

Near-Death Experiences and the Physio-Kundalini Syndrome

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ABSTRACT: Near-death experiences (NDEs), transcendental experiences on the threshold of death with profound implications for both patient care and religious belief, have been hypothesized to be related to the awakening of a biological process known in Eastern traditions as kundalini. In a test of this proposed association between kundalini and NDEs, a sample of near-death experiencers acknowledged significantly more symptoms of a physio-kundalini syndrome than did control subjects.

Near-death experiences (NDEs) are profound spiritual or mystical experiences that many people report as they approach or start to cross the threshold of death.¹ The correlates, contents, and consequences of near-death experiences suggest that they are more than just ordinary hallucinations.² Though their incidence and content do not appear to be influenced by religious belief, they have profound effects on religious or spiritual belief,³ and as a consistent response to the threat of death, the NDE may teach us about the fragile interface between life and death.⁴

While the initial skepticism of the 1970s over the occurrence and frequency of these experiences has long passed, there still is no accepted scientific etiology for NDEs. As complex a phenomenon as the near-death experience does not lend itself to a simplistic mechanistic explanation. Despite the psychological or physiological interpretations of the NDE proposed by some authors,⁵ the experience is almost universally regarded by those who report it as spiritually authentic. This is not necessarily paradoxical, as the measure of an experience's authenticity is not the nature of its trigger, but rather its ability to promote authentic spiritual growth.⁶ One of the most consistently docu-

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mented features of the near-death experience is its profound range of after-effects, including decreased fear of death, decreased competitiveness, decreased interest in personal gain, and increased joy of life, altruism, and interest in spirituality.⁷

Some investigators in the field of consciousness and near-death studies have suggested that the significance of the near-death experience may be its role as a catalyst for human evolution.⁸ They view the reported mental, physical, and spiritual aftereffects of NDEs as indications of an accelerated development in near-death experiencers of intuitive functioning on a different order, and as similar to changes traditionally reported by people awakening to a higher-order state of consciousness. But if evolution of consciousness implies the continuing biological evolution of humanity, then personality transformations should be accompanied by signs of biological transformation.

Kundalini

In Eastern spiritual traditions, the biological mechanism of both individual enlightenment and evolution of the species toward higher consciousness is called kundalini, a potential force that once awakened can produce a variety of mental, emotional, physical, and spiritual effects. The ancient yogic texts described a life energy present in all living beings called *prana*; corollary energies have been identified in many other cultures, such as *huo* and *chi* of Taoist tradition, "boiling energy" or *num* of the Kalahari !Kung, *tumo* of Tibetan yogis, *quaumaneq* of Eskimo shamans, *incendium amoris* and *photismos* of Christian mystics, Henri Bergson's *élan vital*, and the more recent terms "bioenergy," "bioplasma," and "orgone energy." Kundalini was described as a normally dormant mechanism or organizing principle that could be activated or awakened under certain conditions, to strengthen or purify an individual's *prana*, transforming its effects upon the individual. Comparable potential forces or organizing principles also have been described in other traditions, for example, as *shakti*, the Odic force, the Holy Spirit, the Pearl of Great Price, the Serpent Power, the Rod of Aaron, the Sacred Fire, Osiris, and the Sun Behind the Sun.⁹

Kundalini has been held responsible for life itself,¹⁰ the sexual drive, creativity, genius, longevity, and vigor,¹¹ and our evolution toward an ultimate, magnificent state of consciousness.¹² The dormant kundalini is said to be situated at the base of the spine, and when aroused can travel upwards along the spinal cord to the brain, where it can stimulate a dormant chamber of the brain (the *brahma randhra*), leading to biological transformation and immensely expanded perception.¹³

Kundalini and near-death experiences

Eastern traditions have developed elaborate lifelong practices and lifestyles with the intent of awakening kundalini; this is, in fact, the implicit purpose

of yoga.¹⁴ However, the same ancient Eastern traditions have also recognized that when the brain is deprived of oxygen kundalini as the life force in rare circumstances may actually rush to the brain in an effort to sustain life. In fact, one bizarre and unusual yoga sect practiced suffocation by tongue-swallowing in the hope that kundalini would rush to their brains and produce enlightenment,¹⁵ a practice that may have a Western counterpart in *la petite mort*, in which a considerable number of adolescents die each year seeking orgasmic initiation by asphyxiation.¹⁶

This theoretical arousal of kundalini by life-threatening crisis has traditionally been regarded by most Eastern philosophers as dangerous.¹⁷ Kundalini should only be awakened by a gradual process under the guidance of someone who has firsthand experience with it; otherwise, a kundalini awakening in a body and soul not properly prepared can produce negative effects, including psychosis. Joseph Dippong, a Canadian businessman who had a near-death experience when he was assaulted and suffocated, experienced a classical positive kundalini awakening, though he had never heard of that phenomenon. When years later he was introduced to the concept of kundalini, he recognized what had happened to him, and went on to establish the Kundalini Research Institute of Canada.¹⁸

Kenneth Ring was the first Western consciousness researcher to speculate in detail about the role of kundalini in near-death experiences. He presented anecdotal evidence of similarities between kundalini awakenings and the common aftereffects of NDEs. He proposed two possible explanations of these similarities: either that kundalini is the energy underlying the near-death experience, and thus every NDE is an indication of an aroused kundalini; or that the near-death experience is one of many possible triggers that can stimulate a kundalini awakening, but doesn't necessarily do so in every case.¹⁹

Seeking more objective evidence of kundalini among near-death experiencers, Ring embedded nine kundalini items in a 60-item inventory of psychophysical changes administered to 74 individuals who had had NDEs and to a control group of 54 subjects who expressed interest in NDEs but never had one themselves. The experiencers were roughly three times more likely to acknowledge these nine physical manifestations typical of kundalini activation than were the control subjects.²⁰

Margot Grey also pointed out the similarities between classical kundalini awakenings and "core" NDEs, including their common precipitation by temporary cessation of heartbeat and respiratory activity. She concluded that similar physiological mechanisms operate in both NDEs and kundalini phenomena, and that both were manifestations of the same evolutionary force.²¹ Describing the theoretical mechanism for the link between kundalini and NDEs, Gene Kieffer has argued that in a near-death situation kundalini attempts a last-ditch life-saving effort by empowering and directing the body's *prana* to flow directly into the dying brain; this overwhelming rush of potent energy produces the visions and other phenomena typical of NDEs.²²

Because the ancient traditions provided gurus to supervise kundalini awakenings, the classical literature did not address the problems of these phenomena. It was assumed that enlightenment, developed in the proper context and with the proper guidance, though it may be difficult, would lead to good outcomes. However, contemporary Western culture provides neither proper context nor proper guidance, so that the earliest indications of kundalini activity may lead to major disruptions in functioning that are often confused with psychotic disorders.²³ Because near-death experiences often occur without preparation or warning, NDErs facing the chaos and change of kundalini awakening frequently seek professional counseling.²⁴ Therapists unfamiliar with kundalini phenomena are likely to misinterpret their symptoms as reflecting an underlying mental illness.²⁵

The physio-kundalini syndrome

Itzhak Bentov, a biomedical engineer who studied the physiological effects of altered states of consciousness, concluded that the normal biological evolution of the human nervous system could be accelerated under certain circumstances, triggering a predictable sequence of physiological stresses on the body that he described as a progressive sensory-motor cortex syndrome. While Bentov acknowledged that the concept of kundalini involves spiritual forces and effects beyond these physiological symptoms, he proposed this limited mechanical-physiological portion of the kundalini syndrome as a useful working model with which the medical profession might study kundalini.²⁶

This intentionally simplistic model, which Bentov called the "physio-kundalini syndrome," describes a characteristic anatomic progression of sensory and motor symptoms. While classical esoteric literature envisioned kundalini as rising from the base of the spine up through the head,²⁷ Bentov speculated that the physio-kundalini symptoms could result from an electrical polarization spreading along the sensory and motor cortices, in turn induced by acoustical standing waves in the cerebral ventricles. Some kundalini scholars maintain that the physio-kundalini concept oversimplifies kundalini and ignores the critically important spiritual evolutionary features that define that process; others maintain further that the physiological symptoms may not represent kundalini activation at all, but rather a less profound effect of bio-energy or *prana*.²⁸

Nevertheless, Lee Sannella, a psychiatrist and ophthalmologist who had encountered patients presenting problems attributable to kundalini activation, viewed Bentov's physio-kundalini model as the best available explanation. Observing that the classical kundalini process is inexplicable in terms of Western medical science, Sannella proposed that we employ the physio-kundalini model to study (and treat patients suffering from) the physiological dimension of the kundalini experience.²⁹ Most Western health professionals

familiar with kundalini now have gained their understanding of the concept through Bentov's neurophysiological model and Sannella's elaboration in medical terminology of the implications and symptoms of the physio-kundalini syndrome.³⁰

This study was designed to compare the occurrence of kundalini phenomena among a sample of near-death experiencers with that among two control samples: one group of individuals who had come close to death but not had near-death experiences, and another group of individuals who had never come close to death. In the interest of conceptual simplicity, quantifiability, and replicability, I chose to study the physiological aspects of kundalini as proposed by Bentov and Sannella.

Method

Subjects. Subjects were recruited through announcements in the newsletter of the International Association for Near-Death Studies, an organization founded to promote research into near-death experiences, soliciting volunteers for a study of unusual physiological symptoms and their possible relation to NDEs. Out of approximately 1,400 readers of that newsletter, a total of 321 individuals responded, including 208 subjects who had had a close brush with death at some time, and 113 who had never come close to death. The 208 individuals who had had a close brush with death were further divided, on the basis of the NDE Scale as described below, into 153 subjects who had had NDEs and 55 who had come close to death but had not had NDEs.

Of the 321 subjects, 140 (44%) were male and 181 (56%) female. The mean age of the 321 subjects at the time of the study was 49.5 years (S.D. = 13.6, range = 20-86 years), and the mean number of years elapsed since the close brush with death for those subjects was 19.1 (S.D. = 14.8, range = 0-67 years).

Procedure. All subjects signed a consent form for participation in the study, on which they designated (a) their sex, (b) their date of birth, (c) whether or not they had ever come close to death, and if so, whether they had an NDE at that time, (d) the date of that close brush with death.

Subjects who had come close to death were asked to complete by mail the NDE Scale, a 16-item multiple-choice instrument for identifying and quantifying the "depth" of NDEs; this instrument, described in detail elsewhere,³¹ has documented reliability and validity³² and can differentiate NDEs from other near-death events.³³ The NDE Scale yields a continuous measure of depth of an NDE along a 32-point continuum; additionally, a criterion score of 7 or greater on this scale is used to differentiate near-death experiences from other close brushes with death.³⁴

A preliminary sample of near-death experiencers who believed they had

had kundalini awakenings were surveyed on the wording of questions designed to elicit physiological and psychological symptoms Bentov and Sannella included in their physio-kundalini model; included among these symptoms were motor, somatosensory, audiovisual, and mental phenomena. On the basis of this pilot work, I developed a simplified 19-item index of the Bentov-Sannella physio-kundalini syndrome,³⁵ which the 321 participants in this study were asked to complete by mail. This physio-kundalini syndrome index permitted answers of "yes," "no," or "not sure" in response to questions as to whether the subject ever experienced each of 19 symptoms; in tabulating the results, "no" and "not sure" answers were both regarded as negative responses. Documentation of the validity and reliability of this physio-kundalini syndrome questionnaire is not yet available.

Data analysis. The primary hypothesis to be tested was that the study sample of NDErs would acknowledge more of the 19 items on the physio-kundalini syndrome index than would the control samples of subjects who had come close to death without having had an NDE and of subjects who had never come close to death. The difference between the number of symptoms acknowledged by the three groups was evaluated by an analysis of variance.

A secondary hypothesis was that the number of physio-kundalini symptoms acknowledged by subjects who had had near-death experiences would be positively associated with scores on the NDE Scale, that is, that deeper NDEs would be associated with more physio-kundalini symptoms. The significance of that hypothesized association was evaluated by Pearson's correlation coefficient.

Assuming a significant difference between the three groups on the entire 19-item physio-kundalini syndrome index, a secondary focus of this study was whether particular symptoms of physio-kundalini would better differentiate NDErs from control subjects. Chi-squared tests were used to evaluate the differences between the proportion of NDErs acknowledging each individual symptom and the proportion of each of the two control groups acknowledging that symptom. Since these 19 symptoms might not be statistically independent, the Bonferroni procedure was used to correct for interdependence of these tests.³⁶ Accordingly, $p < .0026$ was chosen as the criterion for significance for each of these individual chi-squared tests, which would yield a significance level of $p < .05$ for the 19 tests considered together.

Results

NDE Scale and physio-kundalini syndrome index. For the 208 subjects who had been close to death, scores on the NDE Scale ranged from 0 to 31 with a mean of 12.8 (S.D. = 8.6). The mean score was 16.7 (S.D. = 6.5) for the 153 subjects identified as NDErs, and 2.0 (S.D. = 2.1) for the 55 subjects classified

as not having had an NDE; this difference between the two groups was significant ($t = 11.58$, $df = 206$, $p < .0001$).

The 321 subjects in this study acknowledged an average of 6.0 (S.D. = 4.4) of the 19 items on the physio-kundalini syndrome index (range = 1-19). The mean number of the 19 physio-kundalini symptoms acknowledged was 7.6 (S.D. = 4.8) for NDErs, 4.6 (S.D. = 3.2) for subjects who had come close to death without an NDE, and 4.6 (S.D. = 3.7) for subjects who had never come close to death. Thus, NDErs reported significantly more physio-kundalini symptoms than did either of the two control groups ($F = 20.31$; $df = 2, 318$; $p < .0001$).

Among the 153 near-death experiencers, there was a significant positive correlation between NDE Scale score and number of physio-kundalini symptoms acknowledged ($r = .31$, $p = .0003$); that is, those with deeper NDEs reported more physio-kundalini symptoms.

Given this significant positive association between NDEs and the physio-kundalini syndrome as a whole, and between depth of NDE and physio-kundalini, an analysis of individual physio-kundalini symptoms follows.

Motor physio-kundalini symptoms. The physio-kundalini syndrome index included four items that could be considered motor symptoms. One's body assuming and maintaining strange positions for no apparent reason was reported by 29 subjects, or 9% of the sample. These unusual positions were acknowledged by 17% of the NDErs, 2% of those who had been close to death without an NDE, and 2% of those who had never been close to death. NDErs' reports of this symptom were significantly more common than the two control groups' (chi-squared = 22.54, $df = 2$, $p < .0001$).

One's body becoming frozen or locked into strange positions and immovable was reported by 40 subjects, or 12% of the sample. Becoming paralyzed in these unusual positions was reported by 20% of the NDErs, 7% of those who had been close to death without an NDE, and 5% of those never close to death. Again, NDErs reported this symptom significantly more often than did the control groups (chi-squared = 13.82, $df = 2$, $p = .001$).

One's breathing spontaneously stopping or becoming rapid, shallow, or deep for no apparent reason was reported by 93 of the 321 participants in this study, or 29% of the entire sample. These spontaneous breath changes were acknowledged by 39% of the NDErs, 18% of those who had been close to death without an NDE, and 21% of those who had never been close to death. Once more, NDErs reported this symptom significantly more often than the two control groups (chi-squared = 13.23, $df = 2$, $p = .0013$).

Finally, spontaneous involuntary bodily movements were reported by 129 subjects, or 40% of the sample. These involuntary movements for no apparent reason were acknowledged by 43% of NDErs, 40% of those close to death without an NDE, and 36% of those never close to death. This difference between groups was not significant (chi-squared = 1.27, $df = 2$).

Thus, three of the four motor physio-kundalini symptoms were acknowledged more often by NDErs than by the two control groups.

Somatosensory physio-kundalini symptoms. The physio-kundalini syndrome index included six items that could be considered somatosensory symptoms. A spontaneous deep ecstatic tickle or orgasmic feeling was reported by 82 subjects, or 26% of the sample. These orgasmic sensations without any apparent cause were acknowledged by 37% of the NDErs, 13% of those close to death without an NDE, and 17% of those never close to death. NDErs' reports of this symptom were significantly more common than the two control groups' (chi-squared = 19.11, $df = 2$, $p = .0001$).

Physical sensations starting in the feet, legs, or pelvis, and moving up the back and neck to the top of the head, down the forehead, over the face, then to the throat, and ending in the abdomen were reported by 89 subjects, or 28% of the sample. This anatomic progression of sensations was acknowledged by 37% of NDErs, 16% of those close to death without an NDE, and 20% of those never close to death. Again, NDErs reported this symptom significantly more often than did the control groups (chi-squared = 13.54, $df = 2$, $p = .0011$).

Extreme sensations of heat or cold moving through the body for no apparent reason were reported by 118 subjects, or 37% of the sample. These temperature changes were acknowledged by 54% of NDErs, 27% of those close to death without an NDE, and 19% of those never near death. Once more, NDErs reported this symptom significantly more often than either control group (chi-squared = 36.84, $df = 2$, $p < .0001$).

Such moving pockets of bodily heat or cold being extreme enough to burn or otherwise affect someone else or an inanimate object were reported by 18 subjects, or 6% of the sample. These temperature changes influencing others were acknowledged by 10% of NDErs, 2% of those close to death without an NDE, and 2% by those never near death. Though again NDErs reported this symptom more often than either control group, this symptom was reported so infrequently that the difference did not reach our criterion for statistical significance (chi-squared = 9.73, $df = 2$, $p = .0077$).

Pains in specific parts of the body that begin and end abruptly for no apparent reason were reported by 176 subjects, or 55% of the sample. These spontaneous unexplained pains were acknowledged by 59% of NDErs, 45% of those close to death without an NDE, and 53% of those never near death. Thus approximately half the subjects in each group reported this symptom, and the difference between groups was not significant (chi-squared = 3.42 $df = 2$).

Tingling, vibration, itching, or tickling on the skin or inside the body for no apparent reason was reported by 173 subjects, or 54% of the sample. These spontaneous unexplained sensations were reported by 58% of NDErs, 51% of those close to death without an NDE, and 50% of those never near death. Again, half or more of each group reported this symptom, and the difference between groups was not significant (chi-squared = 1.55, $df = 2$).

Thus, while some somatosensory physio-kundalini symptoms, such as spon-

taneous orgasmic sensations, ascending anatomic progression of sensations, and unexplained isolated temperature changes, are more commonly reported by NDErs than by the control groups, other somatosensory symptoms did not differentiate the three groups, possibly because they are either too infrequent in any group, as with temperature changes so extreme as to burn other people, or too common in all groups, as with spontaneous unexplained pains and tingling or vibratory sensations.

Audiovisual physio-kundalini symptoms. The physio-kundalini syndrome index included four items that could be regarded as audiovisual symptoms. Internal noises, such as whistling, hissing, chirping, roaring, or flutelike sounds were reported by 103 subjects, or 32% of the sample. These internal noises without any apparent cause were acknowledged by 41% of NDErs, 29% of those close to death without an NDE, and 21% of those never near death. NDErs' reports of this symptom were significantly more common than the two control groups' (chi-squared = 12.13, $df = 2$, $p = .0023$).

Internal voices were reported by 119 subjects, or 37% of the sample. These unexplained voices were acknowledged by 46% of NDErs, 35% of those close to death without an NDE, and 27% of those never near death. While NDErs reported this symptom somewhat more often than the control groups, the difference did not reach our criterion for statistical significance (chi-squared = 10.46, $df = 2$, $p = .0054$).

Internal lights or colors illuminating parts of the body were reported by 40 subjects, or 12% of the sample. These unexplained pockets of light or color were acknowledged by 19% of NDErs, 5% of those close to death without an NDE, and 7% of those never near death. Again, while NDErs reported this symptom more often than the two control groups, it was so rarely acknowledged that the difference between groups did not reach our criterion for statistical significance (chi-squared = 11.39, $df = 2$, $p = .0034$).

Such internal lights being bright enough to enable one to see clearly in a dark room was reported by 15 subjects, or 5% of the sample. These internal lights illuminating a room were acknowledged by 7% of NDErs, 5% of those close to death without an NDE, and 1% of those never near death. Once more, while this symptom was reported slightly more often by NDErs than by the control groups, the percentages were so small among all groups that the difference was not significant (chi-squared = 5.89, $df = 2$).

Thus, with the exception of unexplained internal noises, which were reported significantly more often by NDErs than by control subjects, audiovisual physio-kundalini symptoms were acknowledged either so commonly by all groups, as with internal voices, or so rarely, as with internal lights or colors, that differences between groups were not significant.

Mental physio-kundalini symptoms. The physio-kundalini syndrome index included five items that could be regarded as mental symptoms. Sudden intense ecstasy, bliss, peace, love, devotion, joy, or cosmic unity for no apparent

reason was reported by 201 subjects, or 63% of the sample. These sudden unexplained positive emotions were acknowledged by 76% of NDErs, 51% of those close to death without an NDE, and 50% of those never near death. NDErs' reports of this symptom were significantly more common than the two control groups' (chi-squared = 21.76, $df=2$, $p<<.0001$).

Watching what is happening, including one's thoughts, from a distance, as if one were a bystander, while one's activities go on as usual, was reported by 140 subjects, or 44% of the sample. This experience of "witness consciousness" was acknowledged by 55% of NDErs, 31% of those close to death without an NDE, and 35% of those never near death. Again, NDErs reported this symptom significantly more often than did the control groups (chi-squared = 15.34, $df=2$, $p=.0005$).

Thoughts spontaneously speeding up, slowing down, or stopping altogether for no apparent reason was reported by 161 subjects, or 50% of the sample. These unexplained changes in thought processes were acknowledged by 61% of NDErs, 38% of those close to death without an NDE, and 41% of those never near death. Once more, NDErs reported this symptom significantly more often than either control group (chi-squared = 14.98, $df=2$, $p=.0006$).

Sudden intense fear, anxiety, depression, hatred, or confusion for no apparent reason was reported by 137 subjects, or 43% of the sample. These sudden unexplained negative emotions were acknowledged by 52% of NDErs, 27% of those close to death without an NDE, and 38% of those never near death. While this symptom was reported somewhat more often by NDErs than by control subjects, the difference between groups did not reach our criterion for statistical significance (chi-squared = 11.34, $df=2$, $p=.0034$).

Finally, experiencing oneself as physically larger than the body, as expanding beyond the material body boundary, was reported by 80 subjects, or 25% of the sample. This "greater body" experience was acknowledged by 31% of NDErs, 18% of those close to death without an NDE, and 19% of those never near death. Again, while NDErs reported this symptom somewhat more often than the control groups, the difference between groups did not reach our criterion for statistical significance (chi-squared = 6.53, $df=2$, $p=.0381$).

Thus, sudden unexplained positive emotions, changes in thought processes for no apparent reason, and watching oneself from a distance or "witness consciousness" were reported significantly more often by NDErs than by either control group; whereas sudden unexplained negative emotions and the "greater body" experience were not reported with significantly different frequency by the different groups.

Discussion

Interpretation of the findings. These data confirm that NDErs experience more symptoms of the physio-kundalini syndrome than do control subjects.

As previous researchers have pointed out, the physio-kundalini syndrome does not define the full flowering of a kundalini awakening. As noted above, some kundalini researchers maintain that physio-kundalini may represent a lesser effect of circulating *prana* or energy, and not true kundalini, the guiding mechanism that when awakened directs the action of *prana*. However, the traits that led near-death researchers to associate NDEs with classical descriptions of kundalini were not these physiological elements but, rather, the profound spiritual aftereffects.³⁷ Thus, there are theoretical reasons to suspect that the association demonstrated here between NDEs and physio-kundalini symptoms does indeed reflect the action of true kundalini in these individuals' lives.

Given that the physio-kundalini syndrome is at best a consistent indicator of kundalini awakening, it is reasonable to ask whether some specific symptoms of this syndrome are better indicators than others. This study did suggest that some symptoms differentiated NDErs from control subjects with greater reliability than others, which may have been either too common among the control groups or too rare even among the NDErs to yield significant intergroup differences.

Ten of the 19 items on the physio-kundalini syndrome index, most notably the motor and mental symptoms, were significantly more common among the NDErs than among the control groups: assuming strange positions, becoming locked into position, changes in breathing, spontaneous orgasmic sensations, ascending progression of sensations, unexplained heat or cold moving through the body, internal noises, sudden positive emotions for no reason, watching oneself as if from a distance, and unexplained changes in thought processes. These 10 items then may be useful indicators of kundalini awakening.

Six items were quite common among control subjects as well as NDErs, and did not differentiate the groups: spontaneous involuntary movements, spontaneous unexplained pain, tingling or vibrating sensations, internal voices, sudden negative emotions for no reason, and experiencing oneself as larger than the physical body. Thus, these symptoms, though they may be part of the physio-kundalini syndrome, also appear to have other common causes that limit their usefulness as indicators of kundalini awakening.

Three items were quite rare among NDErs as well as control subjects, and also did not differentiate the groups: bodily heat or cold so extreme as to burn or affect others, internal lights or colors, and internal lights bright enough to illuminate a dark room. Thus, these symptoms, if they are part of the physio-kundalini syndrome, play too small a role to be useful indicators of kundalini awakening.

The question of response bias. Since this study relied entirely on responses to mail questionnaires and its major finding was that subjects who responded positively on the NDE Scale also responded positively on the physio-kun-

dalini syndrome index, it is reasonable to ask whether these results may be influenced by a response bias. That is, do these data reflect simply certain subjects' tendency to respond positively to any questions?

The 208 subjects who claimed to have been close to death were also asked whether or not they had had an NDE at that time; 146 claimed to have had an NDE, and 62 denied having had one. These subjects then completed the NDE Scale, on the basis of which 153 subjects were categorized as having had an NDE and 55 subjects were categorized as not having had an NDE. The 153 subjects classified as NDErs included 135 who had claimed to have had an NDE but also 18 who did not; while the 55 subjects classified as not having had an NDE included 44 who had not claimed to have had one but also 11 who had made that claim. The question of response bias can be approached by examining the responses of those subjects whose claims of having had an NDE contradicted their scores on the NDE Scale.

As noted above, NDErs in this study acknowledged a mean of 7.6 items on the physio-kundalini syndrome index, while subjects in both control groups acknowledged a mean of 4.6 items. The 11 subjects who initially claimed to have had an NDE but were classified as non-NDErs on the basis of their NDE Scale scores acknowledged a mean of 4.5 items ($S.D. = 3.1$) on the physio-kundalini syndrome index, comparable to the two control groups. On the other hand, the 18 subjects who initially denied having had an NDE but were classified as NDErs on the basis of their NDE Scale scores acknowledged a mean of 7.7 items ($S.D. = 4.6$) on the physio-kundalini syndrome index, comparable to the group of NDErs.

Thus, respondents who made unverified claims of having had NDEs—"false positive" responders—produced low scores on the physio-kundalini syndrome index; while respondents who erroneously denied having had NDEs—"false negative" responders—produced high scores on the physio-kundalini syndrome index. Physio-kundalini symptoms, therefore, appear associated with truly having had a near-death experience, and not with a tendency toward giving positive responses

Implications. These data demonstrate that a number of physio-kundalini symptoms that were derived from classical descriptions of kundalini awakening are reported more often by NDErs than by control populations. This finding corroborates the anecdotal evidence of previous investigators that NDEs are associated with kundalini. It must be borne in mind that the physio-kundalini syndrome, this consistent pattern of physiological and psychological symptoms, is connected with the classical kundalini awakening of Eastern spiritual traditions only by theory and circumstantial evidence. A true measure of kundalini awakening, such as an enduring state of higher consciousness, is beyond our ability to measure.

Although in theory the physio-kundalini syndrome may imply spiritual evolution, in practice it often denotes a crisis requiring adjustment. While

there has been little scientific literature on kundalini, there has been even less from a clinical perspective. What has been written by physicians and therapists suggests that common physio-kundalini symptoms and individuals' responses to those symptoms are often mistaken for physical or mental illnesses, with tragic results.³⁸ Given that the increasing frequency of near-death experiencers was estimated by a Gallup Poll over a decade ago to be 5% of the adult American population,³⁹ this study suggests that the physio-kundalini syndrome may be far more common in Western society than previously imagined.

This documentation of the frequency of kundalini and of its association with events such as the near-death experience may foster greater awareness of kundalini among the scientific and medical professions. Studies of kundalini phenomena should be enlarged to encompass other populations at risk, such as combat veterans, heart transplant patients and those with terminal illnesses, and individuals following spiritual paths. Further research and dialogue among scientists and clinicians may help individuals experiencing kundalini awakening cope with the psychophysiological crises and fulfill the promise of spiritual growth.

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35. The author gratefully acknowledges the help of Kenneth Ring, Ph.D., and Barbara Harris, R.T.T., Ms.T., in developing the physio-kundalini syndrome index used in this study.
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