Near-Death Experiences

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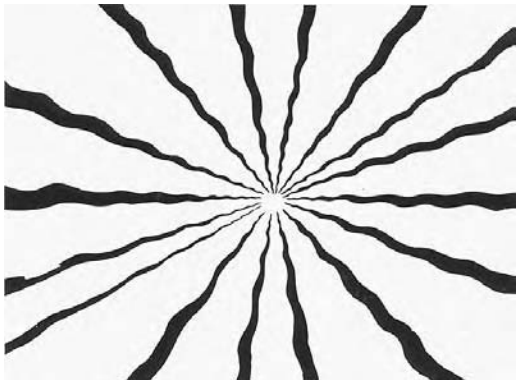
What is it like to come very close to death and survive? In 1975, physician Raymond Moody hit the best-seller lists with *Life after Life*, claiming that hundreds of near-death survivors had reported overwhelmingly pleasant experiences. During these experiences, he noted, they seemed to leave their bodies and view resuscitation attempts from above; then they passed down a dark tunnel toward a brilliant light, met a "being of light" who helped them to evaluate and judge their own lives, and finally decided to return to life rather than go on into the peace and bliss of death (Moody 1975). The near-death experiences (NDEs) were difficult to talk about for the survivors but left them changed for the better—reportedly less materialistic and with a reduced fear of death. Reactions to these claims ranged from the popular view that these experiences must be evidence for life after death to outright rejection of the experiences as, at best, drug-induced hallucinations or, at worse, pure invention.

The State of the Evidence on Near-Death Experiences

Twenty years and much research later, it is clear that neither extreme is correct. On the one hand, the claim that the experiences are evidence for survival after death is untenable. Even though the boundary between life and death is pushed back by improved techniques, it is always possible to argue that the person did not actually die and that the experiences were part of life and not death. Of course, if there is life after death, these experiences may give a clue as to what it is like, but they can never be definitive evidence that there is.

On the other hand, the experiences cannot be dismissed as either totally invented or hallucinations caused by medical intervention or drugs. Moody simply collected cases as they came along, but research by Kenneth Ring, conducted on 101 randomly selected survivors, soon confirmed that such reports are common. In that research, about 60 percent of the participants reported peace, one-third mentioned out-of-body experiences (OBEs), one-quarter said they had entered the darkness (or a tunnel), and rather fewer reported experiences such as life review and the decision to return (Ring 1980). Near-death experiences (NDEs) also appear to be widespread through many ages and cultures. Long before Moody, there were similar descriptions of deathbed experiences (when the patients did go on to die) in the psychical research literature (Barrett 1926; Osis and Haraldsson 1977), as well as isolated reports in the medical literature (Dlin, Stern, and Poliakoff 1974; Dobson et al. 1971; Druss and Kornfeld 1967; MacMillan and Brown 1971). In addition, there are both historical and contemporary accounts from many different cultures



Drawing of tunnel with light at the end, as seen by those in near-death experiences. (Dr. Susan Blackmore/Fortean Picture Library)

(Blackmore 1993), and in our own culture, children also report similar experiences, although their reports tend to be fragmentary compared with those of adults (Morse et al. 1986; Morse 1990).

Explanations for the Near-Death Experience

Although some modern stories may be inventions based on the widespread publicity about the phenomenon, it seems unlikely that people across so many other ages and cultures would have invented similar stories. The question then becomes why the features are so often the same. Common theories include the effects of (1) expectation, (2) administered drugs, (3) endorphins, (4) anoxia (oxygen depletion) or hypercarbia (excess carbon dioxide), (5) temporal lobe stimulation, and (6) life after death. Each will be considered in turn.

Expectation

Expectation clearly has an effect on NDEs, though there are two different aspects to this factor. First, NDEs often happen to people who think they are dying when, in fact, there is no serious clinical emergency. This adds to the general conclusion that you do not have to be physically near death to have an NDE (Gabbard, Twemlow, and Jones 1981; Owens, Cook, and Stevenson 1990). Indeed, some aspects of the NDE, such as the out-of-body experience (see the "Out-of-Body Experiences" entry in this encyclopedia) can occur at any time and to perfectly healthy people (Blackmore 1982; Gabbard and Twemlow 1984; Irwin 1985). There are some differences between the NDEs of those who are and are not close to death, but they are small compared to the similarities (Owens, Cook, and Stevenson 1990).

Second, the details of the NDE may vary with expectations about death. For example, Christians tend to see Jesus in the light, and Hindus see the messengers of Yamraj coming to take them away—and they often refuse to go! (Osis and Haraldsson 1977). However, the general pattern seems to be similar across cultures, suggesting that religious expectations are not responsible for the entire experience or for most of its common features. If they were, we might expect more pearly gates and fewer tunnels. We might also expect those who attempt suicide to have more hellish experiences, but they do not (Greyson and Stevenson 1980; Ring and Franklin 1981–1982; Rosen 1975). Their NDEs are much like others and tend to reduce future attempts at suicide.

All this suggests that, although expectation may change the details of NDEs, it cannot be used to explain their occurrence entirely or even to account for the similarities across ages and cultures.

Administered Drugs

The suggestion that the NDEs are created by drugs administered to dying patients does not hold up either. Many classic cases have been reported from drug-free patients and from

people who were falling from mountains (Noyes and Kletti 1972) or involved in other accidents in which no drugs were involved. More specifically, research shows that patients given anesthetics or painkillers have fewer or more muted and less detailed NDEs than others (Greyson and Stevenson 1980; Osis and Haraldsson 1977; Ring 1980). It seems likely that it is the brain's own drugs that are more important for the NDE than drugs administered from outside.

Endorphins

Daniel Carr (1981, 1982) first suggested that endorphins could account for the NDE. Endorphins are released under stress (including both actual physical trauma and extreme fear—such as the fear of dying). They are known to block pain and to induce feelings of well-being, acceptance, and even intense pleasure, which might suggest they are responsible for the positive emotional tone of most NDEs. There is much controversy over the occurrence of "hellish" NDEs, with some researchers arguing that they are far more common than previously suspected (Atwater 1992; Greyson and Bush 1992; Rawlings 1978). Occasionally, NDEs change from pleasant to hellish, as occurred in one seventy-two-year-old cancer patient who was administered naloxone. His pleasant NDE turned to horror and despair as the friendly creatures morphed into the doctors treating him—suggesting that the naloxone (a morphine antagonist) had blocked the endorphins that were providing the pleasant feelings (Judson and Wiltshaw 1983). This is circumstantial, though, and Melvyn Morse has argued that endorphins are not responsible, suggesting that the neurotransmitter serotonin plays a more important role. Of eleven children who had survived critical illnesses, including coma and cardiac arrest, seven reported NDEs, while twenty-nine age-matched controls, who had had similar treatments including the use of narcotics, did not report any NDEs (Morse et al. 1986). However, it is questionable whether the effects of narcotics administered during critical illness are comparable with those of endorphins. Karl Jansen has argued that endorphins are not potent hallucinogens and suggested instead the involvement of NMDA receptors (postsynaptic receptors for the excitatory neurotransmitter glutamate) (Jansen 1989). Thus, it is still not known just how far endorphins are implicated in the NDE.

Anoxia or Hypercarbia

The argument over the role of anoxia has been complex. Some attribute to anoxia all the features of the NDE, though this reasoning is implausible, since so many NDEs clearly occur in the absence of anoxia (e.g., when the person only *thinks* he or she is going to die).

Others have argued that the cortical disinhibition associated with anoxia may be responsible for the tunnel and light experiences. Since the visual cortex is organized with many cells devoted to the center of the visual field and few to the periphery, random excitation will produce the effect of a bright light in the center fading out toward darkness—in other words, a tunnel effect (Blackmore and Troscianko 1988). More generally, it has been suggested that it is the disinhibition (not the anoxia per se) that is responsible for much of the NDE (Blackmore 1993).

Anoxia in non-life-threatening situations does cause odd experiences, such as the visions and out-of-body experiences reported by pilots trained in gravity-induced loss of consciousness (Whinnery 1990). There are also suggestions of NDE-like experiences in children suffering from reflex anoxic seizures, though most of these children are too young to describe their experiences (Appleton 1993; Blackmore 1998).

Against all this, others argue that the effects

of anoxia are not like those of NDEs (for example, producing confusion rather than the clear thinking of a typical NDE), though this is complicated by the fact that different types and speeds of anoxia cause different effects. There is also one case of an NDE in a patient with measured, normal blood gases (Sabom 1982), although it has been argued that his blood was taken from the femoral artery and that peripheral blood bases are not a reliable indicator of cortical blood gases (Gliksman and Kellehear 1990).

There may also be a role for hypercarbia, which has long been known to induce strange experiences such as lights, visions, and out-of-body and mystical experiences (Meduna 1958).

Temporal Lobe Stimulation

The temporal lobe is likely to be crucial in NDEs, since it is sensitive to anoxia and its stimulation is known to induce hallucinations, memory flashbacks, body distortions, and out-of-body experiences (Halgren et al. 1978; Penfield 1955). The limbic system is also sensitive to anoxia and involved in the organization of emotions and memory, suggesting a possible link with the life review that sometimes occurs during NDEs. An interesting effect of endorphins is that they lower the seizure threshold in the temporal lobe and limbic system (Frenk, McCarty, and Liebeskind 1978), so they might produce the same effects as anoxia. One neurobiological model of the NDE is based almost entirely on the notion of abnormal firing in the temporal lobe and associated parts of the brain (Saavedra-Aguilar and Gomez-Jeria 1989). Also, research looking for an "NDE-prone personality" has led to the conclusion that those most likely to have NDEs may have more unstable temporal lobes and show more "temporal lobe signs" than others (Ring 1984), though it is not clear how much of this association is a cause or an effect of the NDE.

Life after Death

None of the previous mechanisms can account entirely for the NDE, and many theorists argue that something beyond the brain is involved—for example, that there is a soul or something else that leaves the body at death and that the NDE is a glimpse of what follows. Direct evidence for this explanation is impossible to obtain. However, there are claims that during NDEs, people have been able to hear conversations and see the actions of people around them and even observe things such as the behavior of needles on dials, all of which they could not possibly have known about while in a comatose state (Sabom 1982). If such paranormal acquisition of information really occurs, it is evidence that any naturalistic account of NDEs must be incomplete. But does it occur? Many of these claims are based purely on anecdotal evidence, and very few have any independent corroboration.

For example, the most famous case involves a woman named Maria, who was taken to a Seattle hospital after a severe heart attack and then suffered a cardiac arrest. She later told her social worker, Kimberley Clark, that as she was being driven into the hospital in an ambulance, she had looked down from above and seen a tennis shoe on an inaccessible window ledge. Clark then searched for the shoe and apparently found it, just as Maria had described it. The problem with this case is that we have only Clark's description to go on. Neither Maria nor anyone else involved gave an independent account of the original experience or of the existence of the shoe, and Maria herself is now untraceable and presumed dead. Like so many other cases, this one does not stand up under scrutiny. There are other similar cases (Ring and Lawrence 1993). Yet skeptics tend to reject the evidence as inadequate, whereas proponents think it is conclusive. Perhaps the matter might be resolved by appropriate experiments, such as those using concealed targets in operating theaters and recovery

rooms. Some are presently under way, but no successful results have yet been published.

The transformations reported in the lives of some individuals after near-death experiences are also taken as evidence of the NDE's heavenly nature. However, simply facing up to death can bring about a change in personal values, and there is conflicting evidence about whether an NDE is necessary for such an outcome (Greyson 1990; Pope 1994). It has also been argued that during the NDE, the usual model of self breaks down, and this brief experience of selflessness may bring about personal changes (Blackmore 1993).

In the end, it is probably a matter of personal preference whether to interpret the NDE as a glimpse of the life beyond or the product of the dying brain. In either case, the NDE deserves serious research, and the dying, the recovering, and their relatives deserve to know what we have learned. As Morse (1994) put it, these experiences can help us to restore dignity and control to the dying process. Just as NDEs reduce the fear of death in the people who have them, so they can help all of us to accept death as a positive aspect of life. Indeed, the study of life at its last limits may tell us more about ourselves and our lives than it does about death.

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