J Relig Health
DOI 10.1007/s10943-013-9723-0

ORIGINAL PAPER

Near-Death Experiences and Spiritual Well-Being

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Abstract People who have near-death experiences often report a subsequently increased sense of spirituality and a connection with their inner self and the world around them. In this study, we examined spiritual well-being, using Paloutzian and Ellison's Spiritual Well-Being Scale, among 224 persons who had come close to death. Participants who reported having near-death experiences reported greater spiritual well-being than those who did not, and depth of spiritual well-being was positively correlated with depth of near-death experience. We discussed the implications of these findings in light of other reported aftereffects of near-death experiences and of spiritual well-being among other populations.

Keywords Near-death experience · Spiritual well-being · Spiritual change · Spirituality

Introduction

Near-death experiences (NDEs) were initially defined as altered states of consciousness that occur during an episode of unconsciousness as a result of a life-threatening condition (Moody 1975). In general, NDEs may be thought of as processes that occur for some individuals as they come close to death or are "clinically dead" for a period of time (Furn 1987). Clinical death is defined as the period of unconsciousness caused by the total lack of oxygen in the brain (anoxia) because of the arrest of circulation, breathing, or both (van Lommel 2011).

A prospective study of 116 survivors of cardiac arrest in the United States found that 15.5 % of the patients reported NDEs (Greyson 2003), and in a British prospective study of 63 survivors, the reported incidence of NDEs was 11 % (Parnia et al. 2001). An analysis of incidence of NDEs as documented in nine prospective studies in four countries yielded an

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Published online: 30 April 2013

average estimate of 17 % of critically ill patients (Zingrone and Alvarado 2009). With advancements in medical resuscitation techniques, the frequency of NDEs has increased and thus about 9 million people in the United States alone have reported this kind of experience (van Lommel 2011). Although NDEs are thus fairly common phenomena occurring in emergency medicine, many patients are reluctant to acknowledge them due to lack of acceptance and social support (Hoffman 1995).

Moody initially identified 15 characteristics of NDEs described by survivors of a close brush with death: ineffability, hearing oneself pronounced dead, overwhelming feelings of peace, hearing unusual sounds, seeing a tunnel, a sensation of being out of the body, seeing a "being of light," meeting non-physical beings, a life review, a border or point of no return, coming back to life, frustration upon relating the experience to others, broadened or deepened appreciation of life, elimination of fear of death, and corroboration of out-of-body visions (Moody 1975, 1977). A recent review of the accumulated findings from 30 years of research since Moody's seminal work has essentially confirmed his original description (Zingrone and Alvarado 2009).

These experiences can be profound and transforming at personal, religious, spiritual, and societal levels as the person changes drastically, often assuming an altered personality and outlook toward life. They may lead to value and life changes similar to those reported following spiritual awakening, including enduring self-transformation and self-transcendence, and are not associated with prior religious affiliation or religiosity, nor are they typical of those resulting from traumatic experience (Greyson 2006). A recent review of research into the characteristic changes following NDEs found the most commonly reported to be loss of fear of death; strengthened belief in life after death; feeling specially favored by God; a new sense of purpose or mission; heightened self-esteem; increased compassion and love for others; lessened concern for material gain, recognition, or status; greater desire to serve others; increased ability to express feelings; greater appreciation of, and zest for, life; increased focus on the present; deeper religious faith or heightened spirituality; search for knowledge; and greater appreciation for nature (Noyes et al. 2009).

Spirituality is a quality that goes beyond religious affiliation and involves striving for inspiration, reverence, awe, meaning, and purpose, irrespective of a belief in any God (Murray and Zentner 1975). It has also been described as "the way in which people understand and live their lives in view of their ultimate meaning and value" (Muldoon and King 1995, p. 336). A recent overview of measures of spirituality defined the term as "one's striving for an experience of connection with oneself, connectedness with others and nature and connectedness with the transcendent" (de Jager Meezenbroek et al. 2012, p. 338). Many people experience spirituality as an important support while trying to cope with a chronic illness or life-threatening disease (Stefanik et al. 2005), and one of the most significant changes following an NDE is spiritual growth, often involving a more loving attitude, knowledge of God, and inner peace (Marrone 1999).

NDEs generally have a profound and long-lasting impact on those who experience them, often precipitating a significant change in values and attitude toward death and a new sense of purpose or meaning in life (Greyson 2006). A recent analysis of the accumulated literature on spiritual change following NDEs concluded that the pattern of positive life change described by experiencers appeared to reflect a sense of rebirth, revelation of a transcendent reality including a direct experience of divine love, and altered views of themselves and their world (Noyes et al. 2009).

In studies comparing NDErs' attitudes before and after their experiences, they reported a reduced fear of death, a feeling of special importance or destiny, a strengthened belief in postmortem existence, and a state of relative invulnerability (Noyes 1980). Sutherland

(1990) interviewed 50 participants about their NDEs that had occurred years earlier to determine the impact these experiences had left on their lives. She found that although these participants were no more spiritual or religiously inclined than the general Australian population before the NDE, following the NDE there was a significant shift toward spirituality (Sutherland 1990).

In a study measuring religious orientation and religious change as a result of NDEs in 40 experiencers, McLaughlin and Malony (1984) found a strong association between the depth of NDE and various measures of religious change after the experience. Interestingly, though the incidence and content of NDEs did not appear to be influenced by religious belief, NDEs had profound effects on subsequent spiritual or religious beliefs (McLaughlin and Malony 1984).

One aspect of spirituality is *spiritual well-being*, the degree to which a person perceives or derives a sense of well-being from spiritual attitudes and strivings. Spiritual well-being is a barometer of how well a person copes with challenges and may play a role in health outcomes equal to or greater than spirituality it itself (Paloutzian et al. 2012). The ability to focus on processes that transcend immediate survival concerns provides psychological and evolutionary benefits of attending to and finding meaning in the environment (Park 2010).

Research results to date document a relationship between NDEs and spirituality and imply a relationship between NDEs and spiritual well-being. However, the specific construct of spiritual well-being has not yet been investigated in persons reporting NDEs. The purpose of this study therefore was to assess the spiritual well-being of near-death experiencers (NDErs), and to determine whether such a relationship can be corroborated.

Methods

Measures

Participants were 224 individuals who had previously contacted the authors to share their accounts of their experiences when they had come close to death. Participants were mailed or e-mailed a brief questionnaire about their demographic background and details of their close brush with death, and two standardized, self-rated questionnaires: the NDE Scale and the Spiritual Well-Being Scale. They completed these questionnaires at a time and place of their choosing and returned them by mail or e-mail.

The NDE Scale is a self-rated, 16-item, multiple-choice questionnaire developed to assess these experiences (Greyson 1983). It has been shown to differentiate NDEs from other close brushes with death (Greyson 1990); to correlate highly with Ring's (1980) Weighted Core Experience Index, an earlier measure of NDEs ($r = .90$, $p < .001$); and to have high internal consistency (Cronbach's $\alpha = .88$), split-half reliability ($r = .84$, $p < .001$), and test–retest reliability over a short-term period of 6 months ($r = .92$, $p < .001$) (Greyson 1983) and over a long-term period of 20 years ($r = .83$, $p < .001$) (Greyson 2007). A Rasch rating-scale analysis established that the NDE Scale yields a unidimensional measure, invariant across gender, age, intensity of experience, or time elapsed since the experience (Lange et al. 2004). Although the NDE Scale was developed as an ordinal scale without quantified anchor points, the fact that it satisfactorily fits the Rasch model suggests that for all practical purposes, there do appear to be equal distances between the points of measurement that give the scale interval-level measurement properties (Wright and Masters 1982).

The 16 items on the NDE Scale explore cognitive changes during the experience, such as an altered sense of time; affective changes, such as intense feelings of peace; purportedly paranormal experiences, such as a sense of separation from the physical body; and purportedly transcendental experiences, such as an encounter with a mystical being or presence. Scores on the NDE Scale can range from 0 to 32; the mean score of NDErs is 15; and a score of 7, one standard deviation below the mean, is generally used as a criterion for considering an experience to be an NDE (Greyson 1983). For the purpose of this study, we categorized NDEs by "depth," with NDE Scale scores less than one standard deviation *below* the mean considered "subtle," those less than one standard deviation *above* the mean considered "deep," and those greater than 1 standard deviation above the mean considered "profound."

Recently, Parnia and Young (2013) argued that the biology of cardiac arrest is sufficiently different from that of other close brushes with death to justify considering experiences under those two circumstances separately. They suggested that the term *near-death experience* be reserved for those experiences occurring in the absence of cardiac arrest, and that experiences occurring during cardiac arrest be labeled *actual-death experiences*. Although their choice of the term "actual death" may be infelicitous in that "actual death" is usually used to denote an irreversible state, the distinction between experiences occurring with and without cardiac arrest merits further investigation.

The Spiritual Well-Being Scale (SWBS) was developed by Paloutzian and Ellison (1982) and Ellison (1983) as a measure to assess this aspect of a person's spiritual life that transcends any particular religion. The oldest scale of spiritual well-being still commonly used, it has been tested extensively in a broad range of populations, having been used in more than 300 published articles and chapters and 190 dissertations (Paloutzian et al. 2012) and has well-documented reliability, internal consistency, and convergent validity (de Jager Meezenbroek et al. 2012), with alpha reliability coefficients typically in the range of .8 or .9 (Paloutzian et al. 2012). The SWBS is a 20-item self-rated Likert-type questionnaire in which each item is scored from 1 to 6, with a higher number representing greater well-being; half the items are negatively worded and reverse scored, to minimize the role of response sets (Paloutzian and Ellison 1982).

The SWBS includes two non-overlapping components: a religious well-being subscale, which measures one's relationship with God and assesses the vertical dimension of spirituality, and an existential well-being subscale, which measures the horizontal dimension of well-being in relation to the world about us, life purpose, and life satisfaction (Bufford et al. 1991). The religious well-being subscale has items such as "I believe that God loves me and cares about me," and similar items pertaining to a person's relationship with God. In contrast, the existential well-being subscale contains items such as "I feel very fulfilled and satisfied with life," and similar items pertaining to a sense of meaning or purpose without reference to a discrete deity (Paloutzian and Ellison 1982). Correlations between the religious and existential well-being subscales range from .20 to .71 among different populations, suggesting that they are statistically distinct concepts that share some common variance (Paloutzian et al. 2012). The combined score from these two subscales represents the spiritual well-being of an individual.

Statistical Analysis

Pearson's correlation coefficients were used to assess the associations of SWBS scores with age at the time of the NDE and time elapsed since the NDE, and analyses of variance were used to assess the associations with gender, ethnicity, closeness to death, and overall

emotional tone. A *t* test was used to assess the association of SWBS scores with having or not having an NDE during the close brush with death; a Pearson's coefficient was used to assess the association with the depth of the NDE as measured by raw score on the NDE Scale and an analysis of variance to assess that association as measured by categorization of the NDE as profound, deep, subtle, or none, and analyses of variance were used to assess the associations with the type of experience as categorized by Parnia and Young. All data analyses were performed using SPSS 20 (IBM, Armonk, NY, USA).

Results

Participants

Of the 224 participants in this study, 203 (91 %) reported experiences that qualified as NDEs by scoring 7 or higher on the NDE Scale, whereas 21 (9 %) reported experiences that did not.

Table 1 lists demographic variables and parameters of the close brush with death for the entire sample and for the two groups (NDErs and non-experiencers) separately. In terms of demographic variables, the two groups were statistically indistinguishable in gender, ethnicity, and religious identification. Among details of the close brush with death, the two groups were statistically comparable in self-reported closeness to death and in the years elapsed since that experience. However, age at the time of the close brush with death was significantly younger among those who reported NDEs than among those who did not, and the overall emotional tone of the experience was significantly more pleasant among those who reported NDEs and more neutral or unpleasant among those who did not.

NDE Scale and SWBS Scores

Scores on the NDE Scale ranged from 0 to 32, with a mean of 15.37 (SD = 6.86). Table 2 shows the incidence in this study of profound, deep, and subtle NDEs, or no NDE at all; and in Parnia and Young's classification, of actual-death experiences and NDEs. Statistical analyses showed that NDErs differed significantly from non-experiencers in terms of NDE Scale scores (by definition), but not in terms of Parnia and Young's categories.

Scores on the SWBS ranged from 43 to 139, with a mean of 98.55 (SD = 17.81). Scores on the religious well-being subscale ranged from 10 to 60, with a mean of 48.26 (SD = 13.15), and on the existential well-being subscale, they ranged from 25 to 60, with a mean of 50.21 (SD = 7.69).

Spiritual Well-Being and Demographic Factors and Close Brush with Death

As shown in Table 3, scores on the SWBS and its subscales were not statistically associated with age at the time of the close brush with death, years elapsed since the brush with death, gender, or ethnicity. However, scores on spiritual well-being and religious well-being, but not existential well-being, were associated with religious identification, and were highest among Protestants, followed by Catholics, then "other" religious identifications (including various non-Christian denominations and "spiritual but not religious," combined because of their rarity in this sample), and finally agnostics and atheists. A post

Table 1 Characteristics of the participants

Variable	Frequency or mean	NDErs	non-NDErs	Test statistic	*p*
Gender ($n = 224$)				$\chi^2 = .16$ ($df = 1$)	*NS*
Male	62 (30 %)	59 (29 %)	7 (33 %)		
Female	157 (70 %)	144 (71 %)	14 (67 %)		
Ethnicity ($n = 224$)				$\chi^2 = 1.06$ ($df = 1$)	*NS*
Caucasian	198 (88 %)	178 (88 %)	20 (95 %)		
Other	26 (12 %)	25 (12 %)	1 (5 %)		
Religious affiliation ($n = 210$)				$\chi^2 = 3.68$ ($df = 3$)	*NS*
Roman Catholic	45 (21 %)	38 (20 %)	7 (33 %)		
Other Christian	88 (42 %)	83 (44 %)	5 (24 %)		
Other, non-Christian	54 (26 %)	48 (25 %)	6 (29 %)		
Atheist or agnostic	23 (11 %)	20 (11 %)	3 (14 %)		
Age at time of brush with death ($n = 221$)	30.1 (±14.1)	29.3 (±13.5)	37.7 (±17.3)	$t = 2.63$ ($df = 219$)	<.01
Years since brush with death ($n = 215$)	35.3 (±15.7)	35.2 (±15.5)	36.4 (±17.6)	$t = .31$ ($df = 213$)	*NS*
Closeness to death ($n = 194$)				$\chi^2 = 4.82$ ($df = 2$)	*NS*
Lost vital signs (VS) or declared dead	66 (34 %)	63 (35 %)	3 (19 %)		
Life threatened without loss of VS	62 (32 %)	53 (30 %)	9 (56 %)		
Life not threatened	66 (34 %)	62 (35 %)	4 (25 %)		
Emotional tone of experience at brush with death ($n = 223$)				$\chi^2 = 12.10$ ($df = 2$)	<.02
Pleasant	191 (85 %)	178 (88 %)	13 (62 %)		
Neutral or mixed	16 (7 %)	11 (5 %)	5 (24 %)		
Unpleasant	16 (7 %)	13 (6 %)	3 (14 %)		

hoc analysis using Scheffé's method did not reveal discrete homogeneous subsets of the data based on religious identification.

Self-reported closeness to death was also significantly associated with scores on spiritual well-being and religious well-being, but not existential well-being. A post hoc analysis using Scheffé's method revealed two homogeneous subsets of the data: one subset contained participants who reported they had lost vital signs or been pronounced dead and scored significantly higher on spiritual well-being and religious well-being, and the other contained participants who reported they had not lost vital signs or reported their event as not life threatening.

Overall emotional tone of the experience during the close brush with death was significantly associated with scores on spiritual well-being, religious well-being, and existential well-being. A post hoc analysis using Scheffé's method revealed two homogeneous subsets of the data: one subset contained participants who had pleasant or neutral experiences and scored significantly higher on all three measures; and the other contained participants who had unpleasant experiences.

Table 2 Classification of experiences during close brush with death ($n = 224$)

Classification	Frequency	NDErs ($n = 203$)	non-NDErs ($n = 21$)	χ^2 (df)	p
NDE Scale categories				224.00 (3)	<.001
Profound NDE (score = 23–32)	29 (13 %)	29 (14 %)	0 (0 %)		
Deep NDE (score = 15–23)	91 (41 %)	91 (45 %)	0 (0 %)		
Subtle NDE (score = 7–14)	83 (37 %)	83 (41 %)	0 (0 %)		
No NDE (score = 0–6)	21 (9 %)	0 (0 %)	21 (100 %)		
Parnia and Young (2013) categories				.05 (1)	*NS*
Actual-death experience	13 (6 %)	12 (6 %)	1 (5 %)		
Near-death experience	211 (94 %)	191 (94 %)	20 (95 %)		

Table 3 Demographic and brush with death variables and scores on spiritual well-being (SWB), religious well-being (RWB), and existential well-being (EWB)

Variable	SWB test statistic (p)	RWB test statistic (p)	EWB test statistic (p)
Age at time of brush with death ($n = 221$)	$r = -.05$ (*NS*)	$r = -.05$ (*NS*)	$r = -.04$ (*NS*)
Years elapsed since brush with death ($n = 215$)	$r = -.03$ (*NS*)	$r = -.05$ (*NS*)	$r = -.01$ (*NS*)
Gender ($df = 221$)	$t = 1.49$ (*NS*)	$t = 2.05$ (*NS*)	$t = .14$ (*NS*)
Ethnicity ($df = 222$)	$t = 1.31$ (*NS*)	$t = 1.23$ (*NS*)	$t = .99$ (*NS*)
Religious identification ($df = 3, 206$)	$F = 3.30$ ($p = .021$)	$F = 4.22$ ($p = .006$)	$F = .94$ (*NS*)
Closeness to death ($df = 2, 191$)	$F = 3.93$ ($p = .021$)	$F = 6.37$ ($p = .002$)	$F = .79$ (*NS*)
Emotional tone of experience at brush with death ($df = 2, 220$)	$F = 7.31$ ($p = .001$)	$F = 5.61$ ($p = .004$)	$F = 4.70$ ($p = .011$)

Spiritual Well-Being and NDEs

As shown in Table 4, scores were significantly higher among participants who reported NDEs than those who did not on spiritual well-being and religious well-being, but not existential well-being. Depth of NDE as measured either by continuous NDE Scale score or by categorization of the NDE as profound, deep, subtle, or none was significantly associated with spiritual well-being, religious well-being, and existential well-being as well.

Classification of experiences as actual death, involving cardiac arrest, or near-death, not involving cardiac arrest, as proposed by Parnia and Young (2013), was not significantly associated with spiritual well-being, religious well-being, or existential well-being.

Discussion

In general, the data from this study suggest that NDEs are associated with an increased sense of spiritual well-being, and that the "deeper" the NDE, the more profound this effect

Table 4 Near-death experience variables and scores on spiritual well-being (SWB), religious well-being (RWB), and existential well-being (EWB)

Variable	SWB	RWB	EWB
Near-death experience			
Mean, NDErs ($n = 203$)	100.13 (±16.70)	49.57 (±11.81)	50.47 (±7.65)
Mean, non-NDErs ($n = 21$)	83.31 (±21.30)	35.55 (±18.26)	47.76 (±7.80)
t ($df = 222$); p	4.28; $p < .001$	4.88; $p < .001$	1.54; *NS*
NDE Scale correlation ($n = 224$)	$r = .36$; $p < .001$	$r = .36$; $p < .001$	$r = .19$; $p = .004$
Depth of near-death experience			
Mean, profound NDE ($n = 29$)	106.61 (±14.33)	54.20 (±7.81)	51.71 (±7.28)
Mean, deep NDE ($n = 91$)	102.94 (±15.58)	51.48 (±10.56)	51.47 (±8.10)
Mean, subtle NDE ($n = 83$)	94.79 (±17.25)	45.86 (±13.22)	48.93 (±7.07)
Mean, no NDE ($n = 21$)	83.31 (±21.30)	35.55 (±18.26)	47.76 (±7.80)
F ($df = 3, 220$); p	11.63; $p < .001$	13.08; $p < .001$	2.73; $p = .045$
Parnia and Young classification			
Mean, actual-death experience ($n = 13$)	99.27 (±13.60)	49.73 (±10.01)	49.54 (±6.70)
Mean, near-death experience ($n = 211$)	98.51 (±18.07)	48.17 (±13.33)	50.25 (±7.76)
t ($df = 222$); p	.15; *NS*	.42; *NS*	−.33; *NS*

becomes. However, our confidence in and interpretation of these findings must be tempered by certain weaknesses inherent in a retrospective study of this type. First, the correlation between NDE depth and spiritual well-being may not reflect a causal effect of the NDE, although such a relationship would be compatible with other indications of spiritual growth following NDEs (Noyes et al. 2009). Alternatively, the present findings are also compatible with the interpretation that prior spiritual well-being facilitates or increases the probability of an NDE during a close brush with death, although prior research suggests no association between spirituality before a brush with death and incidence or depth of NDEs (Greyson 2006).

Second, our sample of participants who had come close to death was self-selected, and we do not know how or whether they may differ from other survivors of close brushes with death who chose not to participate in the study. Third, we relied on participants' reports of their own experiences and attitudes; although there are data supporting the reliability of such self-reports (Greyson 2007), we do not have external corroboration of the validity of their self-descriptions. Fourth, although the scales we used have well-documented reliability and validity as noted above, they may be vulnerable to ceiling effects in certain populations that might obscure certain differences (de Jager Meezenbroek et al. 2012). However, the ceiling effect on the SWBS appears to be due to extremely high religious well-being scores among religiously conservative groups (Paloutzian et al. 2012), and in the sample utilized in this study, mean scores on the NDE Scale and the Spiritual Well-Being Scale did not approach their upper limits.

Prior studies have demonstrated higher Spiritual Well-Being Scale scores among religious groups than among non-religious groups (Agnor 1988). SWBS scores among our sample of NDErs tended to be comparable to those of religious samples in other studies. For example, respondents in our sample who reported NDEs had SWBS scores similar to those reported among Conservative Baptists, Ethical Christians, and United Methodists, whereas the scores of our comparison sample who had come close to death without having

NDEs were considerably lower (Durham 1988). Likewise, respondents in our sample who reported NDEs had SWBS scores similar to those reported by among Christian college students, but higher than those of non-Christian students (Paloutzian and Ellison 1982).

High scores would be expected among theistic religious groups, since the items on the religious well-being subscale pertain to one's relationship with God. The comparably high scores among NDErs suggest either that prior religiosity facilitates NDEs or that NDEs are transformative experiences that alter experiencers on a spiritual level. As noted above, the latter interpretation is compatible with the evidence from other sources (Noyes et al. 2009), whereas the former is not (Greyson 2006).

Ring (1980) interviewed 102 survivors of NDE and found that they described themselves as being more religious than before. Although Ring's sample did not attend church more often than they had prior to their experiences, they reported a sense of heightened inward religious feeling and an overall tolerance for all ways of religious worship. His respondents stressed the importance of love, caring, and compassion for others and emphasized the need for unconditional love and acceptance for all humanity. These ideas resonate with the teachings of most religious disciplines, and insights into the mechanisms of NDEs may provide further clues to these attitudinal transformations.

Another significant finding from our data is that the depth of NDE was associated with higher scores on the SWBS and on both the religious and existential well-being subscales. This finding is consistent with a study by McLaughlin and Malony (1984) measuring religious orientation and religious change in 40 NDErs, in which they also reported a strong association between the depth of NDE and various measures of religious change following NDEs. They concluded that NDEs are a form of spiritual intervention in the lives of people regardless of their prior religious orientation.

As individuals go deeper into their NDEs, they report a stronger level of connection with their inner being or "spiritual self," as well as with the world around them. These connections impact NDErs' entire outlook toward life and often impel them on a journey to find the same harmonious, peaceful, and serene feeling. These changes may explain NDErs' higher scores on the SWBS compared to respondents who had come close to death without NDEs.

Parnia and Young (2013) have described NDEs during cardiac arrest as *actual-death experiences* and proposed that such experiences are qualitatively distinct from NDEs occurring in the absence of documented cardiac arrest. However, in our sample, we did not find any difference in SWBS scores between these two groups. That finding suggests that physiological parameters that differentiate NDEs occurring without cardiac arrest from arrest-related "actual-death experiences" are not critical in the spiritual transformative aftereffects associated with these profound experiences. This lack of any difference between experience with and without cardiac arrest may appear to contradict the finding above that self-reported loss of vital signs or being pronounced dead was associated with higher scores on the NDE Scale and SWBS. This apparent discrepancy may suggest that some participants reported loss of vital signs from causes other than cardiac arrest, such as pulmonary arrest, cerebrovascular accident, injury, or metabolic failure, but it suggests further caution about the specificity and reliability of self-report of physiological condition.

The data from this study support previous research suggesting that NDEs may be considered a form of, or vehicle for, spiritual awakening. We suggest that a causal link between NDEs and spiritual well-being may cautiously be proposed as the best fit for the cumulative data so far. However, the retrospective design of almost all the supportive research obliges us to regard that causal interpretation as a hypothesis still to be tested by prospective study, for example, with patients at high risk for cardiac arrest and NDEs. We

hope that such prospective investigation into NDEs may help elucidate aspects of human consciousness that have so far been difficult to understand in scientific terms.

Conflict of Interest The authors and their institution have no relationship, financial or otherwise, with individuals or organizations that could influence the authors' work inappropriately.

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