aSAH survivors who met the inclusion criteria and returned a completed consent and questionnaire package. We began by consulting an Oslo University Hospital institutional quality registry of patients registered since January 1, 2013—the date that the registry began—to identify former or current patients who were, at the time of the study, age 18 years or older; who had suffered an aSAH at least one year previously, a time lapse that would give them a reasonable period of recovery before participation; whose language and cognitive abilities rendered them capable of giving informed consent and understanding and answering a questionnaire and participating in an in-depth interview, both in Norwegian; and who were not already enrolled in another clinical study that involved answering some of the same questionnaires as were included in this study.

As of January 1, 2020—the date we completed our consultation of the registry, of the 1,155 aSAH survivors we initially identified, six were below age 18, 357 were deceased, 28 lived abroad or were untraceable, 50 had insufficient language skills, 243 were in unknown or too poor health condition, and 96 were participants in other studies. Thus,

we distributed 375 consent and questionnaire packages. Because the study was conducted during the SARS COVID-19 pandemic, when outpatient visits were largely avoided, we distributed seven packages in person to patients attending outpatient follow-up visits at the hospital and the remaining 368 by mail; in both cases, participants completed the package at home and returned it via return mail. Five packages were returned to sender, one was returned empty, and 169 were not returned. Thus, we received 199 return envelopes with signed consent forms and completed questionnaires. One participant who had returned the package was excluded because of non-aneurysmal SAH, resulting in a final return rate of 52.8%.

Table 1 shows our participants' demographic data, categorized by total NDE Scale scores of 0, 1-6, or ≥7. A Mann-Whitney U test revealed no significant differences between the three groups with regard to sex, age at hemorrhage, or time since hemorrhage. Thus, the three groups were statistically equivalent regarding those three demographic variables.

## Assessments

### Medical and Psychological Variables From Medical Records

For each participant, in addition to demographic data, we registered several medical variables. To assess hemorrhage severity, we used the World Federation of Neurosurgical Societies (WFNS) grade ("Report of World Federation of Neurological Surgeons Committee on a Universal Subarachnoid Hemorrhage Grading Scale," 1988). WFNS grades range from 1 to 5: Grades 1-3 indicate being fully awake or having slightly reduced consciousness, grade 4 indicates a significant reduction in consciousness, and grade 5 indicates deep coma. We scored WFNS just prior to aneurysm repair or intubation. Because consciousness prior to hospital arrival can vary among patients within all WFNS categories, we categorized our participants' worst state of consciousness prior to arrival using a four-point scale: *none,* indicating no loss of consciousness; *short,* indicating loss of consciousness for a few minutes; *prolonged,* indicating loss of consciousness for more than a few minutes but partly or fully regaining consciousness before aneurysm repair; and *persistent,* indicating loss of consciousness that began at aSAH and continued uninterrupted until aneurysm repair.

To assess the amount of blood released by the aneurysm rupture, we used the Fisher score (Fisher et al., 1980), whereby grades 1 and 2 indicate small amounts, grade 3 indicates a thick layer, and grade 4

indicates a thick layer as well as intraventricular or intraparenchymal blood. We registered the aneurysm location and mode of aneurysm repair—surgical versus endovascular. We also noted the time on invasive respiratory mechanical support and total length in neurointensive care. We registered cerebral vasospasm, as a potential cause of brain ischemia possibly causing disorientation and hallucinations, on a 3-point scale: *none, light to moderate,* or *severe.* We also registered whether participants were operated on with a cerebrospinal fluid shunt and whether radiological evidence indicated cerebral infarction.

In addition to these medical variables, we searched participants' medical records for certain psychological variables, specifically health care personnel's observations, and/or patients' reports, of fear, hallucinations, or other indications of physical or psychological distress related to the aSAH.

**NDE Scale**

Each participant completed the Norwegian version of the NDE Scale (Buer et al., 2016; Greyson, 1983) to indicate the presence and depth of an NDE associated with their aSAH. The scale contains 16 items, each with three response options: *0* indicating the absence of, *1* indicating the mild presence of, and *2* indicating the strong presence of a particular NDE feature. Thus, the total score could range from 0 to 32. The original English instrument has been established as both reliable and valid (Greyson, 1983); psychometrics for the Norwegian version have not been established. We also encouraged participants to describe other experiences not addressed by NDE Scale items or to provide any other comments.

Greyson (1983) established a total NDE Scale cut-off score of 7 points to indicate the presence of an NDE (see also Martial et al., 2020). We, however, chose to analyze all positive scores. The NDE Scale comprises four subscales—cognitive, affective, paranormal, and transcendental—which we also used in some of our analyses. We asked participants who indicated the mild or strong presence of a feature to also indicate the phase of consciousness in which they experience it: prior to loss of consciousness, during unconsciousness, while awakening from unconsciousness, after having awoken from unconsciousness, or while dreaming. Regarding participants' qualitative data regarding additional descriptions and/or comments, because the NDE Scale does not address distressing NDE features, we noted whether participants indicated features of distressing NDEs (Momin et al., 2021).

**Interviews**

All interviews were translated from Norwegian into English by the first author and a co-author with a bilingual background. Some transcripts were translated using AI translation and validated by the translators.

**Validation Interviews.** All participants who had total NDE Scale scores greater than zero or who wrote that they did not understand the questionnaire were called for a validation interview (Ward et al., 2015). During the interview, we asked the participant to describe what had happened while they were critically ill and during the time after regaining consciousness. We asked participants to confirm their NDE Scale responses. If they had changed their opinion due to reduced memory or if they managed to give a clearer reflection, we changed the scores accordingly. Because the NDE Scale does not address the emotion of fear or the presence of distressing NDE features, we specifically asked for such experiences.

We summarized the content of the interviews in a written report. From these written reports, we selected eight participants for further in-depth interviews based on a variety of specific variables, such as a relatively more intense NDE as indicated by their total NDE Scale score, a relatively more severe hemorrhage, and representation of various consciousness phases.

**In-Depth Interviews.** We conducted structured in-depth interviews with the selected participants. One of the aSAH participants, who was a professional nurse, helped us develop the interview guide. The guide explored the main topics we found during the validation interviews, which contained NDE items as well as other items.

Before the in-depth interviews, we emailed the interview guide to the eight participants so that they could prepare themselves. The interview guide assessed three main domains: the experiences the participant had while being in the critical phase of the aSAH, the participant's interpretation of their experiences, and the impact of the participant's experiences on their life, life values, and religious/spiritual faith.

We recorded all interviews by phone using a loudspeaker (Ward et al., 2015). We then transcribed the interviews and conducted a content analysis (Flick, 2014).

## Analysis

We performed statistical analyses in SPSS v 28.0.1.1 (SPSS version 28.0.1.1, Armonk, NY, IBM Corp.). We present categorical variables as frequencies or percentages and continuous variables as means and standard deviations or as medians and interquartile ranges. We performed no imputation for missing data. We compared groups using the chi-square test for categorical data, the *t* test for continuous, normally distributed data, or the Mann-Whitney U test for continuous data that were not normally distributed. Backward multiple regression analysis was used to identify a parsimonious combination of variables in predicting the NDE score. For predictors of a dichotomous variable, we used multivariate regression analysis. Collinearity was checked with the tolerance factor, which had to exceed 1-$R^2$ to be accepted in the analysis. A two-sided $p < .05$ was considered significant.

# Results

## NDE Scale Scores

Figure 1 illustrates the frequency distribution of study participants with NDE Scale total scores >0.

Figure 1 Frequency Distribution among Study Participants of NDE Scale Total Scores Greater than Zero

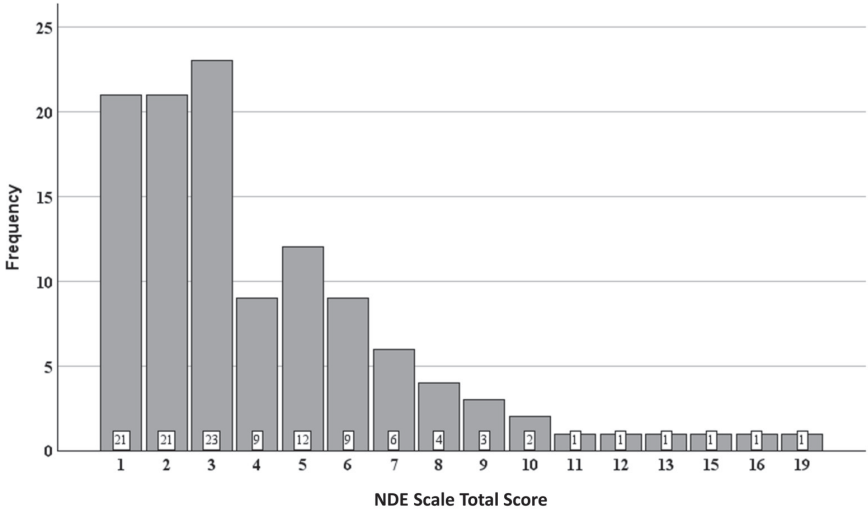


Figure 2 Frequency Distribution by Item for Participants with Positive NDE Scale Total Scores

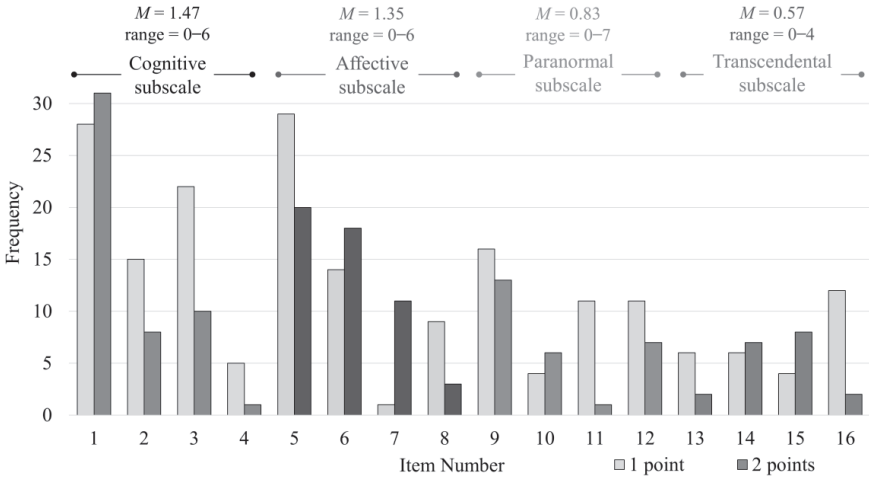



Figure 2 shows the frequency distribution of participants' positive scores of 1 or 2 on each NDE Scale item. In order, the most frequently endorsed items were 1—time distortion, 5—feeling of peacefulness/well-being, 3—scenes from the past, 6—feeling of joy, 9—more vivid senses, and 16—reaching a border or point of no return. Also shown are the mean and range of participants` scores for each of the four subscales: *cognitive, affective, paranormal, and transcendental.*

## NDE Scale Total Score and Participant Variables

Table 1 shows participants' demographic, medical, and psychological data categorized by three groups: participants' NDE Scale total scores of 0, 1–6, or ≥7.

The three groups differed significantly regarding the length of pre-hospitalization loss of consciousness, haemorrhage severity (WFNS grades 4-5), severity of vasospasm, presence of cerebral infarction, distressing experience, fear, and hallucinations reported by patient but not healthcare worker. To identify the most parsimonious variables contributing to the NDE score, variables at $p < .05$ were entered into a multiple regression analysis with backward elimination. This analysis revealed a model with the most parsimonious variables of *distressing experience* and *severe hemorrhage (WFNS grades 4-5)*: $F(2, 196) = 10.09$, adjusted $R^2 = .08$, $p < .001$. The model equation was: NDE score

**Table 1** *Participant Demographic, Medical, and Psychological Data*[1]

| **NDE Scale score** | **0** | **1-6** | **≥ 7** |
|---|---|---|---|
| *n* **(% of total *N* = 198)** | **82 (41.4%)** | **95 (48.0%)** | **21 (10.6%)** |
| Demographic data | | | |
| Sex | | | |
| Female | 64.6% | 69.5% | 61.9% |
| Male | 35.4% | 30.5% | 38.1% |
| Age in years at hemorrhage | | | |
| Mean (SD) | 55.5 (11.4) | 54.8 (10.8) | 51.4 (14.7) |
| Range | 20.7 – 84.2 | 25.8 – 83.1 | 15.6 – 74.7 |
| Time in years since hemorrhage | | | |
| Mean (SD) | 4.9 (3.2) | 5.1 (3.7) | 4.2 (2.5) |
| Range | 1.0 – 15.2 | 1.0 – 21.3 | 1.4 – 9.4 |
| Medical data | | | |
| Pre-hospitalization loss of consciousness | | | |
| None | 63.4% | 50.0% | 47.6% |
| Short | 14.6% | **27.7%*** | **28.6%*** |
| Prolonged | 11.0% | 10.7% | 4.8% |
| Immediate; continuous to intubation | 11.0% | 11.7% | 19.0% |
| Severe hemorrhage (WFNS grade 4-5) | 20.7% | 22.1% | **42.9%*** |
| Rebleeding prior to aneurysm repair | 8.5% | 8.4% | 14.3% |
| Large amount of blood (Fisher 3-4) | 63.4% | 62.1% | 71.4% |
| Aneurysm location | | | |
| Anterior cerebral arteries | 52.4% | 31.6% | 28.6% |
| ICA and MCA | 36.6% | 47.4% | 52.4% |
| Vertebrobasilar arteries | 11.0% | 21.1% | 19.0% |
| Surgical aneurysm repair | 53.7% | 44.7% | 47.6% |
| Vasospasm | | | |
| None | 48.8% | 48.4% | 33.3% |
| Light to moderate | 40.2% | 31.6% | 38.1% |
| Severe in one or multiple arteries | 9.8% | 20.0% | **28.6%*** |
| Shunt | 31.7% | 22.1% | 23.8% |
| Cerebral infarction | 30.5% | 31.6% | **57.1%*** |
| Hours on respiratory support | | | |
| Mean | 5.9 | 6.0 | 8.2 |

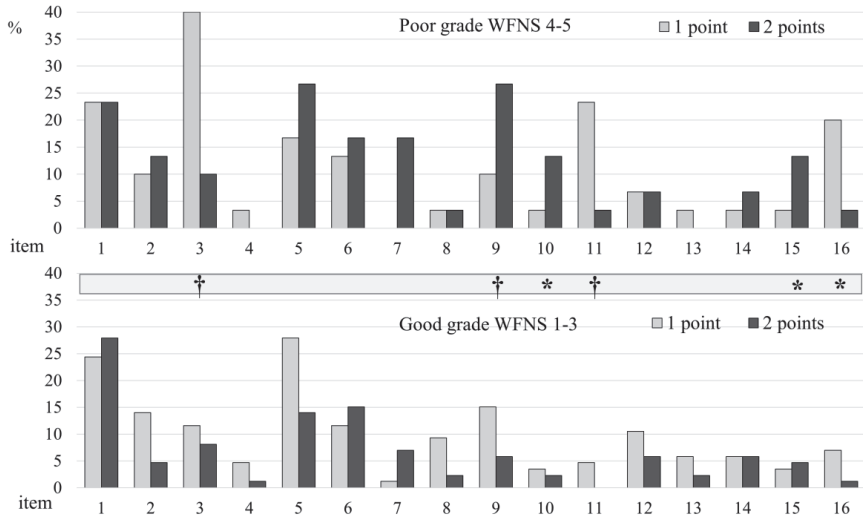
| **NDE Scale score** | **0** | **1-6** | **≥ 7** |
|---|---|---|---|
| ***n* (% of total *N* = 198)** | **82 (41.4%)** | **95 (48.0%)** | **21 (10.6%)** |
| Range | 4.0 – 37.3 | 4.0 – 63.9 | 4.7 – 194.3 |
| No reduced consciousness (GCS) at discharge | 61.0% | 72.6% | 61.9% |
| Length of hospital stay, in days | 14.5±6.8 | 15.3±5.8 | 17.2±10.3 |
| Psychological data | | | |
| Distress and fear | | | |
| Distressing experience | 12.2% | **32.6%**** | **42.9%*** |
| Fear | 15.9% | 25.3% | **38.1%*** |
| Distressing experience and/or fear | 18.3% | **40.0%**** | **47.6%**** |
| Distressing experience and fear | 9.8% | 17.9% | **33.3%**** |
| Hallucination, reported by | | | |
| Patient only | 4.9% | **13.7%*** | **23.8%**** |
| Health personnel only | 29.3% | 31.6% | 28.6% |
| Both patient and health personnel | 6.1% | 6.3% | 4.8% |
| Neither patient nor health personnel | 70.7% | 61.1% | 52.4% |

*Notes.* [1] *Except for NDE Scale Score data reported as a percentage of the total participants, all remaining percentage data are reported as a percentage of the subgroup.*
* indicates $p < .05$.
** indicates $p < .01$.

= 1.66 + 1.90 *distressing experience* + 1.41 *severe hemorrhage (WFNS grade 4-5)* + *e*. Both variables were significant ($t = 3.34$, $p < .001$ and $t = 2.68$, $p = .008$), respectively. When excluding participants with NDE Scale total score = 0 and entering identical variables, we obtained $F(1, 114) = 6.100$, adjusted $R^2 = .04$, $p = .015$. The model equation was NDE score = 3.77 + 1.72 *severe hemorrhage* (WFNS 4-5) + *e*. Hence, *severe hemorrhage* was the sole significant variable ($t = 2.47$, $p = .015$). Indeed, more severe hemorrhage/poor WFNS grade participants had a higher mean NDE Scale total score than less severe hemorrhage/good grade participants (respectively, 5.50±4.50 and 3.77±2.73, $p = .014$), and the percentage of participants scoring ≥7 was higher (respectively, 30.0% versus 11.6%, $p = .049$).

Because *severe hemorrhage* was the sole predictor of higher NDE Scale total scores, we dichotomized the scores by item and subitem into subgroups of those with more versus less severe hemorrhages; see Figure 3. Compared to participants with less severe hemorrhage, those

**Figure 3** NDE Scale Item Scores for Participants with More Severe/Poor Grade and Less Severe/Good Grade Intracranial Aneurysm Hemorrhages




*Note.* $N = 198$. * indicates $p < .05$. † indicates $p < .01$.

with more severe hemorrhage more strongly endorsed that during the NDE, item 3 – scenes from the past came back to them, item 9 – they experienced more vivid senses, and item 11 – scenes from the future came to them ($p < .01$), and item 10 – they seemed to be aware of things going on elsewhere, as if by ESP; item 15 – they saw deceased spirits or religious figures; and item 16 – they came to a border or point of no return ($p < .05$).

## Medical Records Data -- Hallucinations

A note seems warranted regarding results about hallucination. In examining records, we found that the most common observation was that participants talked to someone not present in the room and/or grasped at something in thin air. When participants reported what they saw to the nurse, it was often individuals known to them or animals/insects crawling on the ceiling or wall.

Hallucinations reported by our participants were often inconsistent with what healthcare providers had written in their medical journals. In the cases of only 12 patients, both the participants and the nurses

reported hallucinations, and in only 3 of these 12, the reported content of the hallucination was identical. In the other nine participants, what they remembered and reported to us was scarier and more bothersome than what they revealed to the nurses during hospitalization. None of the experiences that led to a positive response on the NDE Scale were interpreted as a hallucination by the participants, but some interpreted the NDE as a dream. Participants had very clear opinions about what they interpreted as a hallucination versus what they considered to have been real. However, the word *hallucination* may have been used to try to explain the experience, as with P7 during the validation interview.

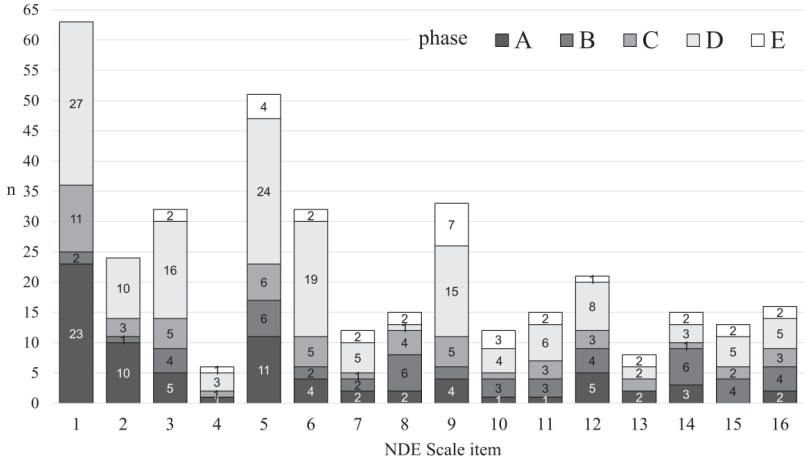
## Experience of NDE Scale Items Relative to Unconsciousness

Figure 4 shows when participants reportedly experienced various NDE Scale phenomena relative to unconsciousness—that is, phase A *prior to,* B *during,* C *awakening from*, or D *after having awoken from unconsciousness,* or phase E *while dreaming.* Participants reported most experiences in phases D (41.5%) and A (20.6%). Experiences in phase C comprised 15.2%, in phase B 13.3%, and in phase E 9.4%. Almost one-third (31.6%) of the participants with an NDE score > 1 had their experiences in more than one phase. In addition, 12.4% of participants reported having experienced a particular NDE Scale item in more than one phase.

Figure 5 shows when participants reportedly experienced various NDE Scale phenomena relative to unconsciousness, divided into patients with hemorrhagic severity poor-grade WFNS scores of 4-5 versus good-grade WFNS scores of 1-3. Poor-grade participants had their experiences in phase B significantly more often than good-grade participants (20.0% poor versus 10.0% good, $p = .027$), whereas the latter had significantly more experiences in phase A (28.4% good versus 3.3% poor, $p = .001$). The prevailing phase, with no significant difference, was D in both groups (35.7 good and 53.3% poor). There were also no significant differences for phases C (15.0% poor and 15.8% good) and E (10.4% poor and 7.5% good). Poor-grade participants, who were closer to death, scored higher on each of the four subscales and significantly higher on the paranormal subscale; see Table 2.

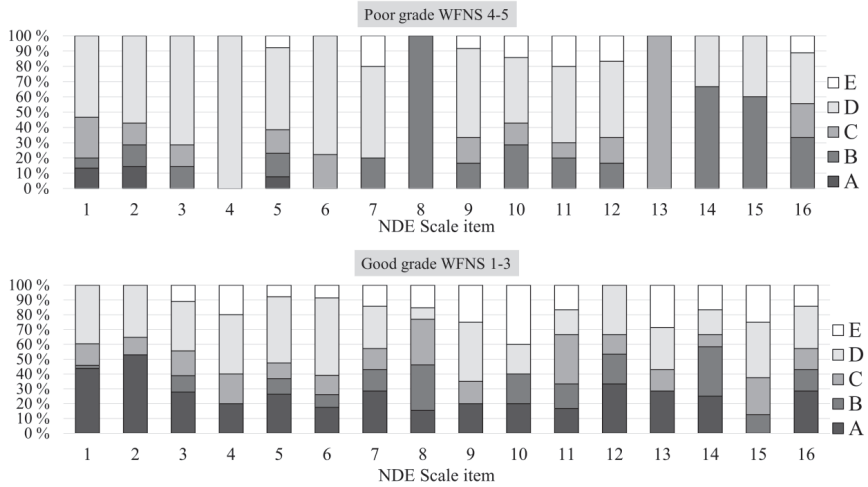
Table 3 presents significant results from multivariate analysis of predictors of the phase of unconsciousness in which participants endorsed NDE Scale items. Significant variables from univariate analysis were entered into the multivariate model, including loss of con-

**Figure 4** Participants' NDE Scale Item Positive Responses Relative to Unconsciousness




*Note.* $n = 116$. Phase A indicates *prior to*, B *during*, C *awakening from*, or D *after having awoken from unconsciousness*, or E *while dreaming*.

**Figure 5** NDE Scale Item Positive Responses Relative to Unconsciousness in Hemorrhage Severity Poor Grade versus Good Grade Par




*Note.* $n = 116$. Phase A indicates *prior to*, B *during*, C *awakening from*, or D *after having awoken from unconsciousness*, or E *while dreaming*.

**Table 2** *Comparison of NDE Scale Subscale Mean Scores for Participants With Lesser (WFNS 1–3) and Greater (WFNS 4–5) Hemorrhagic Severity*

| | WFNS 1–3 | WFNS 4–5 | | | |
|---|---|---|---|---|---|
| NDE Scale | (*n* = 86) | (*n* = 30) | | | |
| Subscale | *M (SD)* | *M (SD)* | *t* | df | *p* |
| Cognitive | 1.38 (1.35) | 1.70 (1.77) | -1.02 | 114 | .311 |
| Affective | 1.27 (1.47) | 1.60 (1.89) | -0.99 | 114 | .324 |
| Paranormal | 0.62 (0.89) | 1.43 (2.06) | 2.99 | 114 | **.003** |
| Transcendental | 0.50 (1.06) | 0.77 (1.22) | -1.14 | 114 | .257 |

**Table 3** *Significant Predictors of the Endorsement of NDE Scale Items in a Particular Phase Relative to Unconsciousness*

| Phase | Significant variable | 95% Odds Ratio | Confidence Interval | *p* |
|---|---|---|---|---|
| A | Poor WFNS grade 4–5 | 0.16 | 0.45–0.58 | .005 |
| B | Poor WFNS grade 4–5 | 2.99 | 1.09–8.20 | .034 |
| C | Cerebral infarction | 0.16 | 0.44–0.60 | .007 |
| | NDE Scale total score | 1.21 | 1.05–1.39 | .009 |
| D | Distressing experience | 2.78 | 1.20–6.44 | .018 |
| | Aneurysm anterior cerebral arteries | 2.50 | 1.02–6.09 | .044 |
| E | Severe vasospasm | 9.17 | 2.72–30.89 | <.001 |

*Note.* $n = 116$. Phase A indicates *prior to*, B *during,* C *awakening from*, or D *after having awoken from unconsciousness,* or E *while dreaming.*

sciousness, NDE Scale total score, patient-reported hallucinations, fear, distressing experience, aneurysm on the anterior cerebral arteries, severe vasospasm, cerebral infarction, and WFNS grade 4-5.

## In-Depth Interviews

Table 4 shows the demographic and medical characteristics of in-depth interview participants, ordered from lowest to highest NDE Scale total score.

**Table 4** *In-Depth Interview Participants*

| **Participant number** | **P1** | **P2** | **P3** | **P4** | **P5** | **P6** | **P7** | **P8** |
|---|---|---|---|---|---|---|---|---|
| Sex | Male | Female | Male | Female | Female | Male | Male | Female |
| Age in years at hemorrhage | 37.6 | 36.6 | 53.3 | 43.5 | 61.2 | 59.7 | 49.0 | 38.6 |
| Time in years since hemorrhage | 1.2 | 9.3 | 7.7 | 1.8 | 3.8 | 2.2 | 4.7 | 8.1 |
| WFNS grade | 4 | 2 | 3 | 3 | 1 | 4 | 1 | 4 |
| Loss of consciousness | Prolonged | Short | Prolonged | Short | None | Persistent | None | Prolonged |
| Aneurysm location | Internal Carotid Artery | Internal Carotid Artery | Anterior Cerebral Artery | Vertebro-basilar Artery | Vertebro-basilar Artery | Middle Cerebral Artery | Anterior Cerebral Artery | Internal Carotid Artery |
| Vasospasm grade | Severe | Moderate | Moderate | Severe | None | Moderate | Moderate | Moderate |
| Cerebral infarction | Yes | No | Yes | Yes | Yes | Yes | No | Yes |
| NDE Scale total score | 2 | 2 | 6 | 7 | 9 | 9 | 10 | 15 |
| NDE Scale positive scored item (points) | 14(2)B | 8(1)C<br>12(1)C | 1(1)D<br>5(2)D | 3(1)E<br>6(1)D | 1(2)A<br>5(2)A | 1(1)D<br>2(1)D | 1(1)D<br>5(2)B | 1(2)B<br>2(1)B |
| phase A-E* | | | 9(1)D<br>12(2)B | 8(1)E<br>13(1)E<br>15(2)E<br>16(1)E | 6(2)A<br>7(2)A<br>12(1)A | 3(1)D<br>4(1)D<br>5(2)D<br>6(1)D<br>11(1)D<br>16(1)D | 6(1)B<br>7(2)B<br>8(1)B<br>9(2)D<br>13(1)D | 3(1)D<br>5(2)B<br>6(2)D<br>8(2)B<br>9(1)D<br>10(2)B<br>15(1)B<br>16(1)B |
| Distressing experience | No | No | No | Yes | No | No | Yes | Yes |
| Fear | No | No | No | Yes | No | No | Yes | Yes |
| Hallucination reported by | | | | | | | | |
| Participant | Yes | No | No | No | No | No | Yes | Yes |
| Health personnel | Yes | No | No | No | No | Yes | No | No |

*Note.* $n = 8$. * Phase A indicates *prior to*, B *during,* C *awakening from*, or D *after having awoken from unconsciousness,* or E *while dreaming.*

## P1

Regarding this participant's endorsement of NDE Scale item 14—encounter a mystical being or presence or hear an unidentifiable voice—he heard what he described as a woman's voice saying, "Now it is time to wake up." He interpreted this as the voice of his mother, who had died when he was 15 years old but had promised to look after him for the rest of his life.

This participant also had various other experiences during what he perceived as intact consciousness while being in a coma, but they were not covered by the items in the questionnaire and were not part of his NDE Scale score. He also reported that after he regained consciousness, he saw a bear, as well as a moose moving in slow motion. He attributed these perceptions to medication, and health personnel perceived him as hallucinating during the period with severe vasospasm.

This participant vividly recalled procedures and conversations that happened while he was in a deep induced coma on mechanical ventilator support:

> . . . but there were many doctors and nurses who talked there, but I don't remember so much what they said, but it concerned serious things—I was dead really, don't know, but I was so bad that they planned to disconnect me from the equipment.

During a later contact with the participant, he told us that his memory had improved and that he remembered NDE Scale item 8—a light experience—while being in a coma. This participant continued to process his experiences, and later, during a second validation interview, he added that he also remembered seeing figures that he thought were human. These data, however, were not included in the patient's NDE Scale total score.

In the in-depth interview, he reported that he experienced fear in the acute phase, but this fear subsided after a while:

> Participant: Yes, I had fear: I thought I was dying.
> Interviewer: You thought you were dying?
> P: I thought that, really, that it was like, it's over now, because it was such a strange experience . . . you know, it was so extremely painful . . . extremely painful, so much I thought, yes, thought that now I was going to die. I thought a bit about that, but then it felt better when the head goes into a defensive mode, sort of . . . .

This participant had not reported fear previously, either in the questionnaires or during the validation interview. For this reason, this last

quote was not included in his NDE Scale total score. This participant had a retrospective processing of his experiences.

## P2

This participant scored one point each on NDE Scale item 8—surrounded by a brilliant light, and item 12—feeling separated from your physical body, both during phase C. She experienced the hemorrhage and her NDE while she was in a private home. She described some parts of her NDE having occurred while unconscious and other parts during awakening. She revealed more details and demonstrated a deeper reflection in the in-depth interview than in the previous validation interview, indicating that, in the interim, she had developed a deeper understanding of her NDE.

In the in-depth interview, she emphasized that the most important point for her was that she returned from being dead to life, not that she experienced her NDE during a phase of awakening. She also experienced that time was perceived differently:

> I would say with time up there where I had this experience . . . there isn't time there, and I believe time isn't like it is here on Earth . . . Here we have clock time, and there one doesn't experience time, if I can say it this way.
>
> I was just in a sort of private home, and then I woke on the floor again, and I was away from life; time is difficult to count in such a situation but I kind of meant I was dead and came back again to life, sort of, and as I have said before, it is that I suddenly remember you as I suddenly in a way remember when I came, because sure it's clear that heaven is up there, I say. I came up . . . .
>
> She described in a detailed way the experiences she had:
>
> > I was dead when I went up there, it was like the road into death . . . "I," sort of, was dead; I was like that in a way you stop breathing, then you are up there, and then breath, I think, comes back to the body, when I came down again like this, I think.
>
> I would not call anything awakening phase. Besides, I think that from the moment I turned, then, and wanted to go back to the body, it is a back-to-the-body experience journey, sort of, back to continue life, that's how I think now . . . I think it is not an awakening, since I made a decision and went down and heard that bang sound, so then I should live on, sort of . . . I did not know in what condition my body would be when I crawled inside again, like this, we should say it . . . that I did not know, it was no time to think, because it was not that; it was all about going down again and fight on . . . .

## P3

This participant attributed his experience of NDE Scale item 1—time distortion—to having been in a coma for several days. He related the experience of item 5—peace/pleasantness—to having been medicated with morphine. After awakening, he was cheerful, and his normal filters/self-regulations were gone, which he related to item 9—unusually vivid senses. In addition to his responses on the NDE Scale, this participant remembered some glimpses from the acute phase while being transported to the hospital by ambulance. He saw his son standing next to the ambulance, looking concerned and wearing a military uniform. In reality, the son was serving somewhere far away at that time. He also thought he saw his daughter while he was being transported to the operating room, but she was on her way to the hospital.

Later, during the out-of-body experience, he saw his daughter together with her boyfriend, whom he had never seen before, and he particularly remembered his clothing:

> Interviewer: The clothing you described; do you remember how it was? Do you remember how it was as if today?
> Participant: Yes, it was, no, I mean, it was a green jacket . . . he also stood with his arms crossed and the head a bit bowed . . . yes, the pants I don't remember at the present moment . . . I can see it even now, really!
> I: And the green jacket, it was true?
> P: Yes, eh, it was so that my daughter became almost afraid [when the patient told her about his experience].

This participant's NDE item responses did not indicate distressing experience; he commented, however, that it was "plundering" that time had passed and that his out-of-body experience resulted in both hope and confusion regarding a persistent question: "if the body dies, but not the thoughts?"

## P4

This participant's response to NDE Scale item 6—feeling of joy—she related to an enormous joy to be alive that she experienced after awakening in phase D.

This participant's NDE occurred during a procedure-related brainstem infarction: "It is one experience that has influenced me in the time that followed." She saw a close relative who had died tragically. The relative was in a tunnel with bright light: "And then I saw his face, and I saw his hand. I did not see his body. He stopped me with his

hand, and said, 'It is not your turn now; you shall not die now.'" This experience also included traumatic memories from her childhood, and she endorsed NDE Scale item 3 – life review, as this memory became reactivated during the acute illness. She described her NDE as a very realistic dream and assigned her NDE Scale responses to phase E.

## P5

This participant reported all NDE Scale items while she had been awake, phase A, during critical phase: item 1 – having experienced time distortion, item 5 – peace/pleasantness, item 6 – feeling of joy, item 7 – unity with the universe, and item 12 – separation from the body.

She described a surrender to a greater power: "I was kind of like at a point where I just kind of surrendered to a fate or a power greater than myself . . . ." In the aftermath, she reflected a lot about the meaning of what happened and her survival:

> Why should I slip through the eye of the needle? Why should I be allowed to keep my life and function as a normal human being? Those are the thoughts I have. And, oh, is there any point to it; is it something I should pass on; is it something that the universe, or whoever it may be, wants me to pass on?

This participant reported neither fear nor distressing experiences during the acute phase but, rather, when she was transferred to the local hospital for further recovery:

> Yes, I remember it was emotions, uh, it was fear, so it started already when I came out of the hospital and was, uh, was put in a single room on the neurological department at the hospital in . . . it was only a few who knocked when I should have medicines, and then I was scared, I was frightened at nights. I thought I was very alone . . . .

## P6

This participant experienced all his 9 points on the NDE Scale after awakening with paresis and aphasia in phase D:

> When I woke up . . . I was unable to talk, and I could not walk; these were the two things. And then I thought to myself that I had to work with myself to manage to walk and talk, so I was clear in my head; I just could not talk.

He experienced NDE Scale item 1 – time distortion, because the period that had elapsed between the time of his last memories before his hemorrhage and the time when he started to remember seemed to have gone faster than usual. His experience of item 2—thoughts speeded up—followed the same reflection. His experience of item 3—scenes from the past—involved a memory from the job tour just before his hemorrhage. Item 4—understanding everything—was his experience of receiving the insight that he had experienced an injury, not at the moment it happened, but later on. Item 5—peace/pleasantness—he described as having had the most pleasant experience, just like sleep without any pain. Item 6—feeling of joy—was because he had not experienced what happened and felt the joy of being alive. Item 11—scenes from the future—involved his thoughts that he was going to be well. Item 16—border/point of no return—was related to his decision that he was going to recover.

He described a strong willpower and decisiveness to recover from the severe effects of his hemorrhage. He had no memory from the acute phase or from post-surgery: "I really remember something from when I was in [name of city] [during the rehab period]. It was the first time I remembered anything of this . . . . " This participant reported no fear or distressing experience during the acute phase. However, in the in-depth interview, he expressed that it was "a bit terrible" that he didn't get to talk about what he wanted to because, upon awakening from coma, he was unable to speak.

## P7

The night before this participant's operation, while comatose, he experienced NDE Scale item 5 – peace /pleasantness, item 6 – joy, item 7 – harmony/unity, and item 8 –light. He saw a light that he experienced as pleasant come towards him, and he was told afterwards that he had been close to dying that night. Scores after awakening, phase D, were item 1 – time distortion, item 9 – vivid senses, and item 13 – entering some other or unearthly world. He stated in the interview that these latter experiences were after awakening from the coma, but he apprehended them as a state of post-surgery, affected by severe medication.

This participant had distressing experiences during phase D. He experienced witnessing illegal abortions in his room and a fatal fire, both of which felt real to him. He also felt traumatized by not being believed by the healthcare personnel:

> I remember that I spoke up but that I felt that I wasn't believed . . . Also, suddenly I was in a fatal fire together with a colleague, and everything went crazy because no one listened to us . . . they were very unpleasant, really, um, at least while I was in [the hospital] . . . That's what's so strange: They were so real.

Still, nurses did not perceive him as hallucinating based on what he actually said to them. This participant has discerned between experiences he connected with anesthesia, and other types of experiences, such as fear and pain when the aneurysm ruptured or the distressing scenarios after surgery, as well as the pleasant light experience. He was interviewed 7 years after the hemorrhage, and the memory of his experiences was still very vivid:

> Interviewer: Seven years have passed, and you still remember it. How well do you remember the light experience?
> Participant: I remember it very well, just as with the horror, I can recall it any time . . . .

## P8

This participant experienced several scenes with various NDE features in them. Among these, she had an out-of-body experience that she did not count as an NDE, but the light experience and being lifted by angels that she did indicate on the NDE Scale. She also had paranormal perceptions, such as seeing what her father was doing while she was in a coma.

> Another thing I experienced was a window beside my bed where I lay, and someone went in and out of that window, and they brought things and some pictures that stood beside me. I don't know if they are symbols, but I could recognize some of the doctors that were around me when I woke up from the coma, three doctors, and I experienced the light and total peace, and there was light around me surrounding the bed where I lay, and way up there was an opening to the other side. I understood that there were figures from whom I cannot recall any conversations with either, but it was the figures that carried me like a child and put me down onto the bed again to life, and it was so far, and then I knew, I was going to survive, I was going to live on and stopped fighting: I was totally calm.
>
> This participant had distressing experiences:
>
> It happened four days after our return from abroad, and I thought that we were kidnapped and were doped, and I was forced down, and I thought for a long time that I would be killed, so I defended myself and fought back, but I understood subsequently that it was here [that] I was rescued . . . .

> I could see them stapling my head, even though I had surgical covers over my eyes.

This last quote was the out-of-body experience in which she saw the doctors stapling the wound after surgery.

## Discussion

### NDE Scale Scores and Time Distortion

A core finding of the present study was that 58.6% of participants who suffered an aSAH scored a total of at least 1 point on the NDE Scale, and 10.6% scored ≥7 points. This cut-off score incidence is consistent with reports of cohorts that included other, non-aSAH circumstances (Greyson, 2003; Rousseau et al., 2023). Still, the total score, per se, cannot directly be translated into the significance of the experience, as we found in our interviews that participants with NDE Scale total scores well below the cut-off had deep existential experiences. We wish to emphasize that a "real NDE" might be composed of fewer items than those reaching the established cut-off score. The existential depth of one NDE Scale item may not be possible to convey in a numerical score but may, nevertheless, be a psycho-spiritually important part of a patient's individual experience. Furthermore, we think that experiencing one transcendental or paranormal item may have a deeper lasting impact on a person than experiencing multiple cognitive items, due to different existential depths connected to different items. This difference is not reflected in a higher NDE score. In the present study, our focus was on the inclusion of all experiences among aSAH during critical phase; we, therefore, have concluded that essential information is lost when excluding individuals who score below the cut-off.

What we learned from the in-depth interviews is that all participants expressed personal ownership of a narrative with deep existential meaning, regardless of their NDE Scale total score. They were all able to conduct introspective self-conscious reflections. The NDE Scale appears to accurately reflect deep existential experiences, as shown by P6, who found the questionnaire an accurate description of his post-aSAH reflections. Among our participants' experiences were also those that contained figures and symbols perceived as real, as with P1. These elements have deep impact because of their meaningfulness.

The frequency of experienced items in our cohort suggests a diagnosis-specific NDE typology among aSAH participants related to specific NDE Scale items and the consciousness phases in which they were experienced. We saw this typology specifically connected to NDE

Scale item 1—time distortion—being the most frequent feature of the NDEs in our sample. It is diagnosis-specific that a high percentage of aSAH patients are conscious in the initial phase of the hemorrhage, as compared to cardiac arrest patients, who typically go directly into unconsciousness during the critical phase and do not experience time distortion in the initial acute phase. Other studies have found different items to be the most frequent (Charland-Verville et al., 2014); in one study, item 5—feeling peace/pleasantness—was most frequently reported (Martial et al., 2017). That item was our second most frequent, which we found surprising considering the excruciating annihilation pain that comes with an aSAH. In our study, Item 1 was often scored in participants who were fully awake upon aneurysm rupture before they reached medical care and received any medication that could influence their apprehension. Time distortion is the psychological perception of time amongst participants. Based on behavioral and neuroscience, attention mechanisms, emotional intensity, and a specialized brain system for representing temporal information play a role in psychological time perception (Grondin, 2010). Another, more spiritual explanation could be that the participant is close to a transcendent realm in which time has a different meaning. P2 expressed this sentiment quite explicitly.

If closeness to death relates to closeness to God or to a supernatural reality, it might be part of a theological argument to explain why so many aSAH participants experience time distortion, and that some perceive a supernatural reality (Baker, 2018). When a person dies, the chronological time dimension seems to be void. These thoughts about time have existed since the time of Aristotle via Augustine (Hausheer, 1937). Augustine argued in a way that connects the human perception of time as such to a possible perception of God that makes time cease. Along this line, closeness to God is equated with closeness to the cessation of time, because God transcends the human dimensions of time and space. God's word is entirely simultaneous and abiding. In God, potency and actuality are complete, and, unlike humans, God needs no time dimension to create this fullness (de Warren, 2016). There may be a transition between dimensions when one's physical body is close to death and when one seems to perceive phenomena that might be interpreted as associated with another dimension of reality.

The question arises whether time distortion is part of the experience of the afterlife, as several religions teach, whereby the temporal structure of a lifespan is no longer the same (Lee, 2009), or whether the experience of time distortion near death is a way a person confronts

death. Martin Heidegger 1953/2010 argued in § 17 of *Being and Time* that the meaning of being, termed *Dasein*, will prove to be temporality. The end of temporality can be linked to the end of Dasein, which is death. In § 266, Heidegger elaborated on "the anxious freedom toward death," which is a preferred authentic awareness towards death, in which illusions are revealed. Edith Stein (2002) unfolded her thinking about temporality from a different perspective. She stated through her argumentation in *Finite and Eternal Being* a work in which she combined Thomism, which built on Aristotle, with phenomenology, that humans move from one stage to another, from actuality to potentiality in life, whereby changes in nature and in life consist of actualization of the potential that are inherent in things/persons. This process is part of the finite status of human lives, and people receive being as such along this temporal line. Conversely, there is an infinite being in which there is a possession of being involving no movement between actuality and potentiality, and, thus, where time is no longer needed. In Stein's perspective, being near death can be seen as nearness to the infinite, whereby time, the way humans know it as linear, is not a dimension needed for existence (Gennuso, 2022). Heidegger argued for nothingness and that death is the end of Dasein, whereas Stein argued for fullness in the dimension to which death is the portal (Gennuso, 2022; Lebech, 2015).

## NDE Scale Scores and Medical Variables

A major feature of our aSAH cohort is that, as reflected in their NDE Scale scores, they revealed a gradient of closeness to death. Thus, participants with no or short loss of consciousness prior to hospitalization more often had no, or low, NDE Scale scores that tended not to meet the ≥7 criterion of a bona fide NDE. Likewise, WFNS grade 4-5 participants, who are medically closer to death than participants with lower grades, had higher NDE Scale scores, which were also distributed in a different response profile than that of WFNS 1-3 participants. Apart from item 3, which is cognitive, WFNS 4-5 patients had a higher frequency of NDE Scale items defined as paranormal and transcendent (Greyson, 1985), which is quite compatible with them being in the deepest and most prolonged coma. One could argue that the passage through items 1-16 reflects not only an ongoing death process in an individual but also the severity of hemorrhage in terms of depth of coma/closeness to death for the entire group.

## Consciousness Phases

Phases of consciousness in which aSAH participants reported specific NDE Scale items were not evenly distributed. The proportion of experiences in phase A was greater in cognitive items, whereas experiences in unconsciousness, phase B, occurred more often in paranormal/transcendent items. This finding suggests that at least some NDE items may be associated with certain states of consciousness; otherwise, our participants' phases relative to unconsciousness would have been more evenly distributed across items (Mays & Mays, 2024). Apart from NDE Scale items 1, 2, 4, 13, and 15, participants reported the remaining items in all phases. A larger sample may have revealed a more distinct pattern for the relationship between NDE Scale items and participants' states of consciousness.

Some participants, such as P1 and P8, had very clear memories of procedures and conversations while being deeply comatose. Awareness during unconsciousness needs to be taken into account by caregivers and is a known and important issue during resuscitation from cardiac arrest (Parnia et al., 2023). Our data support this notion.

The sharpness in distinction between phases varied among our participants. None of the participants was in doubt about phase A or B. However, phase C was more difficult for them to delineate, from being still unconscious to being awake. That phase—involving the transition from unconsciousness to consciousness—presumably lasts the shortest of all phases and is less circumscribed. Moreover, it is the least stable phase, whereby participants can fluctuate in consciousness, drifting between phases B, C, D, or even E. Also, the effect of sedatives wearing off would be a strong factor in this phase. All these phenomena may have contributed to phase C being more seldomly reported. Also, phase E, a dream after awakening from unconsciousness, is less sharply demarcated. We found that some participants preferred to call their experience a dream, such as P4, who called her experiences dreams that took place during unconsciousness. Using the word *dream* might relate to the familiarity with dreams and the similarity between some of the NDE experiences and dreams (Lindsay et al., 2025). However, the NDEs these participants named "dream" still had the essential qualities of NDEs and were assessed as NDEs. We find that introducing the term "dream-near-death (DND)" could be relevant. This is meant as a phenomenologically-based common-sense term and not as a neurological term defining dream.

## Phases and Medical Variables

Parallel to what we found for NDE Scale scores, the consciousness phases in which participants reported experiencing an NDE Scale item were related to the severity of hemorrhage. Thus, participants with the mildest hemorrhages tended to report having experienced NDE Scale items when fully awake, in phase A, as was the case with P5. In contrast to this finding, WFNS 4-5 participants had severely reduced consciousness and remained sedated and on mechanical ventilator support for a longer time, so to the extent that they could remember anything, they were more likely to report having experienced NDE Scale items during phase B, while unconscious. That NDE Scale items classified as paranormal and transcendental were reported primarily in phase B is an interesting observation that other researchers could investigate further in other NDE cohorts. A body-mind interaction seems somehow connected to the NDE, whereby the mind as such has transcendent potentiality that reaches beyond the bodily brain (Mjaaland, 2019).

WFNS 4-5 participants endorsed NDE Scale item 4—understanding everything—exclusively in phase D—while awakening from unconsciousness, whereas WFNS 1-3 participants scored item 4 in all phases except during unconsciousness. Consequently, this item was not experienced during unconsciousness in our cohort. "Understanding all" has a clear cognitive connotation, and "understanding all" can be the result of an experience of elevated insight close to dying (van Lommel, 2014). In our sample, this insight was processed, but not during unconsciousness. We found in a previous study that the experience of "understanding all" could be evaluated by the experiencer and, after some time had passed, could be doubted (Buer et al., 2018).

Also, participants did not endorse NDE Scale item13—entering an unearthly realm—during unconsciousness. WFNS 4-5 participants reported item 13 exclusively in phase C—while awakening from unconsciousness. This finding may be because awakening from a coma is a much longer process in WFNS 4-5 patients than in WFNS 1-3 patients. In contrast, item 8—light experience—was reported only during unconsciousness in WFNS 4-5 patients, such as P8.

Participants reported the affective NDE Scale item 6—feeling of joy—in all phases, but mostly in the awake phase. The background for that feeling could vary. Some participants, such as P6, related this item to the joy of being alive. Others, such as P7, felt joy during unconsciousness combined with peacefulness, pleasantness, and light experience, whereas yet others, such as P5, expressed joy over being taken care of. In our aSAH sample, the feeling of joy may be related to these thoughts

but may also have resulted from a drug-induced euphoria. The same applies to item 5—feeling peace/pleasantness—that very well can be caused by morphine and other drugs commonly administered to aSAH patients. However, some participants endorsed both items as having occurred in phase A—fully awake and under no influence of drugs. Moreover, participants were able to distinguish between experiences they thought were related to medications from those deriving from their NDEs, as with patients P3 and.

Cerebral infarction significantly reduced reported experiences in phase C, possibly because the brain is more vulnerable during the awakening phase, such that an infarct may impair perception and the ability to store and recall sensory impressions. This finding is reflected in our selection of interview participants: The sole patient who endorsed NDE Scale items in phase C had no infarction, and none of those with infarctions reported experiences in phase C. After awakening from unconsciousness, in phase D, cerebral functions gradually improve. Phase D is usually also the longest-lasting period of a typical aSAH course and a period in which delirium can manifest. It is, therefore, not unexpected that distressing experiences would be easily formed and recalled during that phase.

Aneurysms on the anterior cerebral arteries were the most common location in our participants, in whom the frontal lobes presumably were most affected by the hemorrhage. Frontal lobe function is linked to complex information processing, apprehension, and recall that can be affected by the hemorrhage. One would expect these effects to become most obvious in awake phases such as A and D; indeed, anterior cerebral artery aneurysms reached statistical significance only as predictor in phase D. One of the most common causes for disorientation and hallucinations is cerebral vasospasm, which typically peaks around 10 days after the hemorrhage—when many participants will have entered phase D. Cerebral vasospasm, present in about 70% of aSAH patients, is a condition that can lead to cerebral malperfusion, which often causes disorientation. This phenomenon may contribute to participants with experiences caused by vasospasm being more likely to remember them as a dream—phase E. From these reflections, the question arises whether phase D scores are representative for NDEs or are solely pathophysiological phenomena. We argue that they are representative of NDEs because they are associated with a close and long-lasting brush with death. This notion is supported by higher NDE Scale total scores with increasing aSAH severity and by high NDE Scale total scores being a predictor of phase C experiences.

## Medical Records Data: Fear, Distressing Experiences, and Hallucinations

Participants reported a broader spectrum of experiences than what the NDE Scale fathoms. Fear of dying is a natural element for someone affected by a fatal disease, and it is, therefore, not surprising that a high frequency of participants reported fear. During their validation interviews, three of our participants reported fear during the acute phase of their aSAH.

With increased NDE intensity, the frequency of distressing experiences also increased. NDE Scale items could be related to distress in some participants. One reason may be that the mind, during a critical phase, can process experiences without any filter; that is, all impressions are processed, and some of them may be (mis)interpreted as distressing even though they were not in reality. For example, P8 interpreted a rescuing situation as being held hostage. Other distressing experiences can be independent experiences that stand out as separate experiences not addressed in the NDE Scale, or as with P7, who scored his distressing experiences through items 9—senses more vivid than usual—and 13—entering some other, unearthly world.

The interpretation of perceptions touches on a core phenomenological finding: The vivid, realistic experiences that participants reported after waking up were also evident in our in-depth interviews. Participants sometimes referred to these experiences as dreams that felt extraordinarily real. Participants perceived these dreams-near-death as so real that they process them as real events. Future researchers can assess these experiences by specifying a clearer distinction; we suggest that, in whatever state of consciousness a person reports having had the experience, they be asked to rate the experience as (a) hyperreal; more real than waking reality, (b) as real as waking reality, (c) somewhat like a dream, or (d) very much or exactly like a dream.

Unlike dreams, the memory of these experiences did not seem to fade over time. Participants reported having had real-world experiences, often an ordinary, everyday scenario, and in some participants, narratives of these real-world scenarios were combined with NDE elements entering into or sensed in the real-world scenario. All these different experiences, especially the real-world scenarios, are often viewed as hallucinations or delirium by health care personnel, who may overrule and try to correct patients' narratives. P7 reported this kind of situation, and it triggered fear and desperation in him. Health care personnel's lack of understanding regarding the sense of reality

of these patients' experiences may add to the patients' psychological burden. Such experiences must be probed through in-depth interviews that address existential depth, the interpretation of the experience, and in what way the patient recalls the memory of the imagined events (Moore & Greyson, 2017).

The frequency of our participants reporting hallucinations increased with NDE intensity. Experiencers might find, among NDE Scale items, features related to their deliria and/or hallucinations and endorse those items even though they were not actually part of an NDE (Augustine, 2007). Reporting consciousness phases may ease the distinction of an NDE from delirium, effects of opioids, and hallucinations. We were surprised, however, that many participants had a very clear apprehension of what they interpreted as an NDE versus what they perceived as disorientation or medically induced experiences. For example, P1 recognized drug effects by their transient nature and total lack of existential depth. Frontal lobe damage can cause hallucinations. We found that participants with aneurysms on the anterior cerebral arteries, that is, those with the greatest presumed impact on the frontal lobes, more often scored an NDE Scale total score of zero. Furthermore, hallucination observed by health care personnel was not related to the NDE score. These findings argue against NDEs being mostly the result of hallucination.

Interestingly, although medical records indicated hallucinations that our participants had reported to healthcare personnel, at the time of our study, our participants often did not remember what they said to the nurse; conversely, the experiences they reported in our study were still very clear to them but had not been documented in their medical records at the time. These results may be explained by two facts. First, hallucinations tend to be forgotten over time, whereas NDEs tend to be enduringly remembered (Greyson, 2007). Second, research has shown clearly that near-death experiencers often hesitate to talk about their NDEs shortly afterwards, both for fear of not being believed and out of a need to take time to process an interpretation and understanding of such an extraordinary experience before disclosing it to others (Greyson, 1997).

An ambiguity connected to NDEs was also part of our data. It seems that differentiation between "NDE-like" experiences and "real NDEs" results in difficulty defining an NDE, and a clear definition of what an NDE actually is remains controversial (Charland-Verville et al., 2014; Martial et al., 2020). Moreover, there is discussion about NDE features such as out-of- body and changed self-awareness characteristics

reflected in several NDE Scale items, which seemingly contain a dissociative component. Consequently, the degree of dissociation among people who have experienced an NDE has also been tested against pathological dissociative psychological structure. However, findings have shown that certain NDE features are not connected to a dissociative disorder (Greyson, 2000).

From what we learned in this study, we identified four elements that together constitute an NDE: It is an experience that

- Occurs in conjunction with a real threat of dying,
- Remains imprinted in memory over many years or a lifetime,
- Has an inherent deep existential meaning, and
- Appears real both when experienced and thereafter.

## Strengths and Limitations

It is a strength that our study participants were representative of a general aSAH cohort with regard to age, gender distribution, and medical data and, in particular, that we included participants representing the entire spectrum of aSAH severity. The in-depth interviews provided a greater understanding of what participants experienced and what those experiences meant to them. This information would not have been fathomed by the NDE Scale alone. Based on the validation interviews, we revised the NDE questionnaires, which enhanced data quality; however, we did not change NDE Scale scores when the in-depth interviews revealed participants' deeper reflection or enhanced memory. Changing scores of the eight in-depth interviewees would have introduced bias because we were unable to make a similar adjustment for participants whom we had not interviewed.

Medical records data are subject to interpretation, both when being recorded and when retrieved. Still, records regarding fear, disorientation, and hallucinations are professional observer-rated journal entries that provide additional information that helped distinguish NDEs from pharmacologically or medically induced phenomena.

We did not validate data from participants whose NDE Scale total scores were zero. This omission could have led to underreporting of fear, distressing experiences, and other important experiences not fathomed by the NDE Scale. Participants' precise distinction of the phases C, D, and E may not be completely reliable, considering several factors that may have clouded participants' memories, such as the fact that they were trying to recall accurately a time when were acutely

sick, that at the time of the crisis, they may have fluctuated in and out of consciousness, and that, in many cases, several years had transpired since the hemorrhage. These limitations, however, do not discredit our finding that different features of NDEs are reported during various phases surrounding the loss of consciousness.

## Conclusions

The frequency of NDE Scale total scores ≥7 of 10.6% in our sample of aSAH survivors corresponds well with what is reported in cohorts of participants whose NDEs occurred in a variety of circumstances.

We found that deep existential NDEs can occur among participants who score below the NDE Scale total score cutoff of ≥7. In addition, in our sample, greater intensity NDEs were reported by participants who were the sickest, with poor-grade WFNS 4-5 scores, which links greater NDE intensity to greater closeness to death.

Our participants reported NDE items in various phases surrounding unconsciousness, such as awake, unconscious, regaining consciousness, being awake after regaining consciousness, and while dreaming. Some participants mainly reported NDE Scale items during the phase after awakening from unconsciousness, and we interpreted these data as a retrospective processing of a close brush with death. Whether a retrospective understanding of closeness to death is defined as a real NDE is open to discussion.

We found patterns in the NDE Scale item scores that suggest a connection between specific NDE items and unconsciousness, namely the transcendent and paranormal items, and a specific item connected with the awake phases both prior to and after unconsciousness, namely time distortion.

The real-felt dreamlike experiences some participants had can be misinterpreted among healthcare personnel as hallucination or delirium. These types of patient reports should be met with understanding of their extraordinary, reality-felt experience and with no attempt to correct their sense of reality. Healthcare professionals should also reassure such patients that they are safe and protected, thereby helping them to manage their emotional response to the experience.

We found that participants with NDEs more often reported distressing experiences and fear than those with no NDE score. That distressing experiences and fear are part of a close brush with death is not surprising and underlines the fact that such experiences often are part of the phenomenon of an NDE.

We identified four elements that constitute an NDE: It is an experience that occurs in conjunction with a real threat of dying, remains imprinted in memory over many years or a lifetime, has an inherent deep existential meaning, and appears real both when experienced and thereafter.

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# Prioritizing Core Near-Death Experience Phenomena to Minimize Controversial NDE Claims

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*ABSTRACT:* Controversial claims are often made by both naturalistic and spiritualistic interpreters of near-death experiences (NDEs), claiming, for example, that today's Western NDEs differ significantly from indigenous and ancient NDEs, that sin is not important to the Being of Light that experiencers encounter in their NDEs, that the sole purpose of human life is to learn, that God is an impersonal force, that NDEs teach that all religions are false, or that hallucinatory elements show NDEs to be purely natural in origin. Yet, authors who make such assertions typically fail to calculate the percentages of NDE reports that support such claims, leading to contradictory claims among researchers and to unnecessary confusion in near-death studies. In this article, I suggest that researchers should be wary about drawing conclusions from infrequent, low-percentage reports and should give greater evidential weight to better documented, high-percentage, core NDE elements. I offer practical suggestions that may enable authors to keep their claims more consistent with the best research.

*KEYWORDS:* near-death experiences, anomalous NDEs, core NDE elements, NDE themes, NDE Scale

Following one of my video interviews with Sean McDowell (2023), a viewer objected that I failed to acknowledge certain niche, New Age, or Eastern Religion elements, which he claimed were widely reported in near-death experiences (NDEs). I replied, via email, that in the best published studies of NDEs, by virtue of their scientific rigor, such as those by cardiologists Michael Sabom (1982) and Pim van Lommel (2010) and doctoral-level nurse Penny Sartori (2008), I did not find

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such elements, unless they were reported as rare rather than as part of the core experience. By "scientific rigor," I am referring especially to researchers' care in selecting people to personally interview, corroborating the reports with medical records and other witnesses, and reporting with thoughtful precision. This process results in a much purer set of NDEs than databases in which people anonymously submit otherwise unconfirmed stories. My critic insisted that he based his conclusions upon scores of video/audio reports and suggested that I was allowing my Christian worldview to influence my conclusions.

I proposed a way that we could test our differing views of the main characteristics of NDEs, which I subsequently did: by looking carefully at some of the best studies of NDEs, followed by examining a selected set of 100 accounts from the first 141 consecutively-submitted experiences to the Near-Death Experience Research Foundation (NDERF) website (www.nderf.org), which arguably contains the most extensive collection of global NDE narratives available online. I will further explain my methodology and report some of my findings below after first discussing how the initial stalemate alerted me to the way that investigators can draw vastly different conclusions about NDEs by consulting different data sets and giving seeming undue attention to infrequent elements.

In his 1975 bestseller, *Life After Life*—the book credited with opening the contemporary field of near-death studies—Raymond Moody noted global patterns in NDE reports that typically defied the expectations provided by experiencers' varied religions and worldviews. His original core elements were *ineffability, hearing the news, feelings of peace and quiet, the dark tunnel, out of the body, meeting others, the Being of Light, the review, the border or limit, coming back, telling others, effects on lives, new views of death,* and *corroboration*. Later researchers largely confirmed Moody's original core (Sabom, 1982; van Lommel, 2010) and suggested additional core elements, such as *negative emotions* and the *impression of being dead* (Martial et al., 2020, p. 5; Parnia et al., 2022). Bruce Greyson (1983) put core NDE elements into the NDE Scale to help identify authentic NDEs.

Recognizing core elements helped those seeking understanding of NDEs not only to identify and understand the experience more fully but also to distinguish NDEs from hallucinations, false memories, unreported psychedelic drug use, elements of delirium, mental illness, and spurious claims to enhance book sales or gain social media traffic. Such obfuscating factors guarantee that although near-death experiencers (NDErs) typically seem quite sincere and have no reason to

exaggerate reports (Greyson, 2006) or hide relevant diagnoses of mental illness, a certain percentage of collected reports must be set aside as rare or atypical, just as scientists set aside anomalous results in such fields as medical science. As is the case in many fields, although infrequent elements can be legitimate, they can also raise red flags, alerting investigators to take some reports less seriously than others.

Before proceeding, I wish also to comment on the term *near-death experience.* In his seminal book, Moody (1975) coined this term (pp. 14, 19–110). Some authors have argued for expanding the term to include similar experiences that do not occur near death (Charland-Verville et al., 2014, pp. 1–8), resulting in suggestions for alternate terminology such as "classical near-death experiences" (Martial et al., 2020, p. 11) or "recalled experience at death" (Parnia et al., 2022, p. 7). In this paper, however, I use the term "near-death experience" as it is defined in the most recent *Encyclopedia Britannica* article titled "Near-Death Experience:" "Mystical or transcendent experience reported by people who have been on the threshold of death" (Nolen, 2025). This definition is substantially the same as those offered by the current standard dictionaries I consulted: *Britannica Dictionary*, *Cambridge Dictionary*, *Merriam-Webster Dictionary,* and *Oxford Reference.*

## Digital Searches and Databases Yield Both Opportunities and Concerns

Fifty years of near-death research has enabled researchers to collect large reservoirs of both written and audio/video NDE reports, providing access to thousands of full reports—see, for example, the websites of the Near-Death Experience Research Foundation (www.nderf.org) and the International Association for Near-Death Studies (www.iands.org) as opposed to mere excerpts of reports provided to readers by most researchers of multiple accounts. Because critics might suspect that some researchers fail to disclose parts of experiences that are inconsistent with their worldviews or conclusions, access to so many full reports, often unfiltered by the collectors, provides very useful data.

Yet the downsides of such databases include:

a. Some visionaries were not "near-death" at all. Yet collectors may retain reports of many types of visionary experiences beyond NDEs so that they cannot be accused of tampering with the data (https://iands.org/ndes/nde-stories.html).

b. Because the people submitting experiences have not been personally interviewed by reputable researchers, the collection of accounts almost certainly includes narratives by authors whose entries are, for a variety of possible reasons, invalid as genuine representatives of NDEs. In some reports, contributors acknowledge having mental disorders, having taken hallucinogenic drugs, or having had a vision unrelated to a close brush with death. Even if an investigator omits accounts containing such admissions, it is estimated that over 1 in 25 adults in the U.S. suffer from serious mental illness, a portion of whom frequently hallucinate and retain false memories (Center for Behavioral Health Statistics and Quality, 2016). Thus, a database of 5,000 reports might contain 200 cases submitted by people with serious mental disorders, with some reports consisting entirely of hallucinations or false memories—not NDEs at all. Furthermore, the number of contributors whose accounts involved an unreported hallucinogenic drug cannot be determined.
c. Because such databases can be searched, an investigator might find multiple cases of niche reports, which, when brought together in books or articles, can make spurious reports appear to be quite normal and widespread, as if they are a part of the NDE core experience.
d. Because Google's and YouTube's algorithms prioritize what is trending and what users/viewers have indicated they "like," viewers at large are often fed experiences that offer more tantalizing details than the same old core experience (Macready, 2025). Thus, although an investigator may diligently analyze scores of experiences through such searches, a large portion of those experiences may more precisely be scores of *atypical* experiences—that is, containing elements that have, in fact, been reported in very low percentages.

These observations necessitate special cautions when drawing conclusions from large databases and Web searches of NDE accounts and narratives.

## Method

To be clear, my purpose in this essay is not to assert conceptual positions on any particular phenomenon, such as the potential reality of reincarnation or the pre-existence of consciousness prior to earthly life. I am merely asking whether or not researchers are warranted to say that NDEs teach such things—whether or not they are a common feature or are part of the core experience. My purpose is to raise caution about assertions I have encountered that seem to be based on infrequent rather than on frequently reported phenomena.

Thus, for this article, I reference relevant research and draw upon my examination of a set of the first consecutive narratives submitted to the NDERF website (Miller, 2023, pp. 119–175). I chose the *first* submissions to avoid the bias of selecting a set that might contain more of the elements consistent with my worldview. I determined, a priori, that 100 cases would be sufficient to identify the frequency of various features. To have 100 cases that were more likely authentic NDEs—although not *certainly* authentic, because of potential unknown factors—I actually reviewed 141 submissions, setting aside 41 that involved what I considered disqualifying factors, such as authors' self-reports of experiences that did not occur near death, of mental illness, or of experiences during drug use. I carefully read each of the 141 cases in their entirety to find themes that might be missed in a mere search for keywords through a search tool. In this article, although I typically refer to statistics regarding the 100 "more likely authentic" group, I sometimes note that certain infrequent elements were also quite rare throughout the entire group of 141 cases. I also, at times, refer to results from my use of the NDERF search engine to find specific terms among the site's more than 5,300 cases. In all three cases—using the 100, the 141, or the entire database—I examined the narratives for the incidence of particular features to determine whether each feature was relatively common or was infrequent, that is, representing a very low percentage.

I readily acknowledge the limitations of this study. Perhaps preferable would be a study based on the entire collection of NDERF accounts. However, careful reading of over 5,000 accounts was not feasible. Rather than having to report the limitation of possible omissions in a keyword search of all accounts, I chose, instead, the limitation of a smaller sample size of carefully examined accounts.

## Results

Based on my findings, the following are some example claims that appear to be based on infrequent NDE elements. To give some perspective, when Bruce Greyson (2023) asked 100 NDErs and 100 NDE researchers to define "near-death experiences," they mentioned 16 "phenomenological features" that did not include any of the following elements.

## Claim: Because some NDE reports contain elements that seem obviously hallucinatory, all NDEs must be hallucinatory.

Keith Augustine (2007; Martin & Augustine, 2015) documented NDE reports containing prima facie hallucinatory elements, concluding that "such experiences strongly imply that NDEs are not glimpses of the afterlife" (Martin & Augustine, 2015, pp. 529– 569). One cited NDEr reported talking to a bee, another to Elvis Presley, and yet another to Albert Einstein, all of which appear hallucinatory to many, if not most, readers. However, considering that claimed celebrity and insect encounters in NDEs are quite rare, it does not follow logically that *all* NDEs are hallucinatory and that no NDEs could be authentic glimpses of the afterlife.

I searched the more-than-5,300 reports on the NDERF website (www.nderf.org) and found none containing a claim to have seen Presley. Perhaps in the cases cited by Augustine, the NDErs confused a hallucination with an authentic NDE. Perhaps they were mentally ill. Perhaps they wrote spurious accounts to undermine NDE research. Furthermore, both psychiatrist Bruce Greyson (2014) and PhD-level nurse Penny Sartori (2008; 2014, pp. 136–139) compared hallucinations to NDEs and found the two phenomena to be quite different experiences. And yet further, Janice Holden (2009) conducted a study of every published NDE she could find in which some aspect of the NDE could be assessed in light of objective consensus reality, and she found errors to be extremely rare. Taken together, these data indicate that drawing broad generalizations about the alleged hallucinatory nature of NDEs from minority reports such as Augustine's (2007; Martin & Augustine, 2015) is ill-founded.

## Claim: Prophetic errors in NDEs cast doubt on the authenticity of all NDEs.

Some NDErs claimed prophetic insight into the timing of large-scale catastrophes and were subsequently proven wrong when the dates came and went without incident. Dannion Brinkley (1994), for example, foresaw in his NDE that America would go bankrupt and lose superpower status by the year 2000. Kenneth Ring (1985) interviewed 14 prophetic NDErs and found most pointing to the 1980s for apocalyptic/end-of-world events (pp. 193–219), which—it is now obvious—did not occur.

Yet date-specific, end-of-the-world prophecies are not part of the

high percentage, core NDE. Regarding prophetic NDEs, Moody (1988) observed, "This happens in such an extremely small percentage of NDEs that I'm reluctant to consider it one of the traits of an NDE" (p. 22). Thus, the proven inaccuracy of some prophetic NDEs does not cause me to doubt the general authenticity of NDEs.

## Claim: God is everything; thus, humans are God, and after physical death, they will lose their identities as they merge with the eternal Mind.

Ring (1985) quoted an NDEr as saying, "[Now] I think of God as a tremendous source of energy, like the nucleus of something enormous, and that we are all just separate atoms from this nucleus. I think that God is in every one of us; we are God" (p. 151). And another: "God is everything that exists" (p. 151). In *Dying to Live*, Susan Blackmore (1993) taught that the concept of "self" in NDEs is merely a mental construction, as are all the elements reported in NDEs (pp. 160–164). Christof Koch (2024) reported that, in his DMT experience, "I ceased to exist in any recognizable way, shape, or form" and claimed that this experience also occurs in NDEs, which "can be suffused with feelings of loss of ego," which he defined as "the dissolution of any distinction between the experiencer and the experienced." Although such elements may, indeed, be reported by NDErs, the question arises whether they are a *typical* part of the core experience and provide evidence that there is no self or that the self will necessarily be lost in the afterlife.

Reading scores of consecutively submitted experiences, as well as the results of the best NDE research, I have found the "self" to be overwhelmingly intact in the core experience. NDErs them*selves* interact with other *distinct selves* in the form of a *distinct* Being of Light or *distinct* angels or *distinct* deceased relatives. NDErs get *their* lives reviewed. Thus, Sam Parnia et al. (2022) included "'I' myself remains" as one of the typical NDE elements (p. 8). To help identify true NDEs, Greyson (1983) included the component "clearly left body *and existed outside it*" (p. 372, italics added). I cannot imagine that the remaining 45% claimed to have disappeared while out of body. I assume they simply failed to see the significance of reporting, "And by the way, I—my self—was there."

## Claim: All religions are false; alternately, all religions are true.

One NDEr reportedly asked, on the other side, "What is the right religion?" He was told, "They all are. Each religion is a pathway trying to reach the same place" (Kadagian, 2022, p. 250). Another NDEr disparaged all religions: "All earthly philosophical and ontological belief systems are simply misguided. It's just not the way people think, theorize or imagine it to be 'over there'" (Kadagian, 2022, p. 37). And still another NDEr was told in her NDE by her deceased father that she needed to "make sure my daughter would never lose her religion." She was walking toward a beautiful Mosque and saw a light "which I believe may have been Muhammad" (Kadagian, 2022, p. 121). The question arises, then, which of these three mutually contradictory interpretations is correct—including whether Islam is the "right" religion.

On the surface, such statements seem out-of-character with NDEs. If all religions are right, it is problematic that some religious belief systems *deny* oft-cited NDE outcomes, such as a personal afterlife, the existence of angels, and a personal God, whereas other religious belief systems *affirm* most, if not all, of the core elements (Miller, 2023, pp. 27–51). Some religious beliefs include justification to kill a person solely on the basis of that person's choice of religion. Surely this action is not consistent with the prevailing NDE message of love. In such respects, it cannot be concluded that all religions are equally right or equally wrong.

Yet, Moody (1988) noted that "an NDE almost always leads to spiritual curiosity" (p. 39), and many NDErs "accept the spiritual teachings of the great religious thinkers. However, this doesn't mean that they become pillars of the local church. To the contrary, they tend to abandon religious doctrine purely for the sake of doctrine" (p. 40). If, by this assertion, he meant that it is not enough to have correct beliefs that are devoid of good deeds and intentions, I think most religious leaders would agree. But the case he cited implies that beliefs are not important: "The Lord isn't interested in theology" (Moody, 1988, p. 40). He subsequently cited another NDEr declaring that God "didn't care about church doctrine at all" (p. 69).

Based on my study (Miller, 2023), *denunciations* of all religions and all theology appear to be quite rare—only 2%—contradicting other NDErs who found NDEs *confirming* their religious traditions (pp. 162–167). I found that NDErs often expressed such views as personal conclusions following the experience rather than as actual components

of their NDEs. But such apparent contradictions need not throw doubt on the legitimacy of all reports from the other side, unless such contradictory reports are a part of the core experience. In any case, from my study (Miller, 2023), wholesale denunciations of all religions were infrequent.

## Claim: NDEs teach reincarnation.

Although I often hear people stating that NDEs indicate the validity of reincarnation, they should justify it by showing a large percentage of such NDEs in a sufficiently large random sampling. Moody (1975) failed to find reincarnation in any of his original 150 cases (pp. 16, 141, 142). In my study (Miller, 2023, pp. 160–162), I culled experiences that were likely not truly NDEs—such as those by narrators who indicated they had not been near death—and found only two remaining cases in which the narrators spoke of reincarnation. I found one of these accounts to be quite vague, reporting merely "feelings that some people get about reincarnation" (*Bill V NDE,* n.d.). The other account contained several elements that I had never seen in an NDE: A soul "boasted with pride" at completing his lives, and he "felt pity" for a golden castle that was "dull and lifeless" (*Tim NDE,* n.d.). Since I cannot recall ever hearing, in NDE reports, of (a) people on the other side boasting with pride, and (b) viewing a pitiful landscape or structure, the presence of both of these elements led me to red flag such a report, especially because the narrator was never personally interviewed nor his medical claims checked against hospital records. Consequently, I would be quite generous to report 2% of my sample supporting reincarnation, which is already small enough to qualify as infrequent.

Yet, by cherry-picking 2% of over 5,000 experiences, a researcher may find 100 experiences that suggest reincarnation. Present them together in a book, and they appear to be part of the core experience rather than a questionably small percentage. Furthermore, considering that a Pew Research Center (2021) survey found that one-third of adult Americans believe in reincarnation, NDErs with such beliefs may have been predisposed to interpret their visionary experiences in light of reincarnation beliefs. Conversely, of course, people might believe in reincarnation because of NDEs and similar experiences. It also seems possible, however, that the subset of more than 5,000 plus contributors who may have been influenced by drugs, hallucinations, or mental illness might report reincarnation scenarios.

Again, I am not here concluding, solely based upon NDE evidence,

that reincarnation could never happen. I am merely suggesting that, from my studies and the studies of others, I see no strong positive evidence for reincarnation from NDEs, because the percentage containing reincarnation elements is so small. I *can* say that some NDErs do, indeed, report NDEs that include references to reincarnation. But to imply that NDEs teach reincarnation, in the sense that this lesson is a part of the core experience, would surely go too far.

Again, researchers should not be surprised if a web search of NDEs yields a disproportionate number of reports speaking of reincarnation, because they are quite intriguing and often "liked," which appeals to Google's and YouTube's search algorithms.

## Claim: NDErs' frequent reports of feeling "at home" in the spiritual realm implies that they existed in this realm prior to their earthly lives.

Parnia et al. (2022, 2024) listed 51 NDE "themes" and included "A glance at my past and prior past" and "Returning 'home': a place I had known before." In fact, he included "Being 'Home' Again" as one of the "six broad categories or themes" of NDEs (Parnia et al., 2022, p. 15). Yet, I must question: Out of a large, unbiased data set, what percentage of NDErs specify these elements? Parnia gave no percentages. This feature was not one of Moody's (1975), Sabom's (1982), van Lommel's (2010), Marshall's (2020), or Long's (2010) common themes. Without evidence of a large percentage reporting such things, I consider it unjustified to call them "common elements"—implying frequency—or imply that they are a part of the "core" experience. By including this feature as a common NDE theme, researchers may unnecessarily bias people who do not believe in pre-existence against NDE research.

NDErs certainly, in large numbers, report overwhelming peace, security, and love, which some have described as feeling like they are "home." In some children's deathbed visions, they have reportedly felt so safe and welcome on the other side that they expressed being ready and eager to leave their loved ones for the other side (Komp, 1992). But seldom do they explicitly state that they *remembered* aspects of this place or interpreted "at home" feelings to mean they had previously existed there. I searched my collection of the first 141 consecutively-submitted experiences to the NDERF database and, indeed, found five (3.5%) who spoke of going back home, indicating pre-existence. That frequency is much smaller than Greyson's threshold of 16% to establish

themes for his NDE Scale (Greyson, 1983). And even regarding those five, the NDERF database is not a purified set of NDEs, personally interviewed after a traumatic medical event. Thus, when I examined those five, I found that each contained multiple, serious red flags that could bring their authenticity into question. For example, historians had examined case #12 and found inaccuracies in the references to involvement in the Vietnam War. Case #62 spoke of adding an additional 10 commandments to Moses's original 10. Case #103 spoke of being the reincarnated Daniel from the Old Testament, recommending his book of prophecies for sale on Amazon. Thus, out of 141 consecutively-submitted experiences, I could not find one seemingly authentic NDE that explicitly spoke of going home as implying pre-existence.

In the English language, the expression "at home" can mean a feeling of total comfort, as I may express when visiting close friends and exclaiming, "When I'm at your house, I feel at home!" But beyond needing to dig more deeply into what each NDEr means by this expression, until a sufficient percentage is established of those saying they existed there previously, surely it is not warranted to conclude that such reports are a part of the core NDE and that NDEs thus imply pre-existence.

Thus, I must question John Gibbs's (2025, p. 14) claim that "300 of the extant 3,598 NDE entries" on the NDERF website containing the "I was home" theme implies something about preexistence or reincarnation. Perhaps the great majority of these authors simply meant that they felt "at home," that is, felt completely at peace and comfortable in that setting. I appreciate that Gibbs drilled down further to note that "over 50 transcendental or comprehensive NDE cases entail not only 'home' content but also explicit reference to having lived one or more previous lives" (p. 14). He did not, however, specify the size of the set of "transcendental or comprehensive NDE cases" or how it was derived. From my reading of such cases, the most "comprehensive" NDE accounts often contain many red flags, such as those I mentioned above. It does not appear that he considered this factor. If only 50 cases out of the 3,598 contained explicit references to reincarnation, even without culling questionable accounts, this proportion represents only 1% of NDEs—and this result from a database of cases in which the subjects were never personally interviewed and assessed. Although Gibbs acknowledged that "over 50" represents a small percentage of such a large database, he asserted that even a tiny percentage can "gain validity status insofar as it meaningfully embeds in an organic, rather than purely empiricist, approach that identifies themes and subthemes in a core narrative" (p. 14), referring to Parnia (2022, 2024).

Thus, Parnia and Gibbs have proposed that investigators can determine themes and subthemes by utilizing research methods other than assessing frequency. Neither researcher, however, specified how such methods might work and how a very low-frequency feature can be justifiably considered a theme or subtheme. Until such methods are spelled out and justified as significant, I strongly suggest that investigators refrain from claiming that small-percentage themes are significant regarding what humanity can learn from NDEs.

## Claim: Deeper experiences reveal significant details about the creation or structure of the universe.

In the preface to the bestselling book *Embraced by the Light* (1992), in which Betty Eadie described her NDEs, NDE researcher Melvin Morse called the work "a textbook of the near-death experience" (p. ix). Her report, however, contained many low-percentage claims, such as being present at the creation of the world (p. 46), where she and other pre-existent people assisted in creating the Earth (pp. 47, 48). In fact, I found at least 10 specific claims by Eadie that I rarely, if ever, have seen in other NDE narratives.

This infrequency is why I rarely quote from personal NDE testimony books when describing NDE elements: I do not know the people. Typically, I cannot corroborate what they experienced with hospital records. They have a possible financial motive for exaggerating, embellishing, or outright fabricating in order to appeal to certain readerships. Surely the retraction of the best-selling NDE story by the Malarkeys (Zylstra, 2015) should warn researchers that when money is a factor, people are tempted to exaggerate or make things up. A meta-analysis of relevant studies found that one-third to one-half of patients exaggerate their symptoms in independent medical examinations, probably to help them qualify for incentives (Darzi, 2025). We would be naïve to think that such motivations could not also impact some people who write books about their personal NDEs or have other financial incentives.

Of the people I have personally interviewed regarding their NDEs, the most extensive experience is by a family friend who reported several brushes with death and many, many insights into the nature and purposes of the universe and specific ways to solve world problems. His report is so extensive, detailed, and intriguing that he has been interviewed via radio and was included in a book of collected NDEs.

Yet, his interviewers apparently do not know that the NDEr had previously been diagnosed with schizophrenia and was frequently off his

medications, regularly writing down long, rambling "messages from God" about solutions to world problems. All the people I know who are intimately acquainted with him agree that his many and varied and quite regular "revelations" are symptoms of a mental illness rather than a prophetic gift. If such "deeper" experiences are quite infrequent, researchers should resist gathering such experiences from large databases to tantalize audiences and imagine that they are gaining insider knowledge about the universe.

## Claim: Studies of NDEs in ancient and indigenous cultures confirm elements that contradict the contemporary core experience, apparently caused by differing belief systems and expectations.

Studies of NDEs in ancient and indigenous cultures (Shushan, 2011, 2018; Zaleski, 1987) provide evidence that NDEs have been reported globally, throughout the ages. Also, they contradict the theory that indigenous and ancient people believed in God and the afterlife merely because of scientific ignorance and psychological longings (Freud, 1927; Hume, 1757). For example, when various tribes of Native Americans were asked about the basis of their religious beliefs, they often cited visionary experiences such as NDEs (Shushan, 2018).

Zaleski (1987), however, claimed that the differences between medieval and contemporary NDEs are so significant that they cannot provide evidence for God or the afterlife. For example, she asserted that "medieval hell and purgatory scenes find scarcely any counterparts in the near-death testimony collected by Moody and his colleagues" (p. 188). Yet Zaleski failed to acknowledge distressing, sometimes hellish experiences, which Moody (1975) had actually acknowledged (p. 143) and which later researchers detailed (Bush, 2014; Bush & Greyson, 2021; Rommer, 2000). In fact, some researchers have argued that distressing NDEs are so common that they should be included as a part of the core experience (Bush, 2021; Martial, 2020).

In addition, many of Zaleski's (1987) medieval examples were not NDEs at all. She stated up front, in "A Note on Terminology and Translations" prior to her Table of Contents: "I use such terms as near-death experience, near-death vision, otherworld journey, otherworld vision, deathbed vision, and return from death almost interchangeably." Thus, Zaleski included non-NDE cases in which people visited caves to seek visionary experiences (p. 34).

Even acknowledging that NDE *reports* are at times culture-specific need not imply that the medieval core NDE differed from today's core experience. After all, as is the case with indigenous tribes and other ancient civilizations, nobody in medieval times interviewed enough people who had come close to death to establish a core experience for that time and place. Instead, researchers can cite only experiences *that survived through time*, which may be the infrequent experiences that reinforced niche doctrines important to the people-group or to religious authorities, proving more useful to repeat and hand down than experiences that merely reinforced the common core. Zaleski (1987) noted that, regarding her medieval examples, "it is scarcely possible to determine the authenticity of any given account" (p. 6) and acknowledged that such narratives may very well have evolved in content over time, for didactic purposes (pp. 70, 82, 188).

Thus, Zaleski's (1987) medieval examples are not an apples-to-apples comparison with today's core experience as it has been established by interviews with NDErs often quite soon after the experience—thus minimizing embellishment over time—and who had little incentive to lie—not writing books or being on a speaking circuit. In van Lommel's (2010) prospective hospital study, NDErs were interviewed shortly after their experiences and then at two-year and eight-year intervals (van Lommel, 2010, p. 142), showing that the stories were not embellished over time. Of course, none of these safeguards could be implemented for Zaleski's examples.

## Claim: Because NDEs can be replicated by DMT, they must be produced by a DMT-like substance that is released by the brain near death.

Several authors have found inadequate the claim that NDEs are the manifestation of endogenous DMT release near death. Michael Potts (2012), for example, found NDEs and DMT experiences to have some similarities but to be essentially different. DMT reports often include the perception of geometric patterns and sentient creatures in the form of clowns, neither of which is characteristic of NDEs—and rarely include the perception of deceased relatives, which *is* characteristic of NDEs (Davis, 2020, pp. 1008–1020). Similarly, Shannon (2002) compared elements of DMT Ayahuasca tea experiences with core NDEs and found them to be quite different experiences. Although, like NDEs, Ayahuasca experiences often involved a meaningful, realistic encoun-

ter with another reality, unlike NDEs, they did not yield a pattern of common characteristics (pp. 48–56).

Yet when searching hundreds of DMT narratives, researchers could surely find a report of a tunnel, of encountering a deceased relative, and of a decision to return. But this activity is cherry-picking rather than making a core-to-core comparison. Minor overlaps of cherry-picked DMT elements should not imply replication of the NDE core.

## Claim: NDEs teach that God never judges anyone; the purpose of human life is to learn rather than to feel bad about one's sins.

In reviewing NDE narratives, I have found that the feeling of judgment can differ between NDErs. One NDEr said, "I was told there was no condemnation and no judgment" (Kadagian, 2022, p. 251); similarly, another said, "There was no blame, no remorse, and no feelings of guilt" (p. 175). DJ Kadagian summarized with the conclusion that NDEs appear to support regarding sin: "There is no judgment in the life-review. There is no condemnation. There is nothing that you did wrong. No, you learned from it" (p. 186).

Other NDE narratives do, however, convey a feeling of judgment or shame for selfish wrongdoings. One NDEr said, "My heart was filled with shame and remorse" (Kadagian, 2022, p. 174). Similarly, another said, "My whole life was viewed, analyzed and judged" (Parnia et al., 2022, p. 10).

These apparent contradictions may reside only on the surface. Considering that NDErs typically report that the Being of Light was incredibly loving and accepting, some experiencers—and others—appear to assume that He never finds fault with people's life choices. Yet, Greyson found 51% of NDErs who reported life reviews experiencing "a sense of judgment, most often judging themselves, about the rightness or wrongness of their actions" (Greyson, 2021, p. 41; Sartori, 2014, p. 7). After realizing, based upon their life reviews, that they have been hurting—sinning against—others with their unloving words and actions, NDErs often report a dramatic shift in priorities (Greyson, 2021, pp. 163–174). Furthermore, in distressing NDEs, people feel confronted by their shortcomings; thus, they typically respond with repentance (Bush, 2012, Rommer, 2000). Apparently, large percentages of NDErs are conveying that life choices do, indeed, matter both to people and to God.

It seems to me that NDErs often fail to distinguish between "what I learned" from "what I was told." Thus, if they were expecting God to yell at them about their shortcomings, but He merely showed loving concern, they may interpret that to mean that "God never judges anyone." Furthermore, until someone demonstrates that a significant percentage of NDErs report hearing on the other side that God would never judge anybody, such reports should be considered atypical rather than a part of the core experience. Also, a major limitation of all NDEs is that experiencers returned to life. Surely the specifics of a mid-life review—as in NDEs—may differ in some respects from the nature of a possible divine assessment upon permanent physical death.

In summary, I see nothing in the core NDE that denies that God is concerned or grieved with human sins and may ultimately, after final death, judge people for their sins.

## Discussion

### Tips to Avoid Drawing Large-Scale Conclusions From Infrequent Experiences

If I am on target with at least some of the above examples, following are some principles to help researchers avoid making unwarranted NDE claims.

1. Master the core experience. It has been said that those trained to identify counterfeit currency must thoroughly familiarize themselves with authentic currency, so that when they encounter fake bills, differences in look and feel often become obvious. Similarly, those aspiring to study NDEs would do well to thoroughly examine scores, even hundreds, of NDEs exhibiting the core elements. Doing so enables researchers to more easily red-flag potentially fraudulent, embellished, and otherwise questionable reports.
2. There is typically a clear percentile difference between high percentage core experiences and infrequent claims. For example, Greyson (1990) found 46% of 74 NDErs reported "thoughts unusually vivid," and none reported "thinking blurred or dull" (pp. 156–158). Thus, a report noting dull or blurry elements suggests caution in accepting it as authentic. A search for alternative explanations might be warranted: Perhaps the person failed to report drug use, or merely passed out and had a dream containing some NDE-like elements, which blurred when emerging from unconsciousness.
3. Rather than reading or listening to scores of reports and accepting every detail, researchers should familiarize themselves with the core experience of frequently reported elements. In addition,

readers should assess whether or not authors' claims to specific core elements have been documented as truly high-percentage elements.

Although the number of identified core elements differs from study to study, "difference" should not necessarily imply "contradiction," because some authors have noted additional—as opposed to contradictory—core elements or have merely identified sub-categories. For example, one researcher may identify "Saw deceased or religious spirits" (Greyson, 1983), whereas another may list "angels" and "deceased relatives" separately. The following are lists of core elements I have found particularly helpful, in chronological order by their appearance in the NDE literature:

a. Moody's (1975) original list (pp. 19–99)
b. Ring's (1980) Weighted Core Experience Index (pp. 19–103)
c. Greyson's (1983) NDE Scale
d. Long's (2010) elements distilled from his study of 613 sequentially submitted surveys to the NDERF site (pp. 6–17)
e. Van Lommel's (2010) description of 12 core elements (pp. 10–43)
f. Martial et al.'s (2020) Near-Death Experience Content Scale (NDE-C)
g. Parnia et al.'s (2022) list, including sub-categories (pp. 8–13); see also Parnia (2024)

Readers should note that some researchers do not calculate or document percentages for each element, a crucial step toward ensuring that each element cited is legitimately core. Also note that the wording of the elements is still being studied for clarity (Bush, 2021; Mays, 2020).

4. When calculating percentages of elements, set aside questionable NDEs, such as those who did not come close to death, who acknowledged drug use, and who may have sought to profit from their experiences.
5. Resist choosing the "most popular experiences" search options. And realize that Google and YouTube searches for "near-death experiences" will naturally yield more atypical experiences, because tantalizing details that confirm niche beliefs are more likely to be thoroughly read, "liked," and linked to, thus making them preferred by search algorithms (Dean, 2023). Because core experiences are so "normal" to those acquainted with the field, infrequent elements provide new and tantalizing twists, surely resulting in more "likes," and are thus more likely to be found in a search.

When researching whether a certain feature is prevalent in NDEs, resist drawing conclusions prior to establishing a percentage from an unbiased, adequately large data set. For example, from my study (Miller, 2023), only 0.5% of NDErs from the NDERF site reported seeing aliens, making this feature quite

infrequent (pp. 153, 154). Yet 0.5% of a database of 5,000 experiences yields 25 experiences. If an author presents all of these together in a book, many readers may be convinced that aliens are core to NDE reports. A half of a percent is quite rare when compared to the 57.3% percent of NDErs that Long (2010) found reporting "either mystical beings or deceased relatives or friends" (p. 11).

6. Researchers who click "like" on a YouTube NDE that declares "all religions got it wrong" should not be surprised if YouTube sends them similar NDEs, because the algorithm discovered what the researcher likes. Thus, YouTube's algorithm might give the impression that the majority of NDEs teach this lesson, disguising the fact that the researchers have created their own echo chamber for experiences compatible with their worldview.
7. To get a more accurate idea of the number of NDErs experiencing certain phenomena, instead of reading/watching cases fed by Google or YouTube, which are tainted by algorithms, read/watch *consecutively submitted* experiences on a database that dates the submissions. This was how I tried to resolve the conflict with the person who claimed that New Age elements were common themes. I copied and pasted 141 *consecutively submitted* NDEs from the NDERF site into a Word document and highlighted the elements in each experience that I wanted to study. Similarly, Long (2010) derived his core list from 613 "sequential NDErs" (p. 6).
8. When researching generations-past experiences from various cultures, a researcher should consider that if nobody established a core experience for the people-group or time period, one is likely merely accessing experiences with niche elements that a particular generation wished to pass on to another, which may have been quite atypical compared to the typical experience of the time or culture.
9. When assessing "my personal NDE" books and personal reports from YouTube channels and interviews, beware of believing everything that people say, because these venues introduce motives for exaggeration and even making things up that are typically not present in anonymously submitted reports or interviews of patients by cardiologists. To sell more personal experience books, authors typically need more than "the same old core experience." Predicting future catastrophes, reinforcing the beliefs of large readerships, and introducing scintillating details that people cannot find elsewhere can boost sales and reap profits. At least one such book became a best-seller before being taken off the market after the author admitted that it was fabricated to cash in on the hunger for NDE stories (Trammell, 2018). The same ulterior motives can taint YouTube testimonies, because

many contributors are trying to attract viewers to their YouTube channels so that they can achieve fame or generate revenue from advertisers.

10. Resist justifying atypical reports as "black swans." It is quite true that to disprove the theory that all swans are white, it is sufficient to find one sufficiently documented observation of a black swan. Yet, in my view, an isolated NDE, self-reported on a large database, is not sufficiently observed and documented to be granted black swan status. Even when an NDEr is personally interviewed by a physician and corroborated with hospital records, I suggest that a researcher is not warranted in drawing large-scale claims from low-percentage elements, because it is typically impossible to absolutely rule out, in any given case, the impact of such potentially compromising factors as unconfessed drug use, hallucinatory elements, and mental illness. Thus, the evidential power of NDEs and deathbed experiences comes from large-scale reports of core elements. Researchers should seek the true nature of NDEs by paying closer attention to the core rather than to low percentage elements.

    A helpful parallel might be a study in which researchers found that 1.3% of Golden Retrievers exhibited aggressive behavior in inappropriate situations (Ott, 2008). Surely, one would be wrong to conclude from this datum that inappropriate aggression is a common characteristic, trait, or feature of Golden Retrievers, even if a study of 10,000 of them found 100 to be aggressive. Perhaps something spooked the "aggressive" ones or provoked a frightening memory to evoke the anomalous reaction.
11. Researchers also do best to resist the temptation to include low-percentage reports that reinforce their worldview when choosing reports that highlight particular core elements. Some researchers, although not claiming that an element such as reincarnation or a representation of God as an impersonal, universal mind is part of the core experience, include such niche experiences in their books, implying their validity. Everyone is susceptible to wanting to forward one's own worldviews, but by including niche experiences, authors can give the wrong impression about what is core and what is not.
12. Distinguish the report from the interpretation. NDErs often report their own outcomes as if they were clearly taught these "lessons" on the other side. "I learned that sin doesn't matter to God." "Nobody should fear death." "We are all going to heaven." Often, when I read such statements by NDErs and compare them to their full testimony, I find that they were never clearly told these things. Rather, they are telling their initial *conclusions* after the event, which may contradict others' experiences and conclusions.
13. Although large NDE databases can be quite valuable for research, researchers need to be fully aware of their limitations,

such as those I listed above. Reports in such studies as cardiologists Michael Sabom (1982) and Pim van Lommel (2010) have the advantage of screening out such potentially compromising factors as mental illness and use of drugs.

14. When determining or reporting on the typical (core) elements of NDEs, tell the percentage of NDEs from a sufficiently large data set to justify each element.

## The Near-Death Experience Scale and the NDE-C Scale Regarding Core Elements

Some readers may object that I am simply saying that researchers should apply the NDE Scale (Greyson, 1983) to determine if an NDE is authentic. This Scale has proven valuable in identifying authentic NDEs by establishing how many core elements were reported in any given case.

Such tools are only as accurate as the questions are faithful to representing core NDE features. Greyson (1983) justified his inclusion of features by giving the percentage of times a feature was reported out of his set of 74 NDE reports. He did not include core features that were common in other experiences, such as hallucinations, because he wanted his tool to help distinguish NDEs from non-NDEs. Thus, more core features may exist than are represented by the NDE Scale.

A revised scale (Martial et al., 2020) introducing new features failed to validate certain distinctive features with percentages. Thus, Bush (2021) rightly questioned introducing such elements as "non-existence," because she found "no evidence that non-existence is a primary constituent" (pp. 55–58). In other words, it is not part of the core experience.

A possible limitation of the NDE Scale (Greyson, 1983) is that it assesses elements in only positive numbers, helping answer the question, "Does this report have enough distinct NDE features to be considered an NDE?" Thus, if a person did not report enough core features, it should not be counted as an NDE report.

Although this answer has obvious value, the Scale does not give negative values for possible spurious claims in reports that may contradict the core experience, which should produce red flags. For example, I noted one case in which the person had forgotten their NDE for decades; overwhelmingly, they are reported as unforgettable. Another report may contain elements, such as repeated geometrical patterns, that are more consistent with DMT experiences than with NDEs. For me, such reports raise red flags. Relying solely upon identifying core ele-

ments may allow some experiences that involve hallucinatory elements to be counted as legitimate NDEs. Thus, those studying consecutive experiences in a database, even after narrowing down reports via the NDE Scale, should additionally calculate the incidence of various elements and compare them to percentages gleaned from past studies before making large-scale claims from infrequently-reported elements.

## Future Study

The above observations point to directions for future research. As noted, some lists of core elements do not include documentation or fresh studies substantiating that each element is frequently reported enough to be considered core. New studies could find claims to core elements that have yet to be substantiated with percentages.

Imprecise descriptions must be clarified. For example, what percentage of NDErs report feeling "at home" on the other side? What percentage specify that they felt that they were "back home"? What precisely did they mean by such terms? Qualitative researchers could ask NDErs to clarify what they were experiencing. Once clarified, the percentages reporting these meanings could be calculated to determine if they should be included in the NDE core.

What percentage of occurrences should be required to substantiate calling an element "core"? The highest percentage elements, such as Greyson finding 64% of NDErs reporting "time stopped; lost meaning," seem obviously to be core. But what of the 12% who felt "judged, held accountable" (Greyson, 1983)? This 12% is significantly more common than the .5% that I found reporting aliens—which would surely be rare—but is 12% high enough to be considered core?

When Greyson (1983) proposed the NDE Scale, he used "frequency counts" from 67 NDErs (p. 371) to narrow down his 16 NDE features/components. Frequencies for chosen features ranged from 16% to 77% (pp. 372, 373). Thus, these surely could be justified as core features of NDEs. Other features that were reported much less frequently and not included in his scale included "senses blurred or dull" (8%) and "subject of another's extrasensory perception (7%). Therefore, if we do not consider "blurred or dull" as a core feature, due to its infrequent appearance, it seems unjustified to include other features/themes that are found with even less frequency.

To get the conversation started, I propose the following percentages to justify lists of themes or core elements:

- 15-100% = core or theme: a common part of an NDE.
- 5-14% = semi-core or subtheme: found in a substantial number of NDEs, but not enough to be considered core.
- 0-4% = low frequency/outliers: may be a legitimate part of someone's experience, but should not be portrayed as a frequent, core NDE theme.

I derived the 15-100% figure from the frequencies of various core elements documented by researchers such as Greyson (1983) and Long (2010). All of these estimates need to be specified and further justified by future research. Anomaly analysis and detection (Foorthuis, 2021), used in various fields of study, could be profitably consulted in formulating and utilizing such percentages for NDEs. From studies that detail the frequency of various core elements, the core seems to clearly stand out percentage-wise from the 1%-or-less frequency of the atypical elements I have found (Miller, 2023).

## Conclusion

In this article, I call for researchers to reflect deeply upon the NDE core elements, utilizing them when evaluating claims about NDEs. Perhaps NDE reports of aliens, Einstein, and Elvis are authentic, but if their occurrence is quite infrequent, I see no warrant to draw broad conclusions based upon them, such as "Near-death research supports the existence of aliens." All researchers can say for certain is that "some people who claim to have had NDEs reported seeing aliens." Wisdom dictates that infrequent elements should be labeled "suspect" rather than embraced uncritically as authentic or hailed as deeper experiences. If we researchers value scientific objectivity, we dare not allow our worldviews and preferences to dictate which experiences we exalt and, instead, need to rely on the well-documented core experience.

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# Competing Accounts for Death-Related Sensory Experiences in Ancient Medicine: Aretaeus of Cappadocia and Caelius Aurelianus

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*ABSTRACT:* Death-related sensory experiences (DRSEs)—perceptual phenomena reported in patients approaching death, often observed and reported by those present at the bedside rather than by survivors—have attracted growing attention in contemporary medical and psychological research. This paper approaches these phenomena from the perspective of the history of ancient medicine by examining two Imperial-period medical treatises—*On the Causes, Symptoms, and Treatment of Acute Diseases* by the Greek Pneumatist physician Aretaeus of Cappadocia (2nd c. AD) and *On Acute and Chronic Diseases* by the Methodist medical author Caelius Aurelianus (5th c. AD) —that describe experiences comparable to what modern scholarship identifies as DRSEs. Aretaeus associated such phenomena with dying patients undergoing cardiovascular collapse (*synkopē*), whom he portrayed as acquiring an unusual clarity of perception enabling them to predict the moment of their own demise, to foresee future events, and to perceive and converse with the dead as though they were present in the surrounding space. Whereas he distinguished these pre-mortem perceptions from the pathological perceptions of delirious organic syndrome (*phrenitis*), Caelius Aurelianus interpreted seemingly identical pre-mortem perceptions solely as the pathological hallucinations of *phrenitis*, thereby excluding any possible otherworldly or veridical significance. Considered within their physiologi-

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cal and theoretical context, these texts reveal not only the historical continuity of reports of experiences occurring near death but also the existence of competing interpretations of such phenomena in Greco-Roman medicine, thereby providing a noteworthy historical antecedent to contemporary debates on the nature of DRSEs.

*KEYWORDS:* death-related sensory experiences, deathbed visions, Aretaeus of Cappadocia, Caelius Aurelianus, Greco-Roman medicine

In this article I examine descriptions of unusual perceptual experiences occurring shortly before death in two medical treatises of the Imperial period: *On the Causes, Symptoms, and Treatment of Acute and Chronic Diseases* by Aretaeus of Cappadocia (2nd c. AD; Hude, 1958) and *On Acute and Chronic Diseases* by Caelius Aurelianus (5th c. AD; Bendz & Pape, 1990), a Latin work derived from a lost treatise of Soranus of Ephesus (2nd c. AD).

In contemporary research, authors have referred to experiences of this kind as *deathbed visions,* after the title of a book by Sir William Barrett (1926), or, in more recent scientific literature, as *death-related sensory experiences* (DRSEs; Ethier, 2005), *nearing-death awareness* (Callanan & Kelley, 1992), *end-of-life phenomena* or *end-of-life experiences* (Fenwick et al., 2007; Fenwick & Brayne, 2011; Kellehear, 2017), *approaching-death experiences* (Fenwick, 2005), and *end-of-life dreams and visions* (ELDVs; Kerr et al., 2013). The core features of DRSEs—as I refer to them in this paper—include visions of light and vivid landscapes and encounters with deceased loved ones, unknown deceased people, or other non-material entities, often described as otherworldly messengers or religious figures whose aim is allegedly to accompany the dying to the afterlife. DRSEs may also involve information that could not have been known by ordinary means and the re-emergence of detailed memories about past life. These experiences are frequently reported as having an enhanced sense of reality and as occurring in physical space (for detailed reports see Barrett, 1926; Fenwick & Fenwick, 2008, pp. 23–45; Gibbs, 2010, pp. 319–323; Moody, 1975, pp. 43–44; Osis, 1961, pp. 27–78; Osis & Haraldsson, 1977/1997, pp. 186–189; van Lommel, 2010, pp. 310–311).

Although such experiences share certain phenomenological features with near-death experiences (NDEs)—such as encounters or communication with otherworldly figures—they differ from them in important respects. DRSEs are typically described as experiences occurring in the final stages of life and are known primarily through the observation of those present at the bedside, whereas NDEs typically occur

in situations of temporary clinical death from which the individual subsequently recovers, enabling a first-hand account of the experience (Morse, 1994; Simpson, 2001). Moreover, DRSEs do not usually involve characteristic features of NDEs, such as out-of-body experiences or tunnel perceptions; for a detailed comparison, see Ethier (2005, p. 105). As with NDEs, however, there is no consensus among specialists regarding the nature of DRSEs. Some authors have interpreted them as purely organic and hallucinatory phenomena (see, for instance, Siegel, 1980), whereas others have viewed them as evidence of an afterlife and of the non-local nature of consciousness (Morse, 2000).

Comparison of contemporarily observed phenomena to phenomena described in ancient texts has precedence in the near-death literature. In a comparison with NDEs, Moody (1975) proposed that ancient narratives such as Plato's myth of Er (*Republic* X, 614b–621d) might present "similarities and parallels . . . with the narratives of contemporary individuals who have come as close as anyone alive to the state of death" (p. 89). Yet this approach remains controversial among scholars, not least because ancient sources are rarely straightforward records of first-hand experiences and are often shaped by literary, philosophical, or religious conventions. Since Jan Bremmer's sixth 1995 Read-Tuckwell Lecture at the University of Bristol—later published as a separate chapter in his *The Rise and Fall of the Afterlife* (Bremmer, 2002, pp. 87–102)—this comparative approach has been applied, with divergent outcomes, to a limited but important body of ancient accounts. Bremmer ultimately rejected the classification of extant ancient reports as NDEs, a view later challenged by van der Sluijs (2009) with regard to Plato's myth of Er and Plutarch's account of Thespesius; see also Muñoz Gallarte (2019) for the caveat that the criteria defining a modern "near-death experience" would not necessarily have been the same for ancient authors. Seaford (2010) has highlighted possible analogies between descriptions of the experience of the initiated in Plutarch's fr. 178 and the vision of light reported in modern NDE accounts, suggesting that such experiences may even have contributed to the origins of mystery cults. More recently, Y. Ustinova (2018, p. 113–168) has extended the interpretive framework of NDEs to a broader range of mystical or initiatory experiences in Greek antiquity (see Passavanti, 2020, p. 681–682 for discussion). Sassi (2022), building on Pugliese Carratelli (1985; 1990), further proposed including within this comparative perspective the vision from above of the Earth described in Plato's *Phaedo* (110b5–111c3), and possibly even the imagery of the cave allegory in *Republic* VII (514 b – 520 a).

In this study, rather than focusing primarily on the retrospective

explanatory potential of contemporary accounts of DRSEs for analogous experiences reported in ancient sources, as in Moody's (1975) influential and much-debated approach to NDEs, I focused instead on how Greco-Roman physicians described and interpreted unusual perceptual experiences occurring in patients approaching death in severe illnesses such as cardiovascular collapse and delirious organic syndromes.

The accounts preserved by Aretaeus and Caelius Aurelianus reveal not only phenomena that closely resemble what modern researchers call DRSEs but also the existence of competing interpretations of such experiences within Greco-Roman medicine. Whereas the Pneumatist physician Aretaeus presented them as experiences associated with a momentary sharpening of perception in the dying, Caelius Aurelianus—following the Methodist tradition of Soranus of Ephesus—interpreted comparable phenomena as purely pathological hallucinations. When considered within their clinical and theoretical context, this ancient debate may be fruitfully compared with contemporary discussions surrounding DRSEs. Whereas medical skepticism toward ancient NDE-like accounts has emerged largely in modern scholarship, the present analysis suggests that traces of comparable debates concerning experiences occurring near death can already be detected in Classical antiquity.

## Aretaeus of Cappadocia's Report of DRSEs in Cardiovascular Collapse (*synkopē*)

The present discussion takes its cue from Aretaeus's *On the Causes and Symptoms of Acute Diseases* (*SA* = Hude, 1958, pp. 3–35), namely from its chapter *Perì kausōn* (II, iv), in which he discussed the different forms of a disease that lacks a precise equivalent in contemporary nosology. Greek physicians referred to it as *kausos*—a term derived from the same root as *kaiein*, meaning "to burn," "to be on fire" —and defined it as an "ardent fever" caused by the pathological overheating of bile, accompanied by delirious behavior or speech and most often proving fatal for the patient. Attempts to identify this disease univocally with a single modern nosological concept have so far failed. The ancient accounts of *kausos* have been associated with a range of possible diagnoses, including salmonellosis, malaria, rickettsial infection, acute food poisoning, puerperal septicemia, leptospirosis, relapsing fe-

ver, and acute appendicitis. As Mirko Grmek observed, "in terms of underlying nosological realities, *kausos* is a syndrome with multiple etiologies whose only unity lies in a common pathogenetic mechanism, namely, a particular disturbance in the body's water and electrolyte equilibrium" (Grmek, 1989, pp. 290–291).

Ancient physicians, of course, were unaware of such etiological factors and instead focused on the symptomatic features of disease in order to define and understand it. According to Aretaeus, *kausos* was "a sharp and subtle fire" that consumed the entire body and was accompanied by various symptoms, including burning breath, dry tongue, insomnia, and rapid pulse. In its most severe forms, it could lead to disturbances of thought and an inability to recognize nearby objects and people (*gnōmē paráphoros, pantōn agnōsíē*; *SA*, II, iv, 2, 2–3 = Hude, 1958, p. 23, 19–20). If the heat of the disease reached its peak, Aretaeus further wrote, it definitively dissolved "the bonds of nature" (*tēs phýsios tà desmá*), that is, the qualitative and quantitative balance of humors that constitutes each individual's unique temperament—"nature" corresponding here to the genuinely Hippocratic meanings of *physis* as "the normal state of the body" that does not change according to the illness affecting the individual; see Jouanna (1990, p. 167). When the humors overheat to the point of untying their mixture, *kausos* ceases and transitions into another pathological state identified by Aretaeus as *synkopē*.

Caution is required here when drawing modern analogies. This condition does not correspond to the transient loss of consciousness now called "syncope" but, rather, to what would today be described as cardiovascular collapse. Aretaeus defined it as "an affection of the heart or an alteration of the vital power (*dýnamis tou zēn*) it contains," a condition that inevitably led to "the dissolution of the bonds of the power necessary for life" (*lýsis tōn desmōn tēs es zōēn dynámios*, *SA*, II, iii, 1, 7–8 = Hude, 1958, p. 22, 3–4).

Whereas *kausos* purportedly unraveled the patient's "individual nature" by dangerously altering the physiological balance of bodily qualities through the boiling of the humors, *synkopē* definitively broke the force that held the body together in its living unity. Strikingly, according to Aretaeus, when *kausos* reached its acme, the intense fever defining the disease subsided abruptly and gave way to an opposite state of low temperature, which drove the patient to the verge of death. At this point, something remarkable may have sometimes occurred. As Aretaeus wrote, "among those whose heart is afflicted by this illness

(*epì . . . toisi kardiōssousi)* the sensation becomes sharper (*aísthēsis oxytérē*), so that they see and hear better than before, their thought is steadier, and their soul purer." This cognitive improvement—comparable in many respects to what is now called *terminal lucidity* (Tassell-Matamua & Kothe, 2025)—"pertains not only to the present, for such patients are truthful seers even with regard to the future" (*SA*, II, iii, 4, 2–5 = Hude, 1958, pp. 22, 26–23, 1):

> The soul settles (*psychē katástasis*), sensation grows pure (*aísthēsis xýmpasa katharē*), the intellect sharpens (*diánoia leptē*), and thought turns prophetic (*gnōmē mantikē*). [The patients] first predict (*progignōskousi*) their own demise, then foretell future events (*prolégousi tà . . . esómena*) to those present. These sometimes believe that [the patients] are delirious (*allophássein*), yet they marvel at the fulfillment of the things foretold. Some converse with the departed, perhaps because they alone see them as present (*pareóntas horeuntes autoì mounoi*), thanks to their subtle and purified sensibility, or perhaps because their soul foreknows and sets out in detail the persons they are about to join. For previously, they were engulfed in impurity and darkness due to the humors; but once the illness has consumed these and lifted the mist from their eyes, they see what is in the air and, with their soul laid bare (*gumnēi tēi psuchēi*), become infallible seers (*mánties atrekées*). Those who have reached such a rarefaction of humors and thought do not survive long, as their vital force has already dissipated into the air (*SA*, II, iv, 4, 1 – 5, 9 = Hude, 1958, p. 24, 2–14).

A note on translation seems warranted regarding the phrase, "These sometimes believe that [the patients] are delirious." Hude's edition (1958, p. 24, 5) reads ἄλλο φασί (*állo phasí*, "they say something else"). However, as Parisian scholar Pierre Petit (1617–1687) said in his 1662 commentary on Aretaeus, published posthumously in 1726, the reading should be corrected to ἀλλοφάσσειν (*allophássein,* "to rave," "to be delirious;" see also Kudlien, 1963, p. 57).

Within the relatively limited scholarship devoted to this passage, these lines have often been associated with an account attributed to the Stoic philosopher Posidonius of Apamea (1st c. BC), transmitted by Cicero in his treatise *On Divination* (see Grmek, 2000, p. 47; Kudlien, 1964, p. 36; 1970, p. 263; Reinhardt, 1921, pp. 460–462). This account describes the divinatory abilities of "those in the grip of a serious and fatal disease," whose soul "remembers the past, sees the present, and foresees the future." They foresee "the imminence of the death" while "visions of the dead" (*imagines mortuorum*) often appear to them and they perceive the "immortal souls" that fill the air, "on which the

marks of truth are clear, as though hallmarked" (*in quibus tamquam insignitae notae ueritatis appareant*). They can converse with the gods themselves (*ipsi di* [ . . . ] *conloquantur*, I, 63–64; transl. Wardle, 2006, p. 66).

As Karl Reinhardt (1921, p. 461) argued, both passages from Aretaeus and Cicero derive from Posidonius, each preserving complementary elements of the same account. Posidonius is traditionally regarded as the teacher of Athenaeus of Attalia, the 1st-century BC founder of Pneumatism, the medical school with which Aretaeus is usually affiliated. The shared origin of the two accounts, along with their complementarity, enables them to be juxtaposed, revealing a surprising number of parallels with modern accounts of DRSEs. As in the cases of NDEs and DRSEs documented in contemporary scientific literature, the dying individuals described by Aretaeus and Posidonius see and converse with the deceased; whether these were loved ones or unknown persons was not specified by Aretaeus, whereas Cicero's report placed them in the surrounding space, mirroring modern accounts. Dying individuals recall past events, display knowledge of facts previously unknown to them, remain aware of their surroundings, foresee events yet to unfold, and perceive divine figures, such as the immortal souls, the gods, and the other beings filling the air (Ethier, 2005, pp. 106–107; Moody, 1975, pp. 26–27, 43–63; van Lommel, 2011, pp. 32–33, 35–38). Their experience is perceived as undeniably true: In Cicero's account, the visions of the dead appeared "hallmarked," whereas Aretaeus's patients conversed with the departed as though they were "present."

Finally, it should be recalled that the clinical condition in which these phenomena are said to occur may correspond, in contemporary terms, to severe episodes of cardiovascular collapse. In modern medicine, this condition may involve cardiac arrest followed by cardiopulmonary resuscitation (for a summary, see Myerson et al., 2010, pp. 4–12), a scenario comparable to those discussed in studies on NDEs among individuals who have survived cardiac arrest (see van Lommel et al., 2001). Aretaeus likewise mentioned the rare possibility that this condition may be reversible, while emphasizing the short duration of the visionary experience, a feature also reported in many modern descriptions of DRSEs (see, among others, Gibbs, 2010, p. 320; Moody, 1975, pp. 57–62). Read in light of contemporary knowledge about DRSEs, the condition described in Aretaeus's text thus presents a noteworthy degree of clinical and phenomenological coherence.

## Differentiating "Visions" from "Hallucinations": Aretaeus and Caelius Aurelianus on Delirious Organic Syndromes (*Phrenitis*)

One aspect of Aretaeus's account, absent from its Ciceronian parallel, deserves particular attention. Aretaeus noted that dying patients whose perceptions were not shared by others were not always believed by those around them. Not only were their visions dismissed as unworthy of trust, but their predictions, as well as the dialogues they engaged in with the spirits of the dead, were considered clear signs of pathological delirium: "[T]hose present. . . sometimes believe that [the patients] are delirious" (*SA*, II, iv, 4, 3–4 = Hude, 1958, p. 24, 5–7).

Delirium, indeed, was also regarded as one of the distinguishing signs of the most severe forms of *kausos*. As Aretaeus himself stated at the beginning of his chapter on this disease, in such cases "thought is diverted" (*gnōmē paráphoros*) and the patient no longer recognizes anything or anyone (*pantōn agnosíē, SA,* II, iv, 2, 2–3 = Hude, 1958, p. 23, 19–20). It was therefore highly likely that the moment when the patient transitioned from *kausos* to *synkopē* could pass unnoticed, making the prophetic speech of the dying susceptible to being interpreted as the delirium of a feverish patient. Aretaeus's distinction between these two phenomena thus points to the need for a differential diagnosis between the two conditions.

Yet even the exclusive nature of the visions experienced by the "infallible seers" succumbing to *synkopē*—in Aretaeus's words, "they alone see" the objects of their perceptions as "present" (*pareóntas horeuntes autoì mounoi, SA,* II, iv, 5, 2 = Hude, 1958, p. 24, 7)—could easily be mistaken for a pathological symptom. The phrasing clearly recalls expressions used by Aretaeus in his discussion of *phrenitis*, another ancient pathology lacking a straightforward equivalent in modern nosology, possibly comparable, in contemporary terms, to delirious states occurring in conditions such as encephalitis, malaria, or other "delirious organic syndromes" (Byl & Szafran, 1996) involving fever (on *phrenitis* in ancient medical thought, see McDonald, 2009, and Thumiger, 2024, pp. 21–223).

*Phrenitis*, in Greco-Roman medicine, is often characterized by hallucinatory perceptions. Aretaeus (*On the Treatment of Acute Diseases* [= *CA*], I, i, 3, 2–5 = Hude, 1958, p. 92, 3–6; *On the Causes and Symptoms of Chronic Diseases* [= *SD*], I, vi, 7, 5–7 = Hude, 1958, p. 43, 1–3) reported that patients suffering from *phrenitis* "see things that do not

exist" (*horéōsi tà mē ónta*), "imagine things that are not present" (*tà mē hypeónta phantázōntai*), and "perceive in an altered way" (*paraisthánontai*). Most notably, they "see what is not present as though it were present" (*tà mē pareónta horéousi dēthen hōs pareónta*), considering that "what does not appear to others" (*tà mē phainómena allōi*) is nevertheless "shown to their sight" (*kat' ópsin indálletai*). Thus, even in *phrenitis*, patients may perceive certain objects as "present" that are not perceived as such by others (*CA*, I, i, 3 = Hude, 1958, p. 92, 3–8; *SD*, I, vi, 7 = Hude, 1958, p. 43, 1–3).

In other words, Aretaeus used similar phrasing to describe two very different phenomena: the deceptive hallucinations of *phrenitis* and the truthful divinatory experiences associated with *synkopē*. Moreover, *phrenitis* could also be confused with *kausos* (see Giovacchini, 2021, pp. 200–202) because of their common symptomatological features—high fever above all—and because of their comparable etiology, both being attributed to the overheating of yellow bile. The presence of burning fever, chills, and delirious episodes in both conditions could make differential diagnosis particularly difficult. To make matters worse, *phrenitis*, like *kausos*, could progress to *synkopē* once it reached its most severe stage, as Aretaeus repeatedly stated in his books *On the Treatment of Acute Diseases* (= *CA*, I, i, 5, 2 = Hude, 1958, p. 92, 22; I, i, 21, 5 = Hude, 1958, p. 96, 11; I, i, 28, 1 = Hude, 1958, p. 97, 19).

It is therefore likely that Aretaeus's emphasis on this distinction formed part of a broader debate concerning the unusual perceptions and mental states in these diseases that physicians had observed. This hypothesis is supported by the inclusion of visions of the dead among the symptoms of *phrenitis* in the treatise *On Chronic and Acute Diseases* by the Methodist author Caelius Aurelianus (5th c.). This work is a Latin paraphrase of a now-lost treatise by Soranus of Ephesus (2nd c.), an essential source for Caelius, who often translated and paraphrased it without straying significantly from his model (see Pigeaud, 1982; Urso, 1997; Van der Eijk, 1999, pp. 414–424; and Urso, 2018, pp. 286–287, especially regarding psychopathology). Because Aretaeus is also believed to have been active in the 2nd century, the ideas concerning the visions of the dead found in both texts are roughly contemporary, and the divergence between the two authors may reflect a dispute on this issue within the medical circles of the Imperial period. Caelius, unlike Aretaeus, characterized the vision of the dead as a *false* perception associated with *phrenitis*, arising solely from the patients' altered state and not involving any sharpening of their cognitive faculties:

> There is sometimes [in *phrenitis*] such irritation of the mind (*mentis indignatione*) that . . . [the patient] does not respond to those speaking to him, while he speaks to unseen beings, and even to the dead, as though they were visible to him (*ut . . secum loquentibus non respondeat, cum loquatur tamquam uisis ‹non uisis› et non solum ‹non› uisis, sed etiam mortuis*, *On Acute Diseases* [= Cæl. Aur., *Ac.*], I, iii, 35–36 = Bendz & Pape, 1990, p. 42, 1–6).

The symptoms for the most severe forms of *phrenitis* that Caelius described echo in many respects those outlined by Aretaeus in relation to *synkopē*—except, of course, for their utterly deceptive nature. It should be noted that in recent medical literature, deceptive hallucinations of the deceased are considered rather infrequent (see Osis & Haraldsson, 1977/1997, p. 187). *Phrenitics* see—or, rather, believe to see—"invisible beings" and converse with them while ignoring the attempts at dialogue by the physician or by anyone else around them. One might therefore be tempted to interpret these lines as expressing the very position that Aretaeus appears to reject in the passage discussed above.

However, the description of the perceptions in *phrenitis* according to Caelius and the visions of "present" or "absent objects" reported respectively for *synkopē* and *phrenitis* by Aretaeus also overlap in other aspects. As the Latin author stated elsewhere in his treatise, the hallucinations in *phrenitis* appear to the patients "as present and true as those seen by dreamers" and "pursue them as if they were present" (Cæl. Aur., *Ac.*, I, xv, 118–119 = Bendz & Pape, 1990, p. 88, 6–16). Their apparent reality is a consequence of the patients' altered mental state. In other words, Caelius's account broadly reflects a position comparable to that of those who today interpret DRSEs as purely hallucinatory phenomena that do not involve interaction with spiritual entities or carry any metaphysical significance. According to such interpretations, the intense sense of reality associated with these experiences can be understood in organic terms as the result of febrile states, cerebral anoxia, or pharmacological effects.

## Contrasting Physiological Processes for DRSEs and Hallucinations: Aretaeus's Pneumatist Perspective

Physiological explanations of DRSEs generally hold little interest for proponents of what might be termed the 'otherworldly hypothesis' of

such experiences. In their view, these phenomena provide evidence of the non-local nature of the mind and of the persistence of consciousness even after physical death and, therefore, do not require any physiological basis to be established on a material level. Yet not every 'materialistic' account must necessarily be reductionist, as illustrated by Pneumatist medical doctrine. This distinction may help explain why Aretaeus seems to have implied two distinct and, in some respects, mirror-like physiological processes underlying these two categories of experience: the pathological and the divinatory. The following is a brief attempt to account for this distinction.

Unfortunately, Aretaeus's proposed physiological processes behind the delusional perception of absent objects that he attributed to *phrenitis* cannot be directly reconstructed, because the relevant section of his work has not survived. However, the treatise *On Affected Places* by Galen of Pergamon (2nd–3rd c.) (= Gal., *Loc. aff.* = Hude, 1824b, pp. 1–452) contains a pneumatic-humoral account of altered perceptions in *phrenitis* that can hardly have differed significantly from the one underlying Aretaeus's text.

In *phrenitis*, according to Galen, an excess of yellow bile accumulates inside the cranial cavity, the principal seat of the disease. Under the effect of heat, these bilious humors evaporate and obscure the brain, much like fire blackens the objects it touches or the sooty smoke that escapes from an oil lamp (Gal., *Loc. aff.*, IV, 2 = Kühn, 1824b, p. 227, 11 – p. 228, 2). The *pneuma* passing through the brain is thus contaminated and, in its movement between the brain and the organs of the senses, alters the products of sensation, producing distorted images of external objects. Galen further clarified this process in the treatise *On the Causes of Symptoms* (= Gal., *Sympt. Caus.* = Hude, 1824a, pp. 85–272), where "sensory alterations and absence of sensation" (*dysaisthēsíai te kaì anaisthēsíai*) are attributed to the "bad condition of the humors" (*kakochymía*) in the cranial cavities that host the *pneuma* (Gal., *Sympt. caus.*, IV, 2 = Kühn, 1824a, p. 107, 7 – p. 108, 2). According to this account, every sensory disturbance originates in the deposition or passage of unhealthy humors, or their emanations, into the pneumatic channels located near the sense organs or the bodily seats of the different psychic faculties. Thus, tastes are perceived "in an altered way" when the tongue is saturated with "some strange fluid," so that everything seems salty or bitter. The perception of a sound, in the absence of any external cause capable of producing it, results from a pathological movement of the eardrum caused by an influx of harmful fluids into the ear. The same explanatory model applies

to ocular pathologies such as cataracts, which the Ancients attributed to an abnormal flow of humors into the eye (Gal., *Sympt. caus*., IV, 1 = Kühn, 1824a, p. 105, 8–12 and p. 106, 8–10).

A similar mechanism is invoked in the case of *phrenitis*. According to Galen's *Commentary on the Prognostic of Hippocrates* (= Gal., *In Hipp. Progn.* = Diels et al., 1915, pp. 195–378), phrenitic patients, because of the unhealthy humors that settle in their eyeballs, "believe they see as external objects things that are actually inside their own eyes." The visual *pneuma*, described as "that pure liquid found in the pupil," mixes with the emanations of the humors accumulating in the head, thereby darkening and generating unreal images (*phantásmata*;, Gal., *In Hipp. Progn*., XXIII = Diels et al., 1915, p. 236, 2 and 6–7; p. 237, 8–12 = Kühn, 1830, p. 71, 12 – p. 74, 4). In Galen's pneumatic-humoral framework, in short, the same explanatory model accounts for the various sensory alterations that may occur under different pathological conditions, from jaundice to cataracts and *phrenitis*.

Aretaeus's preserved text does not include an explanation of this kind regarding *phrenitis*, but the same model is employed to illustrate the alterations of taste typical of jaundice. If "the bile that settles on the tongue comes into contact with the food at its surface," he wrote, "it alters the sensation" and produces the "error" (*apátē*) of "those who believe that bitter things appear sweet, while they are not really so." As Aretaeus stated in his refined prose, "bile is the veil that makes tastes deceptive" (*SD*, I, xv, 11, 2–12, 6 = Hude, 1958, p. 59, 16–29).

According to the traditional etiology followed by Aretaeus, jaundice is caused by yellow bile, the same humor that was usually considered responsible, by its overheating, for *phrenitis* and—in Galen's account—for sensory delusions. By analogy, then, it is reasonable to suppose that a similar explication underlies Aretaeus's understanding of *phrenitis*. The vapors produced by the burning of yellow bile in the brain and sensory pathways disturb the flow of *pneuma*, interfere with its functions, and generate perceptual disturbances that distort external reality, producing illusory images of objects that are, in fact, "not present."

How, then, does it come about that, according to Aretaeus, the extreme heat and consumption that characterize *synkopē* can give rise to prophetic powers in the dying? In physiological terms, as previously stated, both *kausos* and *phrenitis* stem from an abnormal overheating of yellow bile, which is the humoral correlate of the feverish states accompanying these conditions. When the heat of the bile reaches its peak, the patient crosses a point of no return and undergoes an "affection" (*páthos*) that "leads to the dissolution" (*es diálysin trépei*) of the

"cohesion of the human being" (*sýstasis tou anthrōpou, SA,* II, iii, 1, 5 – 2, 1 = Hude, 1958, p. 22, 3–6). Aretaeus repeatedly returned to this image of the "loosening of the vital bonds" as a dire prelude to *synkopē*. At times, however, he elaborated on it in more detail:

> For when the patient's nature (*physis*) is strong and well-tempered, it dominates and governs all things: the fluids, the vital breath (*pneuma*), and the solid parts; and through their good order and proper proportion, it governs man for the purpose of life. But when the bond of nature—its tension (*tónos*) —is dissolved, then the disease (*i.e.*, *synkopē*) occurs. (*SA*, II, iii, 5, 4–8 = Hude, 1958, p. 23, 7–11)

On the symptomatic level, *synkopē* manifests first in the abrupt disappearance of the heat and dryness typical of *kausos* and *phrenitis*, which then gives way to coldness and incessant sweating, as though streams from every part of the body, bones included, were flowing outward "as in a river" (*SA*, II, iv, 3, 6–7 = Hude, 1958, p. 23, 30 – p. 24, 1). From this observation, Aretaeus derived a general maxim: "things that reach the highest degree of intensity then turn into their opposite" (*SA*, II, iv, 2, 7 – 3, 1 = Hude, 1958, p. 23, 24–25). Yet the phenomenon can also be explained in more concrete physiological terms. The extreme heat of yellow bile heats the body's components to the point of 'melting' them, thereby disrupting the "cohesion" (*tónos, sýstasis*) that once preserved the body's unity. This phenomenon occurs because the bile's heat separates the "vital breath" (*pneuma*) from the degraded mixture of humors to which it was bound, in a process comparable to distillation, in which vapors are released from a boiling liquid. In this process, the *pneuma*, far lighter and more volatile than the other liquid and solid elements of the human body, gradually frees itself and evaporates, escaping from the body's boiling mass. At their peak, *kausos* and *phrenitis* disperse the "impurity" (*ilýs*) and "gloom" (*zóphos*) produced by unhealthy humors obstructing the sensory pathways. They also scatter the "mist" (*achlýs*) clouding the eyes (*SA*, II, iv, 5, 5–6 = Hude, 1958, p. 24, 10–11), which—as cited above in Galen's explanation—would otherwise generate the illusions characteristic of *phrenitis*.

This purification culminates in the separation of soul and body, the same process that Posidonius considered essential for divination. With its outward release, the purified and lightened *pneuma*, now freed from diseased humors and bodily afflictions, acquires a "subtle and pure sensitivity" (*SA*, II, iv, 5, 3 = Hude, 1958, p. 24, 8). It is thus able to ascend toward more subtle realities, perceiving entities ordinarily inaccessible to human knowledge but effectively "present" in the surround-

ing air. *Synkopē*, moreover, is a disease of the heart, which serves as the seat of the "soul" (*psychē*), a notion corresponding in Aretaeus's thought to the "vital breath." It is, therefore, in the heart that the disturbances affecting the entire range of vital, motor, and cognitive functions—collectively known in antiquity as "psychic faculties"—must be situated. As long as the heart retains sufficient strength to carry out its functions, it facilitates the flow of *pneuma* from the external environment to the body's center via the sense organs and continues to gather sensations and thoughts even in the exhaustion that accompanies death by *synkopē*, unimpeded by the hindrance and heaviness associated with ordinary knowledge. The loosening of the vital bonds, or *tónos*, of the human being thus leads to a pure and 'absolute' sensation—in the etymological sense of "untied." With the final heartbeat, the *pneuma* leaves the dying body to which it was residually tethered and ascends to the more subtle realm of souls. This moment marks the literal exhalation of the final breath, after which the dying join the spirits they alone had glimpsed during their agony (*SA*, II, iv, 5, 7–9 = Hude, 1958, p. 24, 12–14): "Those who have reached such a rarefaction of humors and thought do not survive long, as their vital force has already flown away into the air."

## Conclusions: "There is nothing new under the sun"—in Every Sense

With this renowned statement from *Ecclesiastes*—which serves as the title of one of the chapters in his book *Consciousness Beyond Life*—Pim van Lommel (2010) argued that the phenomena now described by contemporary neuroscience and psychology as NDEs "were often known under different names, such as visions or mystical, religious, or enlightenment experiences" (p. 8). Van Lommel offered an extensive list of historical parallels to contemporary NDEs, ranging from ancient Egypt to the *Tibetan Book of the Dead*, from archaic and classical Greece to the early Middle Ages, and further from Dante to Swedenborg and into the 20th century. A similar view, as we have seen, was already advocated by Moody (1975) and rests on the recognition of an underlying unity across the "ecstatic" experiences documented by widely diverse sources throughout history—experiences that often imply belief in the survival of the soul or consciousness beyond physical death. Likewise, scholar of ancient and indigenous NDEs, Gregory

Shushan (2025), has found support for the hypothesis that NDEs, however termed in the cultural context in which they occurred, account for the origin of religions that include the ubiquitous belief in an afterlife. With particular regard to DRSEs, it has likewise been observed that, even in the medieval West, visions experienced by the dying were generally regarded as trustworthy. Thus, Angela Ethier (2005), building on the work of Jerome Kroll and Bernard Bachrach (1982), noted that throughout much of the medieval period, "nearly all visions were accepted without question" (p. 105). The comparison of such remarkably similar phenomena, beginning with Moody's work, has therefore led to the idea that modern skepticism toward these experiences arose only with the advent of experimental science and psychological paradigms.

Yet the texts examined in this article suggest a more nuanced historical picture. The phenomena described by Aretaeus in connection with patients undergoing cardiac collapse (*synkopē*) provide an additional example of ancient descriptions closely resembling what modern researchers call DRSEs. At the same time, his effort to distinguish these experiences from the pathological and illusory perceptions arising in *phrenitis*—contrasted with the opposing interpretation preserved in the work of Caelius Aurelianus—shows that debates about the nature of such experiences were already present in Greco-Roman medicine.

In this respect, there was indeed "nothing new under the sun," not only in the appearance of experiences comparable to modern DRSEs but also in the attempts to interpret them. Whereas the Pneumatist Aretaeus presented these visions as the result of a temporary purification and sharpening of perception in the dying, Caelius Aurelianus—following his Methodist source Soranus of Ephesus—treated similar phenomena as deceptive hallucinations produced by pathological processes. If this interpretation is correct, medical reflection on both the 'otherworldly hypothesis' and its pathophysiological counter-explanations can be traced back at least to the medical debates of the 2nd century AD.

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