

Brief Reports

Posttraumatic Stress Symptoms Following Near-Death Experiences

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Persons who report "near-death experiences" (NDEs) acknowledge more intrusive symptoms of posttraumatic stress disorder (PTSD) than those who came close to death without NDEs, but not more avoidance symptoms, suggesting a nonspecific stress response. Although dissociation generally increases vulnerability to PTSD, the positive affect that distinguishes NDEs from other dissociative experiences may mitigate subsequent PTSD symptoms.

More than half of all Americans are exposed to a life-threatening traumatic event at least once, and one-quarter of Americans more than once (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Although there are many possible psychological and biological responses to traumatic events, almost half of those exposed to such events may develop the particular avoidance and hyperarousal symptoms of posttraumatic stress disorder (PTSD) (Kessler et al., 1995). Many of the symptoms of PTSD overlap with those of depressive and anxiety disorders. What distinguishes PTSD is a biphasic pattern of reliving the trauma through intrusive memories, alternating with avoidance of reminders and numbing (Davidson, 1997).

The DSM-IV diagnostic criteria for PTSD focus on intrusive memories and disordered arousal as its distinguishing characteristics, with other symptoms understood as strategies to ward off emotions, somatic sensations, and personal meaning schemes associated with the trauma (van der Kolk et al., 1996). There are four diagnostic criteria for PTSD that address symptoms (and two others that address duration and degree of impairment): a) exposure to

a traumatic event that induces fear, helplessness, or horror; b) persistent re-experiencing of the traumatic event; c) avoidance of trauma-related stimuli or numbing; and d) hyperarousal (American Psychiatric Association, 1994).

Several studies in recent years have suggested that dissociative experiences at the time of trauma are a significant long-term predictor of the later development of PTSD (Koopman, Classen, & Spiegel, 1994; Marmar et al., 1994; Shalev, Peri, Canetti, & Schreiber, 1996; van der Kolk et al., 1996). One distinctive type of dissociative experience in the face of life-threatening danger is the so-called transcendental "near-death experience" (NDE), in which persons close to death may believe they have left their physical bodies and transcended the boundaries of the ego and the confines of time and space. These NDEs include cognitive elements, such as accelerated thought processes and a "life review"; affective elements, such as intense feelings of peace and joy; purportedly paranormal elements, such as a sensation of being out of the body or visions of future events; and transcendental elements, such as an experienced encounter with deceased relatives or an unearthly realm (Bates &

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Stanley, 1985; Greyson, 1983a; Noyes & Kletti, 1976; Owens, Cook, & Stevenson, 1990). Because NDEs involve perceptions, cognitions, and emotions that are disconnected from mainstream consciousness, they can be considered a type of dissociation (Greyson, 1997b) or depersonalization (Noyes & Kletti, 1976). People who report NDEs also report more everyday dissociation than do other trauma survivors, although they report far less dissociation than do patients with pathological dissociative disorders (Greyson, 2000).

Although the term "near-death experience" was not coined until 1975, transcendental experiences near death were reported in the medical literature of the 19th century (Anonymous, 1894; Wiltse, 1889), and the phenomenon had been described as a discrete syndrome toward the end of that century, when Heim (1892) published a collection of such cases. NDEs probably occur to between 9% and 18% of individuals who experience documented cardiac arrest (Greyson, 1998b), and often produce a consistent pattern of change in beliefs, attitudes, and values (Greyson, 1998a; Noyes, 1980).

In general, retrospective studies of survivors of NDEs have shown them to be psychologically healthy individuals who do not differ from comparison groups on measures of mental health (Gabbard & Twemlow, 1984; Greyson, 1991; Locke & Schontz, 1983). However, some experiencers report considerable distress or psychosocial impairment that appears to be related to recurrent intrusive memories of their close brush with death or to difficulty integrating the NDE and its sequelae into their lives (Greyson, 1997a). Some report typical PTSD symptoms of diminished interest in activities, estrangement from others, restricted range of affect, and a sense of foreshortened future (Greyson, 1997a).

Because, by definition, NDEs involve a threat of death or serious injury, it would be surprising if they were not associated with some symptoms of PTSD. However, near-death experiencers rarely respond with the intense negative affects required to meet the *DSM-IV* criteria for PTSD. They may report recurrent, intrusive recollections of the event, but these recollections are rarely distressing. Those who have had the experience rarely report efforts to avoid reminders of the NDE, difficulty recalling parts of the experience, or hyperarousal.

Thus, although dissociation at the time of trauma may predict subsequent PTSD, the particular type of dissociation seen in NDEs does not. In

fact, uncontrolled clinical anecdotes suggest that NDEs may serve a defensive function, protecting against the later development of PTSD. However, to date such clinical speculation remains untested.

The present study compared the incidence of PTSD symptoms in a nonclinical sample of NDE survivors and in persons who came close to death but did not have NDEs. Only a small percentage of people with PTSD ever seek professional help, and those who do may be atypical of the total population with these problems (Solomon & Davidson, 1997). For that reason, a nonclinical sample was used to provide an assessment of normative responses to life-threatening stress, which could not be obtained from studies of clinical populations.

METHOD

Sample

The sample was recruited from among individuals who contacted the author, in order to share accounts of their close brushes with death, following reports in the public media about the author's prior research on NDEs. No effort was made to solicit such contacts, but once contact was made, correspondents were invited to participate in this research. Participants were not paid, and were told that the purpose of the research was to further understanding of the emotional effects of a close brush with death.

The study sample included 194 individuals who claimed to have come close to death, all of whom completed the NDE Scale (see below). Of those, 148 participants (76%) claimed to have had NDEs at the time of their close brush with death and described experiences that scored at or above the cut-off criterion of seven points on the NDE Scale ($M=17.5$, $SD=6.3$). The remaining 46 participants (24%) denied having had NDEs and described experiences that scored below the cut-off criterion ($M=1.6$, $SD=2.1$). The 15.9-point difference (95% $CI=14.0$ to 17.7) in the scores of these two groups was significant ($t=16.70$, $df=192$, $p<.001$). Among the 194 participants, the traumatic event that precipitated the close brush with death was an accident in 56 cases (29%), illness in 52 cases (27%), surgery in 40 cases (21%), childbirth in 21 cases (11%), suicide attempt in 6 cases (3%), and "other" in 19 cases (10%). Mean elapsed time since the close brush with death was 18.4 ($SD=14.2$) years, with a range of less than 1 year to 67 years.

Of the 194 participants, 122 (63%) were female and 72 (37%) male. Their mean age was 49.8

($SD=12.4$) years, with a range of 22–82 years. Of the 193 participants who indicated a religious preference, 86 (44%) described themselves as Protestant, 41 (21%) as Roman Catholic, 9 (5%) as Jewish, 19 (10%) as "other," and 38 (20%) as "none."

Procedure and Instruments

After a complete description of the study was sent to the participants, written informed consent was obtained. Participants were mailed questionnaires that included the two study instruments. When returned, completed questionnaires were identified only by coded participant number.

NDE Scale. The NDE Scale is a reliable and valid 16-item, self-report, multiple-choice questionnaire for identifying and quantifying NDEs and differentiating such experiences from other responses to a close brush with death (Greyson, 1983a, 1990). Cronbach's alpha was .91 for the 16-item scale in the current study, and a score of seven or higher (out of a possible 32) was used as the standard criterion for identifying an experience as an NDE (Greyson, 1983a). The scale includes questions about cognitive processes (e.g., "Did time seem to speed up or slow down?"), affective processes (e.g., "Did you have a feeling of peace or pleasantness?"), purportedly paranormal processes (e.g., "Did you feel separated from your physical body?"), and experienced transcendence (e.g., "Did you seem to enter some other, unearthly world?").

Impact of Event Scale. The IES is a reliable and valid 15-item, self-report, multiple-choice questionnaire for measuring the stressful effects of specific traumatic life events (Horowitz, Wilner, & Alvarez, 1979). The instrument categorizes these stressful effects into two clusters: intrusion and avoidance. The seven items measuring intrusive symptoms include the penetration of thoughts, images, feelings, and dreams, and distressing repetitive behavior (e.g., "I had dreams about it"). The eight items measuring avoidant symptoms include psychic numbing, denial, behavioral inhibition, and counterphobic activities (e.g., "I tried not to think about it").

Analyses

A score of seven or greater on the NDE Scale was used to determine the presence of an NDE. Scores on the intrusion and avoidance subscales of the IES were used as continuous measures of intrusive and avoidant posttraumatic stress symptoms.

The hypothesis that individuals with NDEs would report higher numbers of intrusive and avoidant posttraumatic stress symptoms than would those who came close to death without NDEs was tested by comparing the mean scores of those two groups on the IES and its subscales, using two-tailed *t*-tests for independent samples. Secondary analyses comparing the two study groups on age and time elapsed since the close brush with death were conducted using two-tailed *t*-tests for independent samples; and those comparing the two study groups on gender, religion, and traumatic event were conducted using Pearson chi-square tests.

Finally, multiple regression analyses were conducted using forward stepwise variable selection, with a criterion of the probability of $F \leq 0.05$ to enter a variable, and a criterion of the probability of $F \geq 0.10$ to remove a variable. One regression analysis was conducted for the overall IES score and one each for the intrusion and avoidance subscales, in order to assess the effect of NDEs while controlling statistically for the potentially confounding covariates of years elapsed since the close brush with death, gender, age, religion (dichotomized into Christian vs. other), and traumatic event (dichotomized into accident vs. other). All analyses were performed using SPSS for Windows, version 9.0.

RESULTS

Sample Demographics

Comparisons on demographic variables between the 148 participants who had NDEs and the 46 who did not are presented in TABLE 1. Two-thirds

Table 1
SAMPLE CHARACTERISTICS: PARTICIPANTS
WITH ($N=148$) AND WITHOUT ($N=46$) NDEs

| ITEM | NDEs | NO NDEs | STATISTIC | df | <i>p</i> |
|------------------------|-------------|-------------|----------------|-----|----------|
| Female | 67% | 50% | $\chi^2=4.20$ | 1 | 0.038 |
| Age: yrs (<i>SD</i>) | 49.0 (11.9) | 52.1 (14.0) | $t=-1.47$ | 192 | 0.144 |
| Yrs Since Trauma | 16.6 (12.9) | 24.5 (16.6) | $t=-3.37$ | 192 | 0.001 |
| Religion | | | $\chi^2=12.17$ | 4 | 0.016 |
| Protestant | 46% | 39% | | | |
| Roman Catholic | 25% | 9% | | | |
| Jewish | 3% | 9% | | | |
| Other | 10% | 11% | | | |
| None | 16% | 33% | | | |
| Traumatic Event | | | $\chi^2=6.16$ | 5 | 0.290 |
| Accident | 26% | 37% | | | |
| Illness | 27% | 26% | | | |
| Surgery | 20% | 24% | | | |
| Childbirth | 13% | 4% | | | |
| Suicide | 3% | 4% | | | |
| Other | 12% | 4% | | | |

of the participants with NDEs, but only half of those without NDEs, were female. The mean difference in age between the two groups was a non-significant -3.1 years (95% CI=-7.2 to 1.1). Time elapsed since the trauma was significantly longer for those without NDEs; the difference in elapsed time between the two groups was -7.8 years (95% CI=-12.5 to -3.3). A higher percentage of participants with than without NDEs described themselves as Christian. The two groups did not differ significantly in type of traumatic event that precipitated the close brush with death.

Posttraumatic Stress Symptoms

The mean score of the 194 participants was 17.5 ($SD=14.6$) on the overall IES, 11.6 ($SD=9.4$) on the intrusion subscale, and 5.9 ($SD=7.4$) on the avoidance subscale. Comparisons on posttraumatic stress symptoms between the 148 participants who had NDEs and the 46 who did not are presented in TABLE 2. On the overall IES, those with NDEs scored 9.0 points (95% CI=4.3 to 13.7) higher than those without NDEs. Nevertheless, the mean IES score of participants with NDEs was 1.2 standard deviations below the mean score of 39.5 among a criterion sample of patients with PTSD (Horowitz et al., 1979). Likewise, on the intrusion subscale, those with NDEs scored 8.4 points (95% CI=5.6 to 11.3) higher than those without NDEs. Again, the mean intrusion score of participants with NDEs was 0.8 standard deviation below the mean score of 21.4 among a criterion sample of patients with PTSD (Horowitz et al., 1979). On the avoidance subscale, the mean scores of those with and without NDEs were comparable (mean difference=0.6, 95% CI=-1.9 to 3.0), and were 1.1 standard deviations below the mean score of 18.2 among a criterion sample of patients with PTSD (Horowitz et al., 1979).

TABLE 3 presents the multiple regression analyses carried out with forward stepwise selection of variables. For the overall IES, NDEs and years elapsed since the traumatic event met criteria to be entered as variables, whereas gender, religion, age,

Table 3

MULTIPLE REGRESSION ANALYSES OF IMPACT OF EVENT SCALE (IES) SCORES

| DEPENDENT VARIABLE | VARIABLE INCLUDED | β | PARTIAL r | t | p | INCREMENTAL R^2 |
|-----------------------------|-------------------|---------|-------------|-------|--------|-------------------|
| IES ^a | | | | | | |
| Step 1 | NDE | 0.22 | 0.22 | 3.12 | 0.002 | 0.069 |
| Step 2 | Yrs elapsed | -0.18 | -0.18 | -2.50 | 0.013 | 0.030 |
| Intrusion ^b | | | | | | |
| Step 1 | NDE | 0.32 | 0.32 | 4.71 | <0.001 | 0.148 |
| Step 2 | Yrs elapsed | -0.19 | -0.20 | -2.86 | 0.005 | 0.030 |
| Step 3 | Fem. gender | 0.13 | 0.15 | 2.03 | 0.044 | 0.017 |
| Avoidance ^c None | | | | | | |

^aExcluded variables: gender, religion, age, type of trauma.

^bExcluded variables: religion, age, type of trauma.

^cExcluded variables: NDE, years elapsed, gender, religion, age, type of trauma.

and type of traumatic event did not. In that analysis, NDEs were a significant predictor of IES scores ($B=7.59$; 95% CI=2.78 to 12.39). For the intrusion subscale, NDEs, years elapsed, and female gender met criteria to be entered as variables, whereas religion, age, and type of traumatic event did not. In that analysis also, NDEs were a significant predictor of intrusion scores ($B=7.02$, 95% CI=4.08 to 9.97). For the avoidance subscale, none of the variables met criteria to be entered into the analysis.

DISCUSSION

This study suggests a distinctive pattern of posttraumatic symptoms among people who report NDEs. Compared to research participants who had come close to death without having had NDEs, those with NDEs scored significantly higher on the total IES and on its intrusion, but not its avoidance, subscale. Thus, although experiencers do report more intrusive thoughts and memories of their close brush with death than comparison-group participants, they do not report greater efforts to avoid thoughts or reminders of that event.

On the total IES and on both subscales, the experiencers scored substantially lower than did the criterion sample of patients with PTSD (Horowitz et al., 1979), and lower than the recommended cut-off point for PTSD "caseness" in a community sample (McFarlane, 1988). These data suggest that survivors of NDEs do not, as a group, suffer the degree of distress or impairment that patients with PTSD do. The clinical relevance of IES scores that are elevated yet still below the PTSD diagnostic threshold is unclear. Given the importance of subsyndromal levels of depressive symptoms (Frasure-Smith, Lesperance, & Talajic, 1995;

Table 2

IMPACT OF EVENT SCALE SCORES: PARTICIPANTS WITH ($N=148$) AND WITHOUT ($N=46$) NDEs

| SCALE | NDEs | | NO NDEs | | $t(df=192)$ | p |
|--------------------|------|--------|---------|--------|-------------|--------|
| | M | (SD) | M | (SD) | | |
| Impact of Event | 19.6 | (14.5) | 10.6 | (12.9) | 3.76 | <0.001 |
| Intrusion subscale | 13.6 | (9.2) | 5.2 | (6.5) | 5.77 | <0.001 |
| Avoidance subscale | 6.0 | (7.5) | 5.4 | (7.3) | 0.45 | 0.65 |

Judd, 2000), it may be premature to assume that subsyndromal levels of intrusive thoughts are not clinically relevant in the prognosis of trauma survivors. However, it is noteworthy that in these participants with NDEs, the elevation of IES scores was entirely due to the scores on the intrusion subscale, and not on the avoidance subscale.

There is some evidence that catastrophic events, such as military combat, produce greater intrusion, whereas more commonplace stressful events, such as bereavement or personal injuries, may produce greater avoidance (Schwartzwald, Solomon, Weisenberg, & Mikulincer, 1987). Longitudinal studies suggest that intrusive phenomena may be a non-specific marker of inadequate cognitive processing of a traumatic event, rather than symptomatic of psychiatric disorder; many survivors of life-threatening crises report intrusive symptoms without ever developing PTSD or other stress-related disorders (McFarlane, 1992).

The profile of near-death experiencers on the IES, with moderate elevation on the intrusion subscale and none on the avoidance subscale, is therefore consistent with a nonspecific response to catastrophic stress with a low specificity for PTSD (McFarlane, 1992). This profile is also in keeping with clinical observations that NDE survivors tend to be preoccupied with their experience and its sequelae, but do not generally view it as a negative influence on their lives. Of course, some individuals who report having had NDEs may also suffer PTSD as a result of their close brush with death or the associated subjective experience (Greyson, 1997a), but the intrusive symptoms commonly reported by near-death experiencers do not in themselves appear sufficient to suggest the presence of PTSD.

Although peritraumatic dissociation has been shown to predict subsequent PTSD (Koopman et al., 1994; Marmar et al., 1994; Shalev et al., 1996), this study suggests that dissociative NDEs do not. One feature that distinguishes most NDEs from other forms of peritraumatic dissociation is the strong positive affect (Bates & Stanley, 1985; Greyson, 1983a; Noyes & Kletti, 1976; Owens et al., 1990), in contrast to the fear and terror that accompany most dissociative responses to catastrophic events. It is plausible that the positive affect in NDEs might help defend against the subsequent development of full-blown PTSD.

The cross-cultural commonalities among NDEs suggest that humans may be programmed to have

such experiences in the face of life-threatening danger. If so, we might speculate about the possible survival value of having NDEs when close to death. For example, the peacefulness and behavioral relaxation of the NDE might conserve energy, prolonging life where agitation or panic might hasten death; the splitting off of the threatened individual's consciousness as a detached observer, separated from the imperiled body, might protect against paralyzing pain and cognitive disorganization; and the accelerated mental processes might facilitate extraordinary rescue efforts in the face of life-threatening danger (Greyson, 1983b; Noyes & Kletti, 1976). The present study suggests that there may, in addition, be a long-term adaptive function of NDEs: namely, strong positive affect at the time of the trauma may forestall or mitigate the subsequent development of the more maladaptive PTSD symptoms.

Limitations of the Study

Findings of the current study must be interpreted with caution because of its reliance on self-selected participants, who may conceivably differ from persons who do not come forward voluntarily. For example, it is possible that individuals who experience fewer intrusive symptoms may be less motivated to participate in research, or that those who experience more avoidant symptoms may be reluctant to participate in research that may arouse traumatic memories. It is also conceivable that those who volunteer for research may feel they are "doing something about" their experience, and that activity may thereby shield them from the more distressing PTSD symptoms experienced by non-volunteers. No attempt was made to corroborate these participants' proximity to death, a factor that may influence some features of NDEs (Owens et al., 1990). Furthermore, no attempt was made to conduct diagnostic interviews with these participants to confirm the presence or absence of PTSD. For these reasons, it may be valuable to repeat this study with an unselected cohort for whom proximity to death has been well documented.

CONCLUSIONS AND IMPLICATIONS

This study corroborates clinical observations that near-death experiencers report more intrusive memories of their close brush with death than do other survivors of a near-fatal crisis, whereas they do not report greater efforts to avoid reminders of that event. Survivors of NDEs do not generally

suffer the degree of distress or impairment that patients with PTSD do, although their lower level of symptoms may still have clinical relevance and may warrant counseling. The profile of posttraumatic symptoms reported by near-death experiencers suggests a nonspecific response characterized by inadequate cognitive processing of a catastrophic event, rather than symptoms of a discrete psychiatric disorder.

Although dissociation at the time of a crisis generally increases the risk of developing subsequent PTSD, NDEs apparently do not. NDEs differ from other forms of peritraumatic dissociation by their strong positive affect. It is plausible that this positive affect might insulate the survivor against the subsequent development of full-blown PTSD.

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